ETH zürich

University of Zurich[UZH]

ÉCOLE POLYTECHNIQUE FÉDÉRALE DE LAUSANNE

京都大学 KYOTO UNIVERSITY

150

Anniversary of Diplomatic Relations
between Switzerland and Japan
日本・スイス国交樹立記念

Swiss-Kyoto Symposium

21–22 November 2013
ETH Zurich and the University of Zurich
Switzerland

Conference Booklet

ETH Global

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Swiss-Kyoto Symposium 2013

Introduction

In 2014 Switzerland and Japan are celebrating the 150th anniversary of diplomatic relations between the two countries. Around the anniversary several cultural and scientific events are planned to foster cooperation and initiate new joint activities building on the long standing friendship.

The Japanese-Swiss partnership extends to many levels with science and technology playing an important role. Building on the high innovation power, the quality of their research institutions and the strong investment in science and technology, Switzerland and Japan have established a strategic bilateral Science and Technology cooperation. Following an agreement signed by the respective governments in 2007, a bilateral funding programme has been established, supporting joint research projects in molecular medical sciences and medicine for an ageing society. The programme will continue for the next four years, adding a new instrument supporting the exchange of young scientists.

Key for successful scientific cooperation are the relations both at institutional level and between individual researcher. Japanese scientists account for a major portion of research partners for Switzerland outside Europe and the US and many of them come from top-institutions like Kyoto University. The Swiss-Kyoto Symposium 2013 will help to strengthen the institutional ties between Kyoto University and its partners EPFL, ETH Zurich and the University of Zurich and offer opportunities both for in-depth scientific discussions and for exploring potential future cooperation projects.

Welcome from Organising Institutions

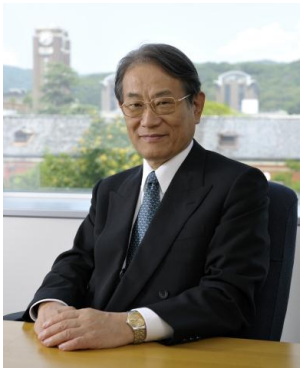
President Ralph Eichler, ETH Zurich

A very warm welcome to Swiss Kyoto Symposium 2013! We are excited to co-host scientific discussions in so many different disciplines between Kyoto University and three Swiss institution: the University of Zurich, EPLF and ETH Zurich. This provides our researchers the opportunity to deepen existing relationships and to explore new collaborations.

At ETH Zurich we believe in the importance of working with strategic partners in order to meet the demands of society in a global world. We have long-standing relationship with Kyoto University with a first memorandum for academic cooperation and exchange signed in 1989. This formal commitment to cooperation was last renewed in 2010. This first Swiss Kyoto symposium now brings together over 200 researchers from the four participating Universities for two days of intellectual discourse. I am convinced this will lay the ground for further fruitful joint activities.

The symposium is also an official part of celebrating 150 years of diplomatic relations between Switzerland and Japan. This is a very telling symbol of the important role that scientific institutions have in the long-standing relationship between our countries.

I wish all the participants productive exchanges throughout the Symposium and a wonderful stay in Zurich.



President Hiroshi Matsumoto, Kyoto University

I am delighted to see the Swiss-Kyoto Symposium realized, and offer my thanks to the outstanding researchers from the various institutions involved for their tremendous efforts.

Established in 1897, Kyoto University is dedicated to advancing world-class higher education and cutting-edge research. In keeping with the rich cultural traditions of its birthplace—Kyoto City—it has maintained and developed its own distinct culture of academic freedom, seeking to contribute to society and promote harmonious coexistence within the world's human and ecological community. The university has evolved into a comprehensive institution with ten faculties, eighteen graduate schools, fourteen research institutes, and twenty other education and research facilities. As an internationalized university, we are constantly expanding the scope of our collaboration and exchange activities with education and research institutions throughout the world.

2014 marks the 150th anniversary of diplomatic relations between Switzerland and Japan, and many researchers from both countries have gathered for this symposium. Each participating university represents a hub of education and research in fields spanning from the humanities to the natural sciences. I sincerely hope that by widely disseminating the world-class academic achievements produced by each university, we can advance international cooperative research, and deepen exchange between Switzerland and Japan.

In closing, I would like to express, on behalf of Kyoto University, our gratitude to the Swiss Federal Institute of Technology in Zurich (ETHZ), the University of Zurich (UZH) and Ecole Polytechnique Federale de Lausanne (EPFL) for their cooperation, generosity, and great efforts towards realizing this event. I offer my sincere best wishes for the success of the symposium in providing an opportunity for the mutual exchange of knowledge and information, and promoting the advancement of cutting edge research.

President Andreas Fischer, University of Zurich

It is a great pleasure to welcome you to Zurich and to the Swiss-Kyoto Symposium, organized by Switzerland's leading universities – ETH, UZH and EPFL – in collaboration with Kyoto University. The symposium brings together world-class scholars from all four participating institutions and is an important step in further deepening the manifold ties between Japan and Switzerland. Diplomatic relationships between the two countries are well established and reach back as far 150 years. The connections between the University of Zurich and Japan do not date back that far, but we are proud of fostering long-standing, fruitful relationships to Japanese Institutions of Higher Education. More than twenty years ago an agreement was established between the Kyoto University of Foreign Studies and Japanese Studies at UZH. This agreement is still in force and supports research collaboration as well as student mobility. Within our newly established Institute of Asian and Oriental Studies, Japanese Studies are a core discipline. Additionally, we entertain various more recently set up research collaborations in widely diversified fields, including anthropology, evolutionary biology and environmental studies, and brain research, to name just three areas of cooperation that will be presented in scientific sessions at this symposium. Furthermore, the first keynote speaker, Professor Shigekazu Nagata, spent important years of his academic career at UZH. In the late 1970s he worked for four years as a post-doctoral fellow at the Institute of Molecular Biology, doing groundbreaking research in the group of Charles Weissmann; in 2012 Professor Nagata received an honorary doctorate from the University of Zurich.

During the two days of the symposium, more than 200 scientists will present their work and share theories, methods and findings. I am convinced that the inspiring atmosphere of the two host institutions, the ETH Zurich and the University of Zurich, will provide an excellent forum for this exchange of knowledge and ideas. Enjoy your stay in Zurich!

President Patrick Aebischer, EPFL

On behalf of EPFL, we welcome you to the «Swiss-Kyoto Symposium 2013». We are looking forward to consolidating collaborations between Japanese and Swiss partners!

EPFL now hosts 5'200 technical and scientific collaborators. It has become a laboratory of scientific knowledge and has won its reputation amongst the best scientific and technical universities. The fact that EPFL is the first technical European university to participate in the on-line course platforms, the famous "MOOCs," along with the three giant American universities – MIT, Stanford, and Harvard – demonstrates our international credibility as well as our commitment to anticipating economic and social changes.

Both the signing of a major agreement with the Canton of Valais for the creation of a campus and a research center focusing on the transition of energy production in Switzerland, and the realization of the Microtechnology branch in Neuchâtel, demonstrate the extent to which the federalism of ideas is of vital importance to our school. This Swiss and international federalism, echoed in the recent signings of agreements in Asia, Europe, and Africa, forms the basis of a Swiss science that is open and adaptable to different economic biotopes.

The scientific results of our young tenure-track faculty, as well as the nearly 100 million francs of private capital raised in 2012 by our start-ups, are extremely positive signs for Switzerland's economic future. We have the strength and the desire to innovate. Developing the school while consolidating our achievements, shaping minds that are at once rational and creative, stimulating the desire for scientific research alongside the creation of start-ups – these are the permanent forces that hold together the plurality of missions driving our school's future.

Greetings from H.E. Ambassador of Japan Ryuhei Maeda

As the Japanese Ambassador to Switzerland I welcome the Japanese participants to the Swiss-Kyoto Symposium 2013 and express my gratitude to the organizers of the Symposium in Switzerland. The year 2014 marks the 150 Years Anniversary of Diplomatic Relations between Japan and Switzerland. This Symposium is an important milestone of the long history of academic cooperation of both countries and one of the first events, which commemorate the Anniversary Year.

I am convinced that the Swiss-Kyoto Symposium - with its focus on various fields of natural and social sciences – will further strengthen our bilateral relations.

As respected scholars from world-famous universities of both countries, Kyoto University, the University of Zurich, EPFL and ETH Zurich participate in this symposium it is my sincere hope that the many discussions will further strengthen our partnership and will serve as a model of future oriented cooperation for other countries to follow.

ETH Zurich

ETH Zurich is one of the world's leading international universities for technology and the natural sciences. It is well-known for its excellent education, ground-breaking fundamental research and for transferring its research results into practice. It offers researchers an inspiring working environment and its students a comprehensive education.

Founded in 1855, ETH Zurich today has some 18,000 students from over 100 different countries, 3,800 of whom are doctoral students. About 500 professors teach and conduct research in the areas of engineering, architecture, mathematics, natural sciences, system-oriented sciences, and management and social sciences. ETH Zurich regularly appears at the top of international rankings as one of the best universities in the world. 21 Nobel Laureates have studied, taught or conducted research at ETH Zurich, underlining the excellent reputation of the institute.

The transfer of research outcomes to the economy and society at large is a key concern of ETH Zurich. It does this very successfully: each year some 80 new patent applications are filed and since 1996, over 260 spin-off companies have emerged out of research done by ETH faculty, research staff or students.

ETH Zurich helps to find long-term solutions to global challenges. The focal points of its research include energy supply, risk management, developing the cities of the future, global food security and human health.

Departments

Architecture and Civil Engineering

- Architecture
- Civil, Environmental and Geomatic Engineering

Engineering Sciences

- Biosystems Science and Engineering
- Computer Science
- Information Technology and Electrical Engineering
- Mechanical and Process Engineering
- Materials Science

Natural Sciences and Mathematics

- Biology
- Chemistry and Applied Biosciences
- Mathematics
- Physics
- System-oriented Natural Sciences
- Earth Sciences
- Environmental Systems Science
- Health Sciences and Technology

Management and Social Sciences

- Management, Technology and Economics
- Humanities, Social and Political Sciences



Kyoto University

Established in 1897, Kyoto University is the second oldest research university in Japan. Today, it is a truly international institution dedicated to providing a free-thinking academic environment with a global perspective. Kyoto University is comprised of 10 faculties, 18 graduate schools, 14 research institutes, 20 educational institutes and other establishments. Approximately 1,700 of the university's 23,000 students hail from overseas. With students from approximately 100 different countries and regions, the university's campuses boast a rich cultural diversity.

Kyoto University offers a broad-minded and accommodating academic environment in which researchers can engage in long-term studies and pursue new frontiers in fundamental and applied science. The strength of the university's methods is testified by the accolades conferred on its alumni and researchers, notably eight Nobel Prize laureates, two Fields Medalists and one Gauss Prize laureate. The internationally recognized accomplishments of KU researchers owe a great deal to the institution's unique approach to education and research, which emphasizes free-thinking, independence and dialogue—an academic philosophy that encourages the creativity essential for groundbreaking research and discoveries. Another key element is the fact that the university is well equipped with state-of-the-art laboratories and research facilities, providing students and researchers with the hands-on practical experience that is vital to their development as scientists and scholars. Kyoto University invites students and researchers from around the world to not only become specialists in their chosen fields, but also to help tackle the world's most urgent problems and contribute to the global community.

Mission

Kyoto University states that its mission is to sustain and develop its historical commitment to academic freedom and to pursue harmonious coexistence within the human and ecological community on this planet.

Research

- Kyoto University will generate world-class knowledge through freedom and autonomy in research that conforms with high ethical standards.
- As a university that comprehends many graduate schools, faculties, research institutes and centres, Kyoto University will strive for diverse development in pure and applied research in the humanities, sciences and technology, while seeking to integrate these various perspectives.

Education

- Within its broad and varied educational structure, Kyoto University will transmit high-quality knowledge and promote independent and interactive learning.
- Kyoto University will educate outstanding and humane researchers and specialists, who will contribute responsibly to the world's human and ecological community.

Relationship with society

- As a university committed to a broad social engagement, Kyoto University will encourage cooperation with local and national society, and will disseminate knowledge informed by the ideals of freedom and peaceful coexistence.
- As an international institution, Kyoto University will promote foreign academic exchange and thereby strive to contribute to the well-being of the world.

Administration

- In order to enhance the free development of learning, Kyoto University will pay due respect to the administrative independence of each of its component institutions, while promoting cooperation among them.
- Kyoto University will conduct its administration with regard for the environment and respect for human rights and will be accountable to society at large.



University of Zurich

Introduction

Established in 1833, the University of Zurich is Switzerland's largest university and offers the most comprehensive academic program in the country. Students can choose from over 130 different fields of study at one of the University's seven faculties. UZH consistently ranks among the best universities in the world and has achieved international renown in the fields of medicine, immunology, neuroscience, structural biology, and economics.

Mission

UZH has a strong commitment to the free and open pursuit of scholarship. The University fosters free dialogue, respects the individual characteristics of the disciplines, and advances interdisciplinary work. The University acknowledges that academic freedom calls for a high degree of responsibility, including reflection on the ethical implications of research activities for humans, animals, and the environment.

Research …

UZH has established twelve University Research Priority Programs (URPP), which are designed to create and promote interdisciplinary academic networks in selected areas of research. The University is leading house at six National Centers of Competence in Research (NCCR) and is affiliated with another twelve. UZH and neighboring university ETH Zurich collaborate in several joint Centers of Competence to realize high-quality research.

… and Teaching

Uniting scientific findings and teaching has been the standing tradition at the University of Zurich since its foundation. Its Bachelor's, Master's, and PhD programs not only bear testimony to the University's academic excellence, but also reflect its focus on innovation: All UZH programs of study are guided by the principles of research-based teaching and place great value on engaging UZH students in research at an early stage of their careers.

International Cooperation

The University of Zurich has an international reputation for excellence. It cooperates in cutting-edge research and teaching activities with leading universities and scholarly networks worldwide. The University also works with industry, government agencies, and non-governmental organizations across the globe. Its excellent reputation and top infrastructure are reasons why many of the world's most eminent scholars choose UZH to carry out their research.

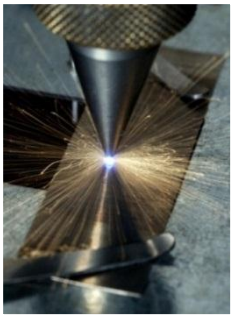


Photos by Michel van Grondel/UZH and Frank Brüederli/UZH

EPFL

EPFL, Ecole Polytechnique Fédérale de Lausanne, in its idyllic location on the shores of Lake Geneva, brings together a campus of more than 10,000 people. By its novel structure, the school stimulates collaboration between students, professors, researchers and entrepreneurs. These daily interactions give rise to new and groundbreaking work in science, technology and architecture. With over 110 nationalities represented on the campus, more than 50% of the faculty recruited internationally and 60% of the PhD students originating from abroad, EPFL is one of the most international universities in the world.

Founded in 1853, EPFL has evolved into a top-ranked research and teaching university that attracts some of the best intellects in the world. Students follow programs at the bachelor's, master's, and doctoral level, and enjoy many opportunities for international exchange. EPFL offers 21 Master's programs in engineering, basic sciences, computer and communication sciences, life sciences, civil engineering, architecture and the environmental studies. The campus is structured to encourage interdisciplinary learning, and students at all levels participate in research projects in the campus' 250 laboratories and research groups. In addition to excellence in education and research, EPFL is committed to technology transfer as a fundamental part of its mission. An average of 10 new start-up companies is created every year in EPFL's Science Park.


Photos by Alain Herzog/EPFL

Programme

Thursday, 21 November

8:30	**Coffee and Registration**	Foyer HG F30
9:00–10:00	**Opening of the Symposium** *Chair: Prof. Ralph Eichler, President, ETH Zurich* Prof. Ralph Eichler, President, ETH Zurich Prof. Hiroshi Matsumoto, President, Kyoto University Prof. Michael Hengartner, President Elect, University of Zurich Prof. Karl Aberer, Vice-President, EPF Lausanne (EPFL) H.E. Ryuhei Maeda, Ambassador of Japan to Switzerland **Signing Ceremony of Memorandum of Understanding** *Chair: Dr. Yasmine Inauen, Head International Relations, UZH*	ETH HG F30
10:00–11:00	**Presentation of Research and International Cooperation** *Chair: Dr. Yasmine Inauen, Head International Relations, UZH* Prof. Roland Siegwart, Vice-President, ETH Zurich Prof. Kiyoshi Yoshikawa, Executive Vice-President, Kyoto University Prof. Daniel Wyler, Vice-President, University of Zurich Prof. Karl Aberer, Vice-President, EPFL	ETH HG F30
11:00–11:15	*Coffee Break*	*Foyer HG F30*
11:15–12:15	**Keynote Lectures** *Chair: Prof. Atsuko Sehara, Institute for Frontier Medical Sciences, Kyoto University* **"Cell Death and Clearance of Dead Cells"** Prof. Shigekazu Nagata, Department of Medical Chemistry, Graduate School of Medicine, Kyoto University **"Translational Neuromodeling: A new Paradigm for Understanding and Diagnosing Brain Diseases"** Prof. Klaas Enno Stephan, Institute for Biomedical Engineering, Translational Neuromodelling Unit, ETH and University of Zurich	ETH HG F30
12:15–13:15	*Buffet Lunch*	*Foyer HG F30*
13:10–13:30	*Bus Transfer to Hönggerberg and Irchel Campuses*	*HG C-Floor*
13:30–17:00	**Parallel Sessions I** (see List of Parallel Sessions and Detail Programmes)	various venues
17:00–17:30	*Bus Transfer from Hönggerberg and Irchel to Dinner Location (for Sessions H1-H5 (in front of HIT) and U1, U2, U5 (taxi stop)*	*see maps*
17:30–18:10	**Funding Opportunities for Cooperation** *Chair: Dr. Rahel Byland, Programme Manager, ETH Global* Prof. Keiichi Kodaira, Director, Bonn Office, Japan Society for the Promotion of Science (JSPS) Jean-Luc Barras, Head International Relations, Swiss National Science Foundation (SNSF)	"Zur Saffran"
18:15–19:00	**Apéro and Musical Entertainment**	"Zur Saffran"
19:00	**Conference Dinner**	"Zur Saffran"

Friday, 22 November

8:00	*Bus Transfer from ETH Main Building to Hönggerberg (For Sessions H1-H5)* *Individual guided transfers for Sessions in Irchel Campus and Botanical Garden, according to information of Session Chair*	*HG C-Floor*
8:30–12:00	**Parallel Sessions II** (see List of Parallel Sessions and Detail Programmes) *(including Coffee Breaks at each Campus)*	various venues
12:00–13:00	*Buffet Lunch* *(see Detail Programmes for lunch locations)*	*ETH HG* *ETH HIT* *UZH Irchel*
13:00–15:30	**Parallel Sessions III** (see List of Parallel Sessions and Detail Programmes)	various venues
15:45	*Bus Transfer from Hönggerberg and Irchel Campus to University of Zurich Main Building* *(For sessions H1-H5 bus in front of HIT building, for Irchel guided individual transfers)*	*see map*
16:15–17:15	**Plenary wrap-up: Reports from Parallel Sessions** *Chair: Prof. Tetsuo Sawaragi, Assistant to the Executive Vice-President for International Affairs, Kyoto University* Reports by Chairs from Parallel Sessions	KOL-G-201
17:15–17:45	**Closing remarks** *Chair: Mr. Anders Hagström, Director Global Educational Affairs, ETH Zurich* Prof. Gerhard Schmitt, Senior Vice-President ETH Global, ETH Zurich Prof. Michiaki Mishima, Executive Vice-President for International Affairs and Hospital Administration Prof. Michael Hengartner, President Elect, University of Zurich Prof. Karl Aberer, Vice-President, EPFL	KOL-G-201
18:00	**Final drinks**	UZH Zoological Museum

Parallel Scientific Sessions

ETH Zurich Hönggerberg Campus (bus transfers needed)

Nr.	Title	Date	Time	Location
H1	Molecular and Cellular Basis of Development, Tissue Repair and Disease	21 November 22 November	13:30 – 17:00 08:30 – 15:30	HPL D32/34 HPL D32/34
H2	Magnetic Resonance	21 November 22 November	14:00 - 17:00 09:00 – 15:30	HIT E51 HIT E51
H3	Condensed Matter Physics	21 November 22 November	13:30 – 16:45 08:30 – 15:40	HIT K51 HIT K51
H4	Nanoelectronics and Nanophotonics	21 November 22 November	13:30 – 17:00 08:30 – 15:30	HPZ E35 HPZ E35
H5	Organic Chemistry and Material Chemistry	21 November 22 November	13:30 – 17:00 08:30 – 15:30	HCI J498 HCI J498

ETH Zurich Zentrum Campus (no transfers needed)

Nr.	Title	Date	Time	Location
Z1	Product Development and Manufacturing	21 November 22 November	13:00 – 17:00 08:30 – 15:30	HG F33.5 LFW E15
Z2	Advanced Nano-/Biotechnology	21 November 22 November	13:30 – 17:00 08:30 – 12:30	ML E13 ML E13
Z3	Energy	21 November 22 November	13:30 – 17:00 08:30 – 15:30	HG F33.1 ML H37.1
Z4	Astrophysics	21 November 22 November	13:30 – 17:00 08:30 – 11:15	HG D5.1 HG F26.1
Z5	AI and Robotics	21 November 22 November	13:30 – 17:00 08:30 – 12:00	HG E42 HG E42
Z6	Natural Hazards and Disaster Prevention Research	22 November	08:15 – 12:00	HG F50.3

University of Zurich (bus transfers for Irchel locations needed)

Nr.	Title	Date	Time	Location
U1	Virtual Ape	21 November 22 November	14:00 – 17:00 09:00 – 12:00	Irchel Y13-L-18 Irchel Y13-L-18
U2	Plant and Environment	21 November 22 November	13:30 – 17:00 08:30 – 15:30	Irchel Y34-J-01 BOT-P1-40
U3	Finance and Risk	21 November 22 November	09:55 – 17:30 Bilateral meetings	KOL-G-217
U4	Existentialismus heute	21 November 22 November	Excursion 08:30 – 16:00	 KOL-N-1
U5	Materials for Energy, Environment, and Life	21 November	11:30 – 16:00	Irchel Y25-H-79

Keynote Speakers' Profiles

Shigekazu Nagata obtained a Ph.D. in 1977 from University of Tokyo for the thesis "Purification and characterization of polypeptide chain elongation factor from pig liver". From 1977 to 1981, he did post-doctoral research in laboratory of Prof. Charles Weissmann (Institute of Molecular Biology, University of Zürich), where human interferon-□ cDNA was identified. In 1982, Dr. Nagata returned to Institute of Medical Science, University of Tokyo as an assistant professor, and identified cDNA for granulocyte colony-stimulating factor (G-CSF). In 1987, he was appointed as a Head of Molecular Biology Department of Osaka Bioscience Institute, where he characterized G-CSF receptor, and started to work on apoptosis. From 1995-2007, he was a professor in Department of Genetics, Osaka University Medical School. In 2007, he moved to Kyoto University as a professor in Department of Medical Chemistry, Graduate School of Medicine. Dr. Nagata was the president of Japanese Biochemical Society (2005-2006), and Japanese Society of Molecular Biology (2007-2008). He was a councilor for Human Frontier Science Program in Strasbourg from 2006 to 2009, and a member of Science Council of Japan since 2008. Dr. Nagata serves or served as an editorial member of various journals including Science, Immunity, and Cancer Cell. The awards include Emil von Behring Prize (Germany), Robert Koch Award (Germany), Prix Lacassagne (France), and Japan Academy Prize and Imperial Prize from the Japan Academy. He is recognized as a Person of Cultural Merit from the Japanese Government in 2001 and nominated to an associate of The Japan Academy in 2010. He obtained a Honorary Doctorate from University of Zürich in 2012, and received Tomizo Yoshida Award (Japanese Cancer Association) and Debrecen Award for Moleculare Medicine from Debrecen University (Hungary) in 2012. Next week, he will receive Keio Medical Science Prize from Keio University.

Klaas Enno Stephan is a computational neuroscientist and medical doctor. He is Professor of Translational Neuromodeling at the University of Zurich and ETH Zurich, and Honorary Principal at the Wellcome Trust Centre for Neuroimaging, London. Following doctoral degrees in both Medicine and Computational Neuroscience, Klaas has been developing mathematical models for quantifying, from non-invasive brain activity measurements, neuronal mechanisms underlying mental diseases (e.g., schizophrenia, addiction and depression) in individual patients. The hope is that such "computational assays" will enable objective diagnostics and individualised treatment recommendations, leading to a redefinition of mental diseases and a revolution of clinical practice. To achieve this goal, Klaas founded the Translational Neuromodeling Unit (TNU), the first institution with the explicit mission statement to translate advances in computational neuroscience into diagnostic tools for clinical practice. At the TNU, computer scientists, engineers, psychologists and clinicians jointly develop mathematical models of brain function and evaluate their diagnostic use for psychiatry and neurology in clinical studies.

Executive Speakers' Profiles

ETH Zurich

Ralph Eichler was appointed by the Federal Council of Switzerland to be the President of ETH Zurich in May 2007 and assumed his position in September 2007. Professor Eichler is professor of Experimental Physics at the Institute of Particle Physics at ETH Zurich. From 2002 to 2007 he was Director of the Paul Scherrer Institute, a multi-disciplinary research center for natural sciences and technology.
Professor Eichler studied physics at ETH Zürich and did his PhD thesis at the Swiss Institute for Nuclear Research. He held research positions in Germany and at Stanford University in the United States before returning to the ETH in 1982, becoming a professor in 1989. Born in Guildford, England, he is a Swiss national.

Roland Siegwart (born in 1959) is a professor for autonomous systems and Vice President research and corporate relations at ETH Zurich. After studying mechanics and mechatronics at ETH, he was engaged in starting up a spin-off company, spent ten years as professor for autonomous microsystems at EPFL Lausanne and he held visiting positions at Stanford University and NASA Ames.
In his research interests are in the creation and control of intelligent robots operating in complex and highly dynamical environments. Prominent examples are personal and service robots, inspection devices, autonomous micro-aircrafts and walking robots. He is and was the coordinator of many European projects, co-founder of half a dozen spin-off companies and board member of various high-tech companies.
As a strong promoter of innovation, he pioneered the focusprojects, where student teams develop their visions to a function prototype, he initiated the pioneer fellowships program for young entrepreneurs at ETH and recently established ETH's innovation and entrepreneurship lab, a biotope for enhancing technology transfer and spin-off creation.

Gerhard Schmitt is Professor for Information Architecture at ETH Zurich and ETH Zurich Senior Vice President for Global Affairs.
From 2010 to 2013, Gerhard Schmitt was the founding Director of the Singapore-ETH Centre for Global Environmental Sustainability. It started with the establishment of its first trans-disciplinary project, the Future Cities Laboratory, which rapidly evolved into a global think tank and scenario simulation research institute for the sustainable development of new and existing cities.
From 1998-2008 he served as Vice President for Planning and Logistics and Member of the Board of ETH Zurich. He directed the development of ETH's strategy and planning in cooperation with the 16 scientific departments and the central administration. He was also responsible for Human Resources, for departmental budgeting and for the infrastructure of ETH Zürich on two major campuses.
In 2000, he initiated the development of a third, virtual campus, named ETH World with an international master plan competition. In 2003, he devised the concept for Science City, ETH's new campus in Zurich; in 2004, he initiated the development of the master plan; in 2006, an international competition for the best integrated urban scale sustainability concept; and in 2007, the energy concept to reduce CO2 output by 50% in 10 years.In 2010, Gerhard Schmitt received the European Culture of Science Award for ETH Science City.

Kyoto University

Hiroshi Matsumoto has been President of Kyoto University since October 2008. Prior to this appointment he served as the university's executive vice-president for research and finance from 2005–08. He completed his Ph.D. in Engineering at Kyoto University in 1973, and is a specialist in space radio science, space plasma physics and space solar power transmission. Prior to his former role as vice-president, Dr. Matsumoto served as director of Kyoto University's Radio Science Center for Space and Atmosphere from 2002–04, and as director of the Research Institute for Sustainable Humanosphere from 2004–05.
He has received several awards and honors including the Russian Federation of Cosmonautics Gagarin Medal, the Government of Japan's Medal with Purple Ribbon, and the URSI Gold Booker Medal.

Kiyoshi Yoshikawa (professor emeritus, Dr. Eng., nuclear engineering, Kyoto University, Japan, 1974) is Kyoto University's Executive-Vice President for research. He held visiting appointments at Lawrence Livermore Laboratory (now LLNL) from 1978–79 and Lawrence Berkeley Laboratory (now LBNL) from 1979–80.
He served as a director of Institute of Advanced Energy, Kyoto University in the period of 2000-2007. His main interests are fusion direct energy conversion, reactor-relevant advanced technologies, fusion reactor design, free electron laser, and humanitarian landmine detection.

Michiaki Mishima (Dr. Med., Kyoto University, Japan, 1986) is Kyoto University's executive-vice president for international affairs and hospital administration.
He has been a professor and chair man of the Department of Respiratory Medicine, Graduate School of Medicine at Kyoto University since 2002, and has served as director of the Kyoto University Hospital since April 2011. He has executive membership in several academic societies, including the Asia Pacific Society of Respirology and the Japan Respiratory Society. He was initially engaged in the study of frequency characteristics of respiratory mechanics using the random noise oscillation method, and then the study of digital analysis of X-ray CT imaging using custom-made computer programming, where he found that the fractal analysis of the distribution of low attenuation area provides various clinically useful information for chronic obstructive pulmonary disease (COPD) and asthma. He manages the COPD, asthma, infection, cancer, and interstitial lung disease groups in his department. He was awarded the 42nd Belts Prize (first prize) in November 2005 and the Harasawa Memorial Award of the Asia Pacific Society of Respirology in November 2008.

Hidetoshi Kotera (Dr. Eng., Kyoto University, Japan, 1993) is Kyoto University's Executive Vice-President for external strategy, Knowledge & Technology transfer and Innovation. Prof. Kotera was a research scientist and manager at the Central Research Laboratory of Matsushita Electric Industrial Co., Ltd from 1982-1993. He was an associate professor in Kyoto University's Department of Mechanical Engineering, School of Engineering (1993-1996) and then in the Post Graduate school of engineering, Department of Mechanical Engineering (1996-2000). In 2000 he attained a full professorship in the same department before assuming his current position as a professor in the Department of Micro-Engineering (2003-2012). He was appointed as director of the President's Office (2008-2012), and vice-president (2009-2012). In Oct., 2012 he was appointed to executive vice president.

Keiichi N. Ishihara is an assistant to the executive vice-president for research of Kyoto University who received his BS, MSc and PhD degrees from the Department of Metal Science and Technology at Kyoto University in 1981, 1983 and 1986, respectively. He is a professor of Kyoto University's Graduate School of Energy Science and his research involves the development of new functional materials for energy and environment. In addition, he was the leader of scenario planning team in Global COE program, where he has investigated scenarios for energy systems based on the combination of technological and societal aspects. He was also the program director of an international joint project supported by MEXT Strategic Funds for the Promotion of Science and Technology on the development of low-carbon energy systems in Thailand from FY2009-FY2011. He has published more than 100 papers in international journals. Currently, he is a member of the Steering Committee of Kyoto University's Organization for the Promotion of International Relations.

Tetsuo Sawaragi is an assistant to the executive vice-president for international affairs of Kyoto University who received his B.S., M.S. and Ph.D. degrees in Systems Engineering from Kyoto University in 1981, 1983 and 1988, respectively. He is a professor in the Dept. of Mechanical Engineering and Science of Kyoto University's Graduate School of Engineering. In addition to his professorship, he holds the concurrent posts of deputy director-general of the Organization for the Promotion of International Relations (OPIR). He is engaged in research on Systems Engineering, Cognitive Science and Artificial Intelligence, particularly in the development of human-machine collaborative systems. He was a project leader of the government sponsored 21st Century COE Program "Center of Excellence for Research and Education on Complex Functional Mechanical Systems" of Kyoto University,and was a principal investigator of the Grant-in-Aid Creative Scientific Research 2007-2012 (19GS0208) on "Design Theory for Dynamical Systems with Semiosis" that was funded by the MEXT. He is now engaged in the Program for Leading Graduate School of "Inter-Graduate School Program for Design Studies" fully supported by the MEXT. He has served as chair of the Institute of Electrical and Electronics Engineers' Systems, Man, and Cybernetics Society (IEEE SMC) Japan Chapter, president of the Human Interface Society, and is currently vice-chair of the Technical Committee on Human-Machine Systems of the International Federation of Automatic Control (IFAC).

University of Zurich

Andreas Fischer has been President of the University of Zurich (UZH) since 2008. Before this appointment he acted as Vice President for Arts and Social Sciences from 2004 to 2006.
He studied English language and literature, German language and literature, and the history of art at the University of Basel and the University of Durham, England. In 1975 he was awarded his doctorate, and he qualified as professor at the University of Basel in 1981. In 1985 Andreas Fischer was appointed full professor of English philology at the University of Zurich. He is co-editor of major publications in the field of English Studies in Switzerland and active as a member of several advisory boards in Switzerland and abroad.

Daniel Wyler is the University of Zurich's Vice President for Medicine and Science. Prior to this position, he was director of the Institute of Theoretical Physics and , from 2006 to 2009, acted as Dean of the Faculty of Science at the University of Zurich. From 1997 to 2006, Daniel Wyler also was a member of the National Research Council at the Swiss National Science Foundation.
Daniel Wyler studied physics at the Swiss Federal Institute of Technology (ETH) in Zurich and at Carnegie-Mellon University in Pittsburgh, USA, where he earned his PhD in 1977. He spent the next years as a research associate at The Rockefeller University, the University of Bonn, at CERN in Geneva, and at ETH Zurich, and was named professor for theoretical physics at the University of Zurich in 1987. The focus of his research lies in theoretical elementary physics – in short, the study of the building blocks of matter and of the early universe.

Michael Hengartner is the current dean of the Faculty of Science and president elect of the University of Zurich. The Swiss-Canadian citizen, born in St. Gallen, Switzerland, grew up in Québec City, Canada, and studied biochemistry at the Université Laval. After his PhD studies at the Massachusetts Institute of Technology with Nobel laureate H. Robert Horvitz, he led for seven years a research group at the Cold Spring Harbor Laboratory in the USA. In 2001, he was appointed professor for molecular biology at the Institute of Molecular Life Sciences of the University of Zurich. He holds an Executive MBA from IMD, Lausanne and is the recipient of several awards for his research on the molecular basis of apoptosis, among them the Swiss National Latsis Prize. Michael Hengartner obtained in 2010 the Credit Suisse Award for Best Teaching at UZH.

EPFL

Karl Aberer is a full professor for Distributed Information Systems at EPFL Lausanne, Switzerland, since 2000. His research interests are on decentralization and self-organization in information systems with applications in peer-to-peer search, semantic web, trust management and mobile and sensor networks. Karl Aberer received his Ph.D. in mathematics in 1991 from the ETH Zürich. From 1991 to 1992 he was postdoctoral fellow at the International Computer Science Institute (ICSI) at the University of California, Berkeley. In 1992 he joined the Integrated Publication and Information Systems institute (IPSI) of GMD in Germany, where he was leading the research division Open Adaptive Information Management Systems. From 2005 to 2012 he was the director of the Swiss National Research Center for Mobile Information and Communication Systems (NCCR-MICS, www.mics.ch). Since September 2012 he is Vice-President of EPFL responsible for information systems. He has also been consulting for the Swiss government in research and science policy as a member of the Swiss Research and Technology Council (SWTR) from 2004 to 2011.

Programme Session H1

Molecular and Cellular Basis of Development, Tissue Repair and Disease

Chairs: Prof. Shigekazu NAGATA, Kyoto University
Prof. Sabine WERNER, ETH Zurich

Room: ETH Hönggerberg, HPL D32/34

Thursday, 21 November

13:30-14:00 Atsuko Sehara, Kyoto University

14:00-14:30 Timm Schroeder, ETH Zurich Basel Campus

14:30-15:00 Sabine Werner, ETH Zurich

15:00-15:30 *Coffee Break (HIT Foyer E-Floor)*

15:30-16:00 Yoshiko Takahashi, Kyoto University

16:00-16:30 Takashi Fujita, Kyoto University

16:30-17:00 Ari Helenius, ETH Zurich

Friday, 22 November

08:30-09:00 Takashi Nagasawa, Kyoto University

09:00-09:30 Lukas Sommer, University of Zurich

09:30-10:00 Shigekazu Nagata, Kyoto University

10:00-10:30 *Coffee Break (HIT Foyer G-Floor)*

10:30-11:00 Michael Hengartner, University of Zurich

11:00-11:30 Tatsushi Igaki, Kyoto University

11:30-12:00 Wilhelm Krek, ETH Zurich

12:00-13:00 Buffet Lunch (HIT Foyer G-Floor)

13:00-13:30 Michiyuki Matsuda, Kyoto University

13:30-14:00 Freddy Radtke, EPF Lausanne

14:00-14:30 Dai Watanabe, Kyoto University

14:30-15:00 Ryosuke Takajashi, Kyoto University

15:00-15:30 Adriano Aguzzi, University of Zurich, UZH

Institution: ETH Zurich
Department: Biology
Full name: Sabine Werner
Position: Full Professor

Talk Title: Parallels between tissue repair and cancer

Keywords: Wound healing, skin cancer, oxidative stress, growth factors

Description of Research Interests:

Our laboratory studies the molecular and cellular mechanisms of cutaneous wound healing and liver regeneration, with particular emphasis on the roles of growth factors and reactive oxygen species in these processes. In addition, we are interested in the parallels between wound healing and cancer.

Institution: Kyoto University
Institute: Graduate School of Medicine
Full name: Shigekazu Nagata
Position: Full Professor

Keywords: Molecular mechanisms of apoptosis, Engulfment and degradation of dead cells

Description of Research Interests:

During mammalian development, many cells undergo apoptotic cell death. In adults, senescent cells die via apoptosis. Apoptotic cells are swiftly engulfed by macrophages, and all cellular components are degraded in the macrophages into amino acids and nucleotides for re-use. The exaggerated apoptosis induces the tissue damage, while the lack of apoptosis leads to hyperplasia and cancer. Inefficient engulfment of apoptotic cells, or their inefficient degradation also leads to autoimmune diseases such as systemic lupus erythematosus or rheumatoid arthritis. We are trying to elucidate the molecular mechanism and physiological role of apoptotic cell death.

Institution: University Hospital Zurich
Department: Institute of Neuropathology
Full name: Adriano Aguzzi
Position: Director of the Institute of Neuropathology and full Professor

Talk Title: Biology of Prion Diseases

Keywords: Prion diseases, neurodegeneration, animal models of disease, Neuropathology

Description of Research Interests:

The primary mission of my lab is to develop mammalian models of human disease, from which we then extract general pathogenetic principles. While we have historically focused on prion diseases, we also study further neurological and, occasionally, extraneural diseases if our discoveries take us there. Our work is mostly precompetitive and focuses on the molecular triggers of organ dysfunction. While we occasionally develop commercially exploitable reagents (e.g. antibodies) and file patent applications, we feel that downstream activities (e.g. drug discovery; diagnostic test development) do not belong to our core competence and are best passed on to our industrial partners.

Institution: Kyoto University
Institute: Institute for Virus Research
Full name: Takashi Fujita
Position: Full Professor

Keywords: Innate immunity, virus infection, interferon, antiviral response,

Description of Research Interests:

Our current interest is to understand how RIG-I family activates innate antiviral responses. It concerns with exact RNA structures recognized by the helicase family as substrate, as well as how the CARD-containing helicases switch on the signaling. Furthermore, we hypothesize that RIG-I family is regulated by certain cellular transcript RNA as well as by invading viral RNAs. The pathological phenotype of RIG-I knockout mouse embryo may be relevant to this hypothesis. Our final goal is to understand physiological role of RIG-I family among other RNA-interacting proteins.

Institution: ETH Zurich
Department: Biology
Full name: Ari Helenius
Position: Full Professor

Talk Title: How viruses enter their host cells

Keywords: Animal virus/pathogen/cell biology/infectious disease/endocytosis

Description of Research Interests:

In order to replicate, viruses enter cells and force these to produce new virus particles. The entry is a complex process that requires the willing assistance by the host cells. It involves attachment, activation of signaling pathways, endocytosis, penetration into the cytosol, intracellular transport, and finally uncoating of the viral genome. Hundreds of cellular proteins inadvertently end up helping the viruses during entry. Using high-end light microscopy, automated siRNA and drug screening as well as biochemical and biophysical approaches, we have analyzed the cell biology of entry of viruses from different families. We find five distinct routes with final penetration occurring in the plasma membrane, early endosomes, maturing and late endosomes, macropinosomes, and the ER. In the lecture I will describe some of the strategies that viruses use with the main emphasis on Influenza A virus.

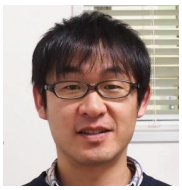
Institution: University of Zurich
Department: Molecular Life Sciences
Full name: Michael O. Hengartner
Position: Full Professor

Talk Title: Genetic analysis of DNA damage and chemotherapy agent-induced apoptosis in the nematode C. elegans.

Keywords:

Description of Research Interests:

Multicellular organisms use programmed cell death (apoptosis) to remove cells that are superfluous, in the way, or potentially dangerous. In the nematode C. elegans, germ cells activate apoptosis in response to both developmental signals and environmental stresses such as DNA damage. In my talk, I will summarize what we have learned about the signaling pathways that activate apoptosis in the C. elegans germ line in response to stimuli that are relevant to cancer therapy, including ionizing radiation and exposure to chemotherapeutic agents such as the microtubule-binding drug vincristine.



Institution: Kyoto University
Institute: Graduate School of Biostudies
Full name: Tatsushi Igaki
Position: Full Professor

Keywords: Cell-cell communication, Tissue growth regulation, Cell competition

Description of Research Interests:

Cell-cell interactions in multicellular organisms play crucial roles in coordination of cell proliferation, differentiation, and cell death during development and homeostasis. However, little is known how cells communicate each other within animals to establish a multicelular community. We are exploring the molecular basis of cell-cell communications within epithelium using Drosophila genetics. Particularly, our research focuses on the mechanisms of cellular ‘competition’ and ‘cooperation’ during normal development and tumorigenesis.

Institution: ETH Zurich
Department: Biology
Full name: Wilhelm Krek
Position: Professor and Chairperson Institute of Molecular Health Sciences

Talk Title: The Molecular Basis of the von Hippel Lindau Cancer Syndrome

Keywords: Cancer cell signaling, aneuploidy, tumor suppressor genes

Description of Research Interests:

Cells in multicellular organisms constantly communicate with each other and the environment around them through sophisticated signaling circuits integrating systemic, local and architectural cues. Research in our laboratory is devoted to understand how mammals sense, integrate and process information between and within their cells in complex tissues and organs and how abnormalities in information management cause disease. Major efforts are devoted to the study of the oxygen regulatory circuit and its downstream protein and RNA-based mediators in different disease states and to the investigation of stress signalling networks engaged by environmental cues and genomic abnormalities in cancer. In our work, we employ a broad range of modern ‚omics’ and life-cell imaging technologies, develop and apply 3D tumor microtissues for high-throughput RNAi-based screening and model disease states in mice for pre-/co-clinical investigations.

Institution: Kyoto University
Institute: Graduate School of Medicine
Full name: Michiyuki Matsuda
Position: Full Professor

Keywords: Fluorescent imaging, bio-imaging, signal transduction, cancer

Description of Research Interests:

In the past fifteen years I have been working on development and application of biosensors based on the principle of Förster resonance energy transfer (FRET). Particularly, we are focusing on genetically-encoded FRET biosensors for signaling molecules, which comprise of two GFP variants. With FRET biosensors for tyrosine kinases, Ras, Raf, and ERK, we have shown how growth factor signaling is transduced from plasma membrane to the nucleus. More recently, transgenic mice expressing the FRET biosensors have been established to visualize how signaling molecules are activated in living tissues of normal and pathological conditions by two-photon excitation microscopy.

Institution: Kyoto University
Institute: Institute for Frontier Medical Sciences
Full name: Takashi Nagasawa
Position: Full Professor

Keywords: Hematopoietic stem cell, niche, chemokine, bone marrow, lymphohematopoiesis, microenvironment

Description of Research Interests:

In bone marrow, the special microenvironments known as niches control proliferation and differentiation of hematopoietic stem cells (HSCs) and their progeny. However, the identity and functions of the niches has been a subject of longstanding debate. To address this issue, we focuse our analysis on the chemokine CXCL12-CXCR4 signaling, which is essential for homing and maintenance of HSCs and production of immune cells, including B cells, pDCs and NK cells, and a population of adipo-osteogenic progenitors with long processes, expressing high amounts of CXCL12 as well as stem cell factor (SCF), termed CXCL12-abundant reticular (CAR) cells in the marrow.
References; (1) Nagasawa, T. et al. Nature 382, 635-638 (1996) (2) Tachibana, K. et al. Nature 393, 591-594 (1998) (3) Tokoyoda, K. et al. Immunity 20, 707-718 (2004)(4) Sugiyama, T. et al. Immunity 25, 977-988(2006)(5) Omatsu, Y. et al. Immunity 33, 387-399 (2010))

Institution: EPFL
Institute: Faculty of Life Sciences/ ISREC
Full name: Freddy Radtke
Position: Full Professor

Talk Title: Notch: Inflammation and skin cancer

Keywords: Notch, wnt, skin cancer, TSLP, inflammation

Description of Research Interests:

We use mouse genetics to study the molecular mechanisms controlling self-renewal and differentiation of normal and cancer stem cells in the blood system as well as in epithelial tissues including the intestine and the epidermis. The basic principle of self-renewing tissues is to constantly produce cells from a stem cell reservoir. This pool gives rise to proliferating transient amplifying cells, which subsequently differentiate and migrate to the correct compartment. These processes have to be under stringent control mechanisms to ensure life-long tissue homeostasis. Their deregulation can lead to organ failure and/or cancer. Current attention is focused on the evolutionarily conserved Notch and Wnt signaling pathways, which play pleiotropic roles in different self-renewing tissues and cancer.

Institution: ETH Zurich
Department: Biosystems Science and Engineering
Full name: Timm Schroeder
Position: Full Professor

Talk Title: Long-term single cell quantification: New tools for old questions

Keywords: Stem Cell, Imaging, Single Cell, Cell Fate, Transcription Factor, Signaling

Description of Research Interests:

The group Cell Systems Dynamics studies cell fate choices and their molecular control in complex and dynamic stem cell systems. We are developing bioimaging approaches including the required software to allow the long-term imaging, tracking and quantification of individual cells and their cellular and molecular behavior in cultures. The required combination of cell and molecular biology, genetics, imaging, engineering, software development, statistics and computational mathematical modeling is enabled by interdisciplinary work within the group and with local and international collaborators.

Institution: Kyoto University
Institute: Institute for Frontier Medical Sciences
Full name: Atsuko Sehara
Position: Full Professor

Keywords: Development, Regeneration, Cell-cell Interaction, Ectodomain Shedding, ADAM Family

Description of Research Interests:

In multicellular organisms, cells produce different kinds of cell-to-cell signaling and cell adhesion molecules. Those molecules are often generated as transmembrane proteins, and their extracellular domains are cleaved off when cells send messages or detach. These processes, called as “ectodomain shedding”, are coming into focus since discovery of proteases that possess the activity of ectodomain shedding. Questions are in what physiological contexts these proteases play roles and how they manage to control ectodomain shedding spatiotemporally. In order to address these questions, our group utilizes transparent zebrafish embryos, in which dynamic cell behaviors can be visualized as 3D images. In this symposium, I will talk about roles of ADAM8 and ADAM19, members of ADAM family proteases, in blood circulation and neural development, respectively, in zebrafish. Based on these and other studies on ADAM proteases, I will discuss how these proteases regulate cell-cell interactions.

Institution: University of Zurich
Department: Institute of Anatomy, Cell and Developmental Biology
Full name: Lukas Sommer
Position: Full Professor

Talk Title: Neural Crest Stem Cells and Melanoma Formation: a Common Theme

Keywords: Stem Cells; Embryonic Development; Tumorigenesis;

Description of Research Interests:

Genetic approaches in mouse model systems combined with cell biological assays have allowed our group to identify mechanisms regulating stem cell fates in the developing CNS and in neural crest-derived tissues. Our research also led to the identification and characterization of adult neural crest-derived stem cells (NCSCs) and the study of disease mechanisms involving aberrant neural crest development and tumor formation. Strikingly, interfering with mechanisms normally regulating ‘stemness’ in NCSCs alters tumorigenesis both in genetic melanoma mouse models in vivo and in human melanoma cells. Thus, targeting stemness properties of NCSC-like cells present in aggressive melanoma might lead to new strategies for future melanoma therapy.

Institution: Kyoto University
Institute: Department of Neurology, Graduate School of Medicine
Full name: Ryosuke Takahashi
Position: Full Professor

Keywords: Neurodegeneration, molecular mechanism, Parkinson's disease, animal model, medaka, mouse

Description of Research Interests:

Dr. Takahashi has been interested in cell death signaling and the pathogenetic mechanisms of neurodegenerative diseases including Parkinson's disease (PD) and Amyotrophic Lateral Sclerosis (ALS). He elucidated that apoptosis inhibitory protein (IAP) family are endogenous caspase inhibitors (Nature,1997; PNAS 2001). He further identified Omi/HtrA2 as a novel IAP inhibitor (Mol. Cell, 2001). Regarding PD, he first studied the pathomechanisms of autosomal recessive juvenile parkinsonism (AR-JP), which is caused by the mutations in the parkin gene. He found that parkin is a ubiquitin ligase (J. Biol. Chem., 2000). He further identified misfoled Pael receptor (Pael-R) as a substrate of Parkin and proposed a hypothesis that accumulation of misfoled Pael-R may lead to AR-JP through ER stress and generated PD animal models based on Pael-R overexpression (Cell, 2001; Hum. Mol. Genet., 2007) . Recently he has generated several medaka fish models of familial PD (Hum. Mol. Genet., 2013, FEBS Lett., 2013).

Institution: Kyoto University
Institute: Biological Science
Full name: Yoshiko Takahashi
Position: Full Professor

Keywords: Development, Morphogenesis, Organogenesis, Cell migration, Gene regulation

Description of Research Interests:

I am interested in morphogenesis and organogenesis that proceed during vertebrate development. To understand how such dynamic processes are regulated, my lab has been studying the molecular mechanisms underling divergent cellular behaviors in vivo including cell-cell communications, cell epithelialization, tubular formation, cell migration, and stem cell division, mainly using chicken embryos. Furthermore, I am fascinated by tissue interactions that allow coordinated development of multiple tissues. We have recently discovered that migrating NC cells are profoundly influenced by adjacent blood vessels, a new mode of neuro-vascular interactions (Science 2012, Science 2013). We also perform live-imaging analyses to visualize individual cells directly in vivo, allowing us to discover unprecedented cell behaviors. The aim of my research is to find a logical explanation that bridges gene and cellular functions to organogenesis.

Institution: Kyoto University
Institute: Department of Biological Sciences, Graduate School of Medicine
Full name: Dai Watanabe
Position: Full Professor

Keywords: Brain plasticity, vocal communication, social learning, songbird

Description of Research Interests:

The emergence and development of behavioral skills is greatly influenced by social environment, in addition to other environmental factors. Human language and birdsong are one of the most prominent examples. Both humans and songbirds acquire their complex vocal signals through social learning, that is, learning facilitated by social interaction, education, or imitation. Because such socially learned behaviors are culturally transmitted from generation to generation, they have a potentially great impact on behavioral and cognitive traits of the future generations. To explore the brain mechanisms underlying such socially transmitted behaviors, we focus our research on the vocal communication of songbirds. We study how brain perceives and controls conspecific vocal signals with a complex acoustic and temporal structure. We also apply molecular genetic approaches to examine how social interaction facilitates learning process of such complex behavioral skills.

Programme Session H2
Magnetic Resonance

Chairs: Prof. Kazuyuki TAKEDA, Kyoto University
Prof. Matthias ERNST, ETH Zurich

Room: ETH Hönggerberg, HIT E51

Thursday, 21 November

14:00-14:30 Sebastian Kozerke, ETH Zurich
"Beyond Nyquist - Highly Accelerated Magnetic Resonance Imaging."

14:30-15:00 Shin-ichi Urayama, Kyoto University
"High temperature superconducting magnet for MRI."

15:00-15:30 Klaas P. Prüssmann, ETH Zurich
"Current Topics in MRI Technology."

15:30-16:00 *Coffee Break (HIT Foyer E-Floor)*

16:00-16:30 Kazuyuki Takeda, Kyoto University
"Development of magnetic resonance hardware/methods."

16:30-17:00 Gunnar Jeschke, ETH Zurich
"Fuzzy structural information on membrane proteins from EPR techniques and what it can tell."

Friday, 22 November

09:00-09:30 Frédéric Allain, ETH Zurich
"NMR structures of protein-RNA complexes."

09:30-10:00 Hidehito Tochio, Kyoto University
"In situ NMR analysis of proteins in living cells."

10:00-10:30 Beat H. Meier, ETH Zurich
"Solid-state NMR: protein structures with submilligramm amounts of sample."

10:30-11:00 *Coffee Break (HIT Foyer G-Floor)*

11:00-11:30 Hironori Kaji, Kyoto University
"Solid-State NMR Analysis of Organic LEDs and Organic Solar Cells."

11:30-12:00 Roland Riek, ETH Zurich
"Ensemble-based structure calculation using eNOEs."

12:00-13:00 Buffet Lunch (HIT Foyer G-Floor)

13:30-15:30 Individual visits of NMR/MRI laboratories.

Institution: ETH Zürich
Department: Physical Chemistry
Full name: Matthias Ernst
Position: Titularprofessor

Description of Research Interests:

My research interests focus on the theoretical description of solid-state NMR experiments where mechanical sample rotation in combination with radio-frequency irradiation leads to Hamiltonians with multiple time dependencies. Based on the theoretical understanding, we work on the development of new and improved methods in solid-state NMR of biological solids. In collaboration with Prof. Kozerke, we also work on dissolution dynamic nuclear polarization (DNP) topics with a focus on understanding and improving the polarization transfer efficiency of DNP at liquid-Helium temperatures.

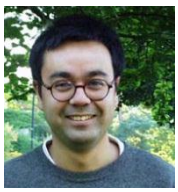
Institution: Kyoto University
Institute: Division of Chemistry, Graduate School of Science
Full name: Kazuyuki Takeda
Position: Lecturer

Talk Title: Development of magnetic resonance hardware/methods

Keywords: Solid-state NMR, MRI, dynamic nuclear polarization, NMR hardware/methods

Description of Research Interests:

KT completed his Ph.D. thesis in Division of Chemistry, Graduate School of Science, Kyoto University, working on dynamic nuclear polarization using electron spins in the photo-excited triplet state. He later became a postdoctoral fellow and then a faculty staff at Division of Advanced Electronics and Optical Science, Graduate School of Engineering Science, Osaka University, where he studied nuclear hyperpolarrization and NMR quantum computing. Since 2007, KT has been a staff member of the solid-state NMR group lead by Prof. Takegoshi in Division of Chemistry, Graduate School of Science, Kyoto University. His current research interests include MRI, hardware/methodology development in solid-state NMR and their applications to materials science.



Institution: ETH Zurich
Department: Biology, Institute for Molecular Biology and Biophysics
Full name: Frederic Allain
Position: Full Professor

Talk Title: NMR structures of protein-RNA complexes

Keywords: NMR spectroscopy, RNA biology, protein-RNA complexes, structural biology

Description of Research Interests:

Many genetic diseases originate from a post-transcriptionnal misregulation of gene expression that is often correlated with errors in pre-mRNA alternative splicing, RNA editing or translation defects. Several neuron-associated diseases such as FTDP (Frontotemporal Dementia with Parkinsonism) or SMA (Spinal Muscular Atrophy) originate from a single nucleotide mutation in the pre-mRNA resulting in an imbalanced ratio between alternatively-spliced protein variants. The mutations are located in the pre-mRNA and are speculated to weaken critical interactions with a protein splicing factor. Our lab is primarily focusing on determining the structures at atomic resolution of RNA binding proteins (splicing and translation regulators) in complex with RNA using NMR in order to understand their mechanism of action.

Institution: ETH Zürich
Department: Laboratory for Physical Chemistry
Full name: Gunnar Jeschke
Position: Full Professor

Talk Title: Fuzzy structural information on membrane proteins from EPR techniques and what it can tell

Keywords: EPR spectroscopy, distance measurements, water accessibility, protein folding

Description of Research Interests:

My group develops methods for characterizing paramagnetic centers and, by spin labeling, diamagnetic biological and synthetic macromolecules by electron paramagnetic resonance spectroscopy. The emphasis is on measurement of distance distributions in the nanometer range and of small hyperfine couplings with high sensitivity as well as on extraction of reliable structural information from measurements on spin labels. This is achieved by development of spectrometers, probe heads, pulse sequences and data analysis and modeling software. Applications are mainly to membrane proteins and catalytically active systems.

Institution: Kyoto University
Institute: Institute for Chemical Research
Full name: Hironori Kaji
Position: Full Professor

Talk Title: Development of magnetic resonance hardware/methods

Keywords: Organic LEDs, Organic Solar Cells, NMR, Material Chemistry, Quantum Chemical Calculation, Amorphous Materials

Description of Research Interests:

Our group focuses on fundamental researches on organic devices, especially organic light-emitting diodes (OLEDs) and organic solar cells (OSCs). We synthesize organic and polymer materials, fabricate organic devices using these materials, and measure the device performances. For the scientific understanding of the device performances, we are trying to observe what is happening in the devices at the molecular level mainly by solid-state NMR experiments (and quantum chemical calculations). Organic materials in these devices are in amorphous states. Therefore, solid-state NMR is suitable for the detailed analysis. On the basis of these studies, we attempt to obtain fundamental knowledge on organic devices. For example, we would like to obtain systematic guiding principles for material and device designs for amorphous organic devices with excellent performances.

Institution: University and ETH Zurich
Institute: Biomedical Engineering
Full name: Sebastian Kozerke
Position: Full Professor

Talk Title: Beyond Nyquist - Highly Accelerated Magnetic Resonance Imaging

Keywords: Magnetic Resonance imaging, Undersampling, Transform Coding, Compressed Sensing, Cardiovascular imaging

Description of Research Interests:

Sebastian Kozerke's research interests include Magnetic Resonance imaging methodology with focus on ultra-fast dynamic imaging of perfusion, function and mechanics of the cardiovascular system. A number of contributions to the field of k-t undersampling and parallel imaging methods have permitted important advances in spatiotemporal resolution and scanning speed in major applications. Other fields of activity concern probing of microstructure of moving organs using diffusion imaging methods. Recent research work also includes real-time imaging of substrate metabolism using nuclear hyperpolarization methods. Sebastian has been involved in a wide range of scientific and educational and teaching activities in the major international MR organizations.

Institution: ETH Zürich
Department: Departemnt of Chemistry and Applied Biosciences
Full name: Beat Meier
Position: Full Professor

Talk Title: Solid-state NMR: protein structures with submilligramm amounts of sample

Keywords: Physical Chemistry, Spectrosopy, NMR, solid-state NMR, structural Biology, Amyloids, Membrane Proteins

Description of Research Interests:

Development of Methods for high-resolution solid-state NMR, in particular for fast magic-angle spinning at 100 kHz and above. Application to problems in structural biology, e.g. structure and dynamics of amyloids and prions.

Institution: ETH Zurich & University of Zurich
Department: Institute for Biomedical Engineering
Full name: Klaas Prüssmann
Position: Professor of Bioimaging

Talk Title: Current Topics in MRI Technology

Keywords: Magnetic Resonance Imaging, Instrumentation, Data Acquisition, Image Reconstruction, Magnetometry

Description of Research Interests:

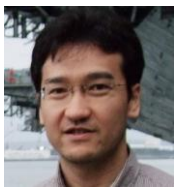
Our lab focuses on the development and application of technology and methods for magnetic resonance imaging (MRI). Research interests range from imaging physics and instrumentation to data acquisition strategies, signal processing, image reconstruction, and medical applications.

Institution: ETH Zurich
Department: Laboratory of Physical Chemistry
Full name: Roland Riek
Position: Professor

Talk Title: Ensemble-based structure calculation using eNOEs

Description of Research Interests:

The main focus of the group is the study of protein structures and dynamics using as a major tool Nuclear Magnetic Resonance Spectroscopy. The biological systems of interest are in particular protein aggregation and membrane proteins.



Institution: **Kyoto University**
Institute: **Molecular Engineering**
Full name: **Hidehito Tochio**
Position: **Associate Professor**

Talk Title: In situ NMR analysis of proteins in living cells

Keywords: Structure Biology, NMR, Protein, Innate Immunity, Ubiquitin

Description of Research Interests:

My research interest is in structural and functional analysis of biologically important proteins, those related to the ubiquitin system, innate immunity and the inflammation signal. For structural analysis, I use liquid state NMR, X-ray crystallography and SAXS. For functional analysis of the proteins, biochemical method such as ITC, SPR and cell-based NF-kB assay are usually employed. I am also trying to apply NMR technique to cellular proteins, which is called “in-cell NMR”. In particular, mammalian cultured cells are the target of this technique, with which structural analysis of proteins functioning in living cells is aimed to be performed.

Institution: Kyoto University
Institute: Human Brain Research Center
Full name: Shin-ichi Urayama
Position: Assistant Professor

Talk Title: High temperature superconducting magnet for MRI

Keywords: MRI, high-temperature superconducting magnet, diffusion weighted imaging

Description of Research Interests:

My main research interests are on MRI physics and engineering. Especially, I'm currently working on the following projects.

1. Development of helium-free MRI system with high-temperature superconducting (HTS) tapes.

Recent deficit of liquid helium causes severe problems in MRI because more than 20% of helium is consumed for MRI as a cryogen. Therefore, we are trying to develop HTS-MRI systems without liquid helium.

2. Diffusion weighted fMRI.

BOLD fMRI, a powerful tool to investigate human brain function, is known to detect change of regional blood flow caused by neuronal activity. Diffusion weighted fMRI (DfMRI) is expected to be able to detect neuronal activity directly because DW imaging is less-sensitive to blood signal and because it is sensitive to micro-structure change which is thought to be happened at neuronal activity. Our goals are to clarify the source of its signal change and to apply to various kind of fMRI studies.

Programme Session H3
Condensed Matter Physics

Chairs: Prof. Yuji MATSUDA , Kyoto University
Prof. Manfred SIGRIST, ETH Zurich

Room: ETH Hönggerberg, HIT K51

Thursday, 21 November

13:30-13:40 opening

13:40-14:10 Y. Matsuda (30')
"Exotic superconductivity in heavy fermion superlattices"

14:10-14:40 N. Kawakami (30')
"Electron Correlations in Heavy-Fermion Superlattices"

14:40-15:10 *Coffee Break (HIT Foyer E-Floor)*

15:10-15:30 T. Shibauchi (20')
"Electronic phase diagram of iron pnictides"

15:30-15:50 B. Batlogg (20')
"Fe pnictide semiconductors in extreme magnetic fields:
upper critical fields, critical currents and novel vortex physics"

15:50-16:15 T. Schmitt (PSI) (25')
"PSI - Resonant Inelastic X-ray Scattering on low-dimensional cuprates, oxide heterostructures and iron pnictide superconductors"

16:15-16:45 Y. Maeno (30')
"Non-equilibrium Mott transition in Ca2RuO4"

Friday, 22 November

8:30-9:00 K. Ishida (30')
"NMR Studies on Spin-Triplet Superconductors"

9:00-9:20 K. Aoyama (20')
"Field-induced superconductivity in ferromagnets"

9:20-9:45 K. Ensslin (25')
"QSIT - InAs/GaSb quantum well as a candidate material for 2D topological insuators: Insulating state and giant non-local response in the quantum Hall regime"

9:45-10:00 S. Ueda (15')
"Interface phenomena in correlated heterostructures involving topological insulators"

10:00-10:30 *Coffee Break (HIT Foyer G-Floor)*

10:30-10:50	M. Fiebig (20') “Nonlinear optics, multiferroics, ultrafast correlation dynamics, oxide interfaces”
10:50-11:10	O. Yazyev (20') “Computational physics of Dirac fermion materials”
11:10-11:30	S. Fujimoto (20') Thermal responses in topological superconductors
11:30-11:45	T. Yoshida (15') Correlation effects on topological insulators
12:00-13:00	*Buffet Lunch (HIT Foyer G-Floor)*
13:00-13:20	H. Ronnow (20') “Breaking the Waves from spin-waves and spinons to a unified Hubbard model of cuprates and mechanism for superconductivity in Fe-based superconductors”
13:20-13:40	H. Ikeda (20') Recent progress on the _rst-principles approach in heavy-fermion systems
13:40-14:00	N. Spaldin (20') “Cosmic strings in multiferroics”
14:00-14:20	*Coffee Break (HIT Foyer G-Floor)*
14:20-14:50	K. Yoshimura (30') “TBA”
14:50-15:10	H. Dil (20') “Spin-orbit interaction and topology studied by spin-resolved ARPES”
15:10-15:40	Discussion

Institution: ETH Zurich
Department: Physics
Full name: Manfred Sigrist
Position: Full Professor

Description of Research Interests:

Our research activities lie in the field of materials-oriented condensed matter physics with focus on strongly correlated electron system. Main subjects are unconventional superconductivity, quantum magnetism and various types of ordered/disordered phase as well as quantum phase transitions between them. Moreover, we pursue research on transport properties of correlated and uncorrelated systems. Special recent topics in this framework are the interplay of magnetism and superconductivity in heavy Fermion superconductors, electronic states at interfaces between correlated and uncorrelated materials and thermoelectricity in various types of systems. Furthermore we study various systems with topological electronic states, including mainly exotic superconductors, but also irridates and graphene.

Institution: Kyoto University
Institute: Department of Physics
Full name: Yuji Matsuda
Position: Full Professor

Talk Title: Exotic superconductivity in heavy fermion superlattices

Keywords: Low temperature physics, superconductivity, quantum magnetic system

Description of Research Interests:

Yuji Matsuda received his Ph.D. in Physics from the University of Tokyo (Japan) in 1987 and became a research associate at Department of Pure and Applied Science, the University of Tokyo. He became an associate professor in 1993 at Hokkaido University (Japan) after spending two years at Princeton University (USA) as a postdoctoral fellow. He moved to Institute for Solid State Physics, University of Tokyo, in 1997, and became a full professor at Kyoto University in 2004. His research interests include strongly correlated electron and quantum spin systems, in particular exotic superconductivity, heavy fermion systems, iron-pnictides, and quantum spin liquid.

Institution: Kyoto University
Institute: The Hakubi Center for Advanced Research
Full name: Kazushi Aoyama
Position: Program-Specific Assistant Professor

Talk Title: Field-induced superconductivity in ferromagnets

Keywords: Condensed Matter Physics, Theory, Superconductivity

Description of Research Interests:

My research interests are in condensed matter physics, such issues as superconductivity, superfluidity, and magnetism, in which quantum mechanical effects on microscopic components of materials, such as electrons and atoms, appear on a macroscopic length scale. In the past few years, I have theoretically studied interplay between magnetism and superconductivity, elucidating origins of experimentally observed extraordinary properties and proposing system setups for novel quantum phenomena.
In my current research, I conduct a theoretical investigation of the properties of superconducting states in an external magnetic field by using analytical methods based on quantum many-body theory.

Institution: ETH Zurich
Department: Physics
Full name: Bertram Batlogg
Position: Full Professor

Talk Title: Fe pnictide semiconductors in extreme magnetic fields : upper critical fields, critical currents and novel vortex physics

Keywords: High critical current density, Abrikosov-to-Josephson vortex crossover, magnetic fields in excess of 100 Tesla,

Description of Research Interests:

Novel materials with strong electron correlation (synthesis and physical properties), superconductivity, “phase diagram superconductors”, vortex matter at the cross-over from Josephson to Abrikosov behavior; thermoelectricity; organic molecular crystals, organic semiconductors (pushing transport physics towards the clean limit) , electronic states and transport mechanism in organic molecular semiconductors; heteroepitaxy of dissimilar semiconductors (Ge, GaAs, …on Si); developing experimental techniques (focused ion beam cutting and shaping of crystals; multi-transport of micro-sculptured crystals in diamond anvil high pressure cells, transport measurements in extreme magnetic fields, …).

Institution: ETH Zurich
Department: Physics
Full name: Gianni Blatter
Position: Full Professor

Description of Research Interests:

We study a diversity of topics in a broad domain encompassing vortex matter, mesoscopic physics, cold atomic physics and quantum optics. In superconductivity, we study effects of vortex pinning and vortex dynamics in the presence of defects as well as geometrical pinning in superconductors of complex shape. In mesoscopic physics our focus is on electronic transport (e.g., generated by voltage pulses) including interaction effects, the generation of entanglement, as well as new protocols in quantum metrology. In the quantum optics domain, we study the structural competition in a dipolar molecular gas with long-range interactions and subject to an optical lattice, as well as strongly interacting photons (so called polaritons) in cavity arrays.

Institution: ETH Zurich
Department: Physics
Full name: Leonardo Degiorgi
Position: Full Professor

Talk Title: Chasing the nematic phase in Ba(Fe1−xCox)2As2 with optical investigations

Keywords: Nematic phase, optical properties

Description of Research Interests:

We perform our optical study by measuring the optical reflectivity as a function of both temperature and magnetic field in a very broad spectral range from the far-infrared up to the ultraviolet, thus addressing various energy scales, which are essential for the full understanding of the investigated materials. Through the Kramers-Kronig transformation we extract all optical functions, including the frequency dependence of the conductivity.
Our research activity mainly focuses on magneto-optical investigations of strongly correlated systems as well as materials with novel quantum states. Our facilities allow us to tackle rather complex phase diagrams displaying peculiar and/or competing ground states.

Institution: Ecole polytechnique fédérale de Lausanne
Department: Institute of Condensed Matter Physics
Full name: Hugo Dil
Position: SNSF Professor

Talk Title: Spin-orbit interaction and topology studied by spin-resolved ARPES

Keywords: topological insulators, spin-orbit interaction, Rashba effect, photoemission

Description of Research Interests:

Our research program focusses on the study of the effects of spin-orbit interaction (SOI) on the electronic structure of a variety of materials. Most prominent examples are topological insulators and Rashba systems where the SOI lifts the spin degeneracy, making these materials promising candidates for spintronics applications. Further interest lies on the influence of SOI in combination with other correlations and to use the spin to characterize such correlations. Our experimental method of choice is spin- and angle-resolved photoemission using synchrotron radiation.

Institution: ETH Zurich
Department: Physics
Full name: Klaus Ensslin
Position: Full Professor

Talk Title: InAs/GaSb quantum well as a candidate material for 2D topological insuators: Insulating state and giant non-local response in the quantum Hall regime

Keywords: Topological insulator, InAs/GaSb, quantum Hall effect, non-local transport

Description of Research Interests:

Our group works on electron transport through semiconductor and graphene quantum structures at low temperatures. We focus on quantum dots and quantum point contacts realized in high-mobility electron and hole gases as well as fractional quantum Hall states in ultra-clean two-dimensional electron gases. Local probes are used to investigate the local properties of transport mechanisms and sample properties. In graphene we are interested in realizing clean quantum systems with tunable electronic properties. In this talk I will focus on a new material system, InAs/GaSb quantum wells, which are predicted to be a candidate for two-dimensional topological insulators. This works is done in collaboration with F. Nichele, A. Nath Pal, P. Pietsch, S. Müller, T. Ihn, K. Ensslin, C. Charpentier, and W. Wegscheider.

Institution: ETH Zurich
Department: Department of Materials
Full name: Manfred Fiebig
Position: Full Professor

Talk Title: Nonlinear optics, multiferroics, ultrafast correlation dynamics, oxide interfaces

Keywords: Nonlinear optics, multiferroics, ultrafast correlation dynamics, oxide interfaces

Description of Research Interests:

We investigate systems with multiple ferroic order by nonlinear optics (e.g. second harmonic generation). With the extraordinary symmetry sensitivity of this technique we observe unusual manifestations of ferroic order, domain states that are normally difficult to access, and the magnetoelectric interaction of domains. In addition we investigate ultrafast dynamic processes in systems with strong electronic correlations, such as the response of an optically excited magnetically ordered system at 100 fs to 10 ns. Other fields of interest are functional domain walls and unusual oxide interfaces (like LaAlO3/SrTiO3). Aside from using lasers we have labs for force microscopy and pulsed-laser deposition.

Institution: Kyoto University
Institute: Department of Physics
Full name: Satoshi Fujimoto
Position: Associate Professor

Talk Title: Thermal responses in topological superconductors

Keywords: Condensed matter physics, superconductivity, magnetism, strongly correlated electron systems

Description of Research Interests:

My main research interest is the study on novel quantum phases arising from many-body interactions in condensed matter systems such as metals, insulators, superconductors, superfluids, and magnets. In particular, recently, the exploration of topological phases in these systems is one of the main research theme. This subject is interesting since novel topological phenomena such as the quantum (spin) Hall effect and axion electromagnetism supporting the existence of monopoles are realized. Furthermore, topological phases may be useful for the applications to future technology such as spintronics and quantum information. One of the most important issues is to explore Majorana fermions in topological superconductors, which play an important role for the realization of novel quantum statistics called non-abelian statistics, and topological quantum computation.

Institution: ETH Zurich
Department: Institute for Theoretical Physics
Full name: Vadim Geshkenbein
Position: Senior Scientist

Talk Title: Vortex dynamics and Strong pinning

Description of Research Interests:

Condensed Matter, Superconductivity, Vortices, Disordered systems, Mesoscopic Physics, Quantum computing.

Institution: ETH Zurich
Department: Theoretical Physics
Full name: Sebastian Huber
Position: Assistant Professor

Talk Title: Geometry induced pair condensation

Keywords: Condensed matter theory, Ladder systems, Frustration, Cold atoms

Description of Research Interests:

We are interested in problems in condensed matter theory. Our focus lies on interaction effects in ultra-cold atoms and strongly correlated electron systems. In particular we investigate intinerant interacting particles on frustrated lattices, topological phases away from thermodynamic equilibrium and dynamical properties of interacting systems in general. We use a variety of analytical and numerical tools. Recently we implemented a new numerical method capable of simulating open, interacting one-dimensional quantum systems.

Institution: Kyoto University
Institute: Department of Physics
Full name: Hiroaki Ikeda
Position: Assistant Professor

Talk Title: Recent progress on the _rst-principles approach in heavy-fermion systems

Keywords: Theory of magnetism and superconductivity in strongly correlated electron systems, First-principles calculations

Description of Research Interests:

Recently, I developed an advanced theoretical approach based on the first-principles calculations, and applied to the iron-pnictides, ruthenates, and some topics in heavy-fermion compounds, including the hidden order in URu2Si2 and heavy-fermion superconductor CeCu2Si2 and so on. This theoretical approach can provide useful information on understanding correlated electron states. I am very interested in a variety of topics in strongly correlated electron systems, including unconventional superconductivity and topological materials.

Institution: Kyoto University
Institute: Department of Physics
Full name: Kenji Ishida
Position: Full Professor

Talk Title: NMR Studies on Spin-Triplet Superconductors

Keywords: Condensed Matter Physics, Strongly Correlated Electron System, Superconductivity, Magnetism, Nuclear Magnetic Resonance

Description of Research Interests:

His research interests include nuclear magnetic resonance/nuclear quadrupole resonance (NMR/NQR), and muon spin rotation (□SR) studies of strongly correlated electron systems (SCES); superconductivity, magnetism, and non-Fermi-liquid behavior at low temperatures in SCES.

Institution: Kyoto University
Institute: Department of Physics
Full name: Norio Kawakami
Position: Full Professor

Talk Title: Electron Correlations in Heavy-Fermion Superlattices

Keywords: Condensed matter physics, Theory, Strongly correlated systems

Description of Research Interests:

I have been working on Theory of Condensed Matter Physics with particular interest in phases of matter where interactions between the constituent particles, such as electrons in solids, are very strong and thus give rise to novel quantum phenomena. Such phases may typically occur in strongly correlated electron systems and cold atomic gases. I am also interested in frustrated quantum magnetism, topological insulators, quantum dot systems, etc. I make use of standard theoretical methods such as perturbations and numerical methods as well as exact-solution and field-theoretic approaches.

Recent research topics include:
(1) Correlation effects on topological insulators
(2) Nonequilibrium dynamics and many-body effects in cold atoms
(3) Frustration effects on Mott metal-insulator transitions
(4) Correlated interface of Mott/band insulators

Institution: Kyoto University
Institute: Department of Physics
Full name: Yositeru Maeno
Position: Full Professor

Talk Title: Non-equilibrium Mott transition in Ca2RuO4

Keywords: Low temperature physics (experiment), Superconductivity, Strongly-correlated electron systems

Description of Research Interests:

His main research interest has been finding materials exhibiting exotic physical behavior at low temperatures and elucidating its physical mechanism. In particular, he has been studying ruthenium oxide materials (ruthenates) extensively. Soon after his group discovered superconductivity in Sr2RuO4 in 1994, Rice and Sigrist at ETH proposed a revolutionary "spin-triplet" pairing state in this superconductor. The novel physics of spin-triplet superconductivity as well as a variety of properties arising from strong correlations among electrons in ruthenates have been pursued over the years. Very recently an insulating sister compound, Ca2RuO4, is found to exhibit an insulator-to-metal “Mott transition" by an application of small electric fields, and moreover to remain metallic to low temperatures by flowig current. His group specializes in growing high-quality single crystals and investigate their physical properties at low temperatures by specific-heat measurements, etc.

Institution: Paul Scherrer Institut, Villigen PSI
Department: Research with Neutrons and Muons
Full name: Elvezio Morenzoni
Position: Head of Laboratory for Muon Spin Spectroscopy PSI

Talk Title: muSR studies of superconducting and magnetic materials

Keywords: High Tc superconductors, Diluted magnetic semiconductors

Description of Research Interests:

Superconductivity and magnetism
Thin films
Local probe techniques: Muon Spin Rotation/Relaxation, beta detected NMR

Institution: Paul Scherrer Institut, Villigen PSI
Department: Condensed Matter Theory
Full name: Christopher Mudry
Position: Group Head

Talk Title: Topological insulators: a progress report

Keywords: Strongly correlated physics, topological phases of matter

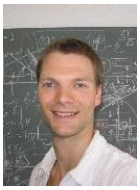
Description of Research Interests:

Strongly correlated electronic systems
Disordered systems
Mesoscopic physics

Institution: University of Zürich
Department: Physics Department
Full name: Jürg Osterwalder
Position: Full Professor

Description of Research Interests:

Our group is interested in the surface physics of single-layer materials, typically grown by chemical vapour deposition on single-crystal metal surfaces. These monolayer films are used as support for molecular layers. They decouple the electronic degrees of freedom of the molecules from the metal substrate, and thus increase substantially the lifetimes of electronic excitations. In lattice-mismatched systems these single layers form regular superstructurs that can be used as templates for ordered molecular layers. Activities include also the optimisation the large area growth of graphene and hexagonal boron nitride monolayers, including their transfer onto insulating substrates.



Institution: Ecole polytechnique fédérale de Lausanne
Department: Laboratory for Quantum Magnetism
Full name: Henrik M. Ronnow
Position: Professor

Talk Title: Breaking the Waves – from spin-waves and spinons to a unified Hubbard model of cuprates and mechanism for superconductivity in Fe-based superconductors

Description of Research Interests:

Quantum Magnetism, High-temeprature superconductors, Magnetoelectrics, skyrmion physics, neutron scattering, low-temperature experimental methods, magnetoelectric susceptibility

Institution: Paul Scherrer Institute and University of Geneva
Department: Department Research with Neutrons and Muons
Full name: Christian Rüegg
Position: Head of Laboratory for Neutron Scattering, Professor

Talk Title: Exploring Condensed Matter at the Swiss Spallation Neutron Source SINQ

Keywords: Quantum Magnets, Quantum Critical Points, Low-dimensional Systems, Neutron Scattering

Description of Research Interests:

My research projects focus on systematic studies of strongly correlated quantum phenomena in low-dimensional spin systems, quantum, single-molecule and frustrated magnets, and novel emergent materials. In addition to my primary research tool of neutron spectroscopy and diffraction, my expertise extends to complementary techniques including X-ray scattering and measurements of thermodynamic and magnetic properties. All of my studies involve extreme conditions, as high magnetic fields and pressures in combination with ultra-low temperatures are required to investigate e.g. spin correlations in quantum materials. The results from a number of my projects are of interest to people working particularly in the fields of quantum phase transitions, quantum condensates and other forms of collective quantum behaviour, as well as in several related areas where mesoscopic quantum states are under active exploration for future technological applications.

http://www.psi.ch/lns/laboratory-for-neutron-scattering

Institution: University of Zurich
Department: Physics Institute
Full name: Andreas Schilling
Position: Full Professor

Talk Title: Renewed interest in new but conventional low-temperature superconductors: Ba1-xAxTi2Sb2O and NbO1.3Nb0.7 as examples

Keywords: Superconductivity, oxides

Description of Research Interests:

- Development and physical understanding of superconducting nanostructured single-photon detectors (-> first experimental study of the effects of magnetic fields on count rates; single X-ray photon detection)
- Investigation of vortex phase transitions in type-II superconductors by the measurement of thermodynamic properties (-> invention of a thermal analogue to an electric inductor: LC circuit calorimetry)
- Search for possible phase-coherent or superfluid properties of the quasiparticle BEC in a certain class of quantum magnets (-> search for a manifestation of the a.c. Josephson effect)

- All-purpose materials research activities
(-> solid solution Ba3-xSrxCr2O8; n- to p-type transition in GeBi4-xSbxTe7)

Institution: Paul Scherrer Institute
Department: Department of Synchrotron Radiation and Nanotechnology
Full name: Thorsten Schmitt
Position: Group Leader, Staff Scientist

Talk Title: Resonant Inelastic X-ray Scattering on low-dimensional cuprates, oxide heterostructures and iron pnictide superconductors

Keywords: RIXS, XAS, electronic structure, spin excitations, unconventional superconductivity, correlated materials

Description of Research Interests:

My research group studies the electronic structure, magnetic properties and phase transitions of strongly correlated materials with soft X-ray absorption and Resonant Inelastic X-ray Scattering (RIXS) spectroscopies. The dramatically improved energy resolution and sensitivity of the RIXS instrumentation at the PSI allows directly probing, as a function of momentum and energy transfer, all elementary excitations within charge-, orbital-, lattice- and spin-degrees of freedom of transition metal oxides and related compounds. In our projects we investigate phenomena such as superconductivity, charge order, orbital order, metal-insulator-transitions and various types of magnetism. Research examples of my group range from studies of the high-energy spin excitations in iron pnictide and cuprate superconductors over spin-orbital separation phenomena in one-dimensional Mott-insulators to measurements of the character of the interfacial charges, the orbital reconstruction and the spin fluctuations at the interfaces of oxide heterostructures.

Institution: Kyoto University
Institute: Department of Physics
Full name: Takasada Shibauchi
Position: Associate Professor

Talk Title: Electronic phase diagram of iron pnictides

Keywords: Condensed matter physics; superconductivity; strongly correlated electron systems

Description of Research Interests:

For the past few years I have been studying on exotic quantum phases in strongly correlated electron systems. These phases include unconventional superconductivity, coexistence phase between superconductivity and magnetism, quantum spin liquid states, and the so-called hidden order phase. More specifically, I have the following four projects:
(1) Iron pnictide high-temperature superconductivity,
(2) Two-dimensional superconductivity in heavy-fermion artificial superlattices,
(3) Quantum spin liquids in organic Mott insulators with two-dimensional triangular lattices, and
(4) Symmetry breaking in the hidden order phase of heavy-fermion material URu2Si2.
By using several measurement techniques sensitive to the low-energy excitations, the physical properties in the ground state of these phases are studied. I am also interested in quantum critical phenomena near the boundary of different phases in the zero temperature limit, in which enhanced quantum fluctuations strongly modify the electronic properties and can induce unconventional superconductivity.

Institution: ETH Zurich
Department: Physics
Full name: Manfred Sigrist
Position: Full Professor

Description of Research Interests:

Our research activities lie in the field of materials-oriented condensed matter physics with focus on strongly correlated electron system. Main subjects are unconventional superconductivity, quantum magnetism and various types of ordered/disordered phase as well as quantum phase transitions between them. Moreover, we pursue research on transport properties of correlated and uncorrelated systems. Special recent topics in this framework are the interplay of magnetism and superconductivity in heavy Fermion superconductors, electronic states at interfaces between correlated and uncorrelated materials and thermoelectricity in various types of systems. Furthermore we study various systems with topological electronic states, including mainly exotic superconductors, but also irridates and graphene.

Institution: ETH Zurich
Department: Department of Materials
Full name: Nicola Spaldin
Position: Full Professor

Talk Title: Cosmic strings in multiferroics

Description of Research Interests:

Transition-metal-oxides with "strong correlations", in which the behavior of each electron explicitly influences that of the others.
Contra-indicated multifunctional materials, which combine multiple, technologically desirable functionalities that tend not to co-exist.
Multiferroics, which are simultaneously ferromagnetic, ferroelectric and ferroelastic and/or ferrotoroidic.
Materials with multiple coupled or competing instabilities, which in turn show strong responses to electric or magnetic fields or strain.

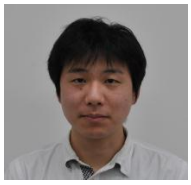
Institution: ETH Zurich
Department: Theoretical Physics
Full name: Matthias Troyer
Position: Full Professor

Talk Title: Quantum magnetism in ultracold atomic gases

Keywords: Quantum gases, quantum magnets, density functional theory, quantum Monte Carlo

Description of Research Interests:

My group's main research interests are in the areas of computational science, high performance computing, and quantum devices. One focus of the past years have been simulations of ultracold atomic gases. We use quantum Monte Carlo simulations and density functional theory to validate experiments in quantum simulators and guide experimental efforts. Another focus has been quantum computing, and in particular the design of quantum algorithms and the validation and testing of quantum devices like quantum random number generators and the D-Wave quantum annealer.



Institution: Kyoto University
Institute: Department of Physics
Full name: Suguru Ueda
Position: Student

Keywords: Condensed matter physics, Theory, Strongly correlated systems

Description of Research Interests:

My research interests are in theoretical condensed matter physics. In particular, I have been working on the physics of strongly interacting electrons in the artificial heterostructures. In such heterostructures, very strong electron-electron interaction realizes interesting and novel interface phenomena, such as coexistence of superconductivity and magnetism. I make use of numerical techniques to reveal the basic nature of the correlated heterostructures. I also have a strong interest in the interface physics of topological insulators and f electron systems.

My research topics include:
(1) Electronic properties at an interface between Mott and band insulators
(2) Correlation effects on heterostructure of topological insulators

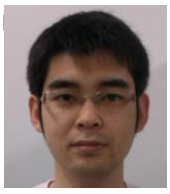
Institution: Ecole Polytechnique Fédérale de Lausanne (EPFL)
Department: Institute of Theoretical Physics
Full name: Oleg Yazyev
Position: Assistant Professor

Talk Title: Computational physics of Dirac fermion materials

Keywords: Graphene, topological insulators, disorder, electronic transport, magnetism, *ab initio*

Description of Research Interests:

The group of Prof. Oleg Yazyev is active in the field of theoretical and computational physics of emerging materials with a strong emphasis on technological applications. The methods utilized by the group range from model Hamiltonian techniques to first-principles approaches based on density functional theory and many-body perturbation theory. More specifically, the research projects carried out in the group aim at understanding (i) electronic transport phenomena and magnetic properties of realistic graphene, e.g. large-scale polycrystalline samples of this material, and (ii) spin-orbit effects in a wide range of emerging materials such as topological insulators and two-dimensional transition metal dichalcogenides. In addition, the group is developing proposals of nanoscale devices based on novel materials for applications beyond traditional electronics (spintronics, valleytronics, etc.)



Institution: Kyoto University
Institute: Department of Physics
Full name: Tsuneya Yoshida
Position: PhD student

Keywords: Condensed matter physics, Theory, Topological aspects of strongly correlated systems

Description of Research Interests:

I have been working on Theory of Condensed Matter Physics. My current studies focus on topological aspects of strongly correlated systems where correlation effects under the nontrivial condition give rise to novel phenomena (e.g., nontrivial spin liquids). In order to study nontrivial correlated systems, we employ non-perturbative methods, such as dynamical mean field theory with continuous-time quantum Monte Carlo, density matrix renormalization group etc.

Recent research topics include:
1) Nontrivial spin liquids
2) Topological Kondo insulators
3) Topological properties of magnetic phases
4) Mott transition in topological insulators

Institution: Kyoto University
Institute: Division of Chemistry, Graduate School of Science
Full name: Kazuyoshi Yoshimura
Position: Full Professor

Talk Title: TBA

Keywords: Magnetism, Superconductivity, Strongly Correlated Electron System, NMR

Description of Research Interests:

Our researches are on chemical syntheses and characterizations, and measurements of physical properties of condensed matter systems in which the strong electron-electron correlations determine the physical nature of the system. Presently under study are compounds of transition metal and/or rare-earth metal which display novel phenomena as follows: 1. high-temperature superconductivity in cuprate oxide, Fe pnictide and chalcogenide systems, 2. metal-insulator transition, itinerant electron magnetism and spin fluctuations in transition metal compounds, 3. heavy fermion system (electron with extremely large effective mass), valence fluctuation and mixed valence state in rare-earth compounds.

Institution: ETH Zurich
Department: Physics
Full name: Andrey Zheludev
Position: Full Professor

Description of Research Interests:

Experimental study of excitations, correlations, structures and phase transitions and critical phenomena in correlated electron systems, particularly quantum magnetic insulators, “multiferroic” materials, ferroelectrics and disordered systems. The main techniques used are neutron spectroscopy, X-ray and neutron diffraction and quasielastic scattering, mu-SR experiments and Raman spectroscopy. Also, synthesis and magneto-thermodynamic characterization of quantum spin systems.

Programme Session H4
Nanoelectronics and Nanophotonics

Chairs: Prof. Susumu NODA, Kyoto University
Prof. Jérôme FAIST, ETH Zurich

Room: ETH Hönggerberg, HPZ E35

Thursday, 21 November

13:30 Introduction

13:35 **Jérôme Faist**, ETH Zurich
"THz lasers at the fronier between electronics and optics"

14:15 **Susumu Noda**, Kyoto University
"Recent Progress in Photonic Crystals"

14:55 *Coffee Break (HIT Foyer E-Floor)*

15:15 **Atac Imamoglu**, ETH Zurich
"Quantum interfaces between solid state and optics"

15:50 **Koichiro Tanaka**, Kyoto University
"Transient spin polarized current induced by femtosecond pulse excitation in topological insulators"

16:25 **Tobias Kippenberg**, EPF Lausanne
“Chip-scale frequency combs”

Friday, 22 November

08:30 **Hirofumi Yamada**, Kyoto University
"Investigations of Nanoscale Electrical Properties at Solid-liquid Interfaces by Atomic Force Microscopy toward Energy Applications"

09:05 **Andreas Wallraff**, ETH Zurich
"From single photon detection to teleportation with microwave frequency electronic circuits"

9:40 **Mitsuru Funato and Yoichi Kawakami**, Kyoto University
"III-nitrides toward ultimate solid-state light emitters"

10:15 *Coffee Break (HIT Foyer G-Floor)*

10:30 **Colombo Bolognesi**, ETH Zurich
"mm-Wave / THz Transistor Research at ETH-Zurich"

11:05 **Jun Suda and Tsunenobu Kimoto,** Kyoto University
"Ultrahigh-Voltage SiC Power Devices for Green Society"

11:40 **Deniz Bozyigit**, Olesya Yarema and Vanessa Wood, ETH Zurich
“Understanding Performance Limitations of Semiconductor Nanocrystals for LED and Solar Cell Applications”

11:52 **Hiroki Niwa**, Jun Suda and Tsunenobu Kimoto, Kyoto University
“Measurement of Impact Ionization Coefficients in 4H-SiC Toward Ultrahigh-Voltage Power Devices”

12:00-13:00	*Buffet Lunch (HIT Foyer G-Floor)*
13:00	**Ryota Ishii**, Mitsuru Funato and Yoichi Kawakami, Kyoto University “Strong electron-hole exchange interaction in AlN”
13:12	**Fabrizio Nichele**, Atindra Nath Pal, Susanne Mueller, Christope Charpentier, Werner Wegscheider, Thomas Ihn, Klaus Ensslin, ETH Zurich “Transport experiments in InAs/GaSb, a candidate topological insulator”
13:24	**Shuhei Ichikawa**, Mitsuru Funato, and Yoichi Kawakami, Kyoto University “High quality semipolar AlGaN/AlN quantum wells for deep ultraviolet emitters”
13:36	**Kevin M. McPeak**, Christian D. van Engers, Mark Blome, Jong Hyuk Park, Sven Burger, Miguel A. Gosálvez, Ava Faridi, Yasmina R. Ries, Ayaskanta Sahu and David J. Norris, ETH Zurich “Plasmonic Surfaces and Nanoparticles with Strong Shape Chirality”
13:48	**Takuya Ozaki**, Junichi Nishinaka, Mitsuru Funato, and Yoichi Kawakami, Kyoto University “Exciton Hopping Dynamics in InGaN quantum well systems”
14:00	**Palash Bharadwaj**, Markus Parzefall, Zachary Lapin, and Lukas Novotny, ETH Zurich “Optical Antennas for Single Quantum Emitters”
14:12	*Coffee Break (HIT Foyer G-Floor)*
14:30	**Masaya Nishimoto**, Kenji Ishizaki, Kyohei Maekawa, Kyoko Kitamura and Susumu Noda, Kyoto University “Fabrication of Photonic-Crystal Lasers by Molecular Beam Epitaxy”
14:42	**Thomas Tschirky**, Christophe Charpentier, Fabrizio Nichele, Atindra Nath Pal, Klaus Ensslin and Werner Wegscheider, ETH Zurich “2D topological insulators in the InAs/GaSb system”
14:54	**Takuya Inoue**, Menaka De Zoysa, Takashi Asano, and Susumu Noda, Kyoto University „Demonstration of Narrow-bandwidth Mid-infrared Thermal Emitters Based on Quantum Wells and Photonic Crystals”
15:06	**Benedikt Bäuerle,** David Hillerkuss and Jürg Leuthold, ETH Zurich „Terabit/s Single Laser Communications“
15:18	**Ryotaro Konoike**, Takashi Asano, Yoshinori Tanaka, and Susumu Noda, Kyoto University „Study of On-Demand Light Transfer Schemes among Distant Photonic Crystal Nanocavities”

Institution: ETHZ
Department: Physics
Full name: Jérôme Faist
Position: Full Professor

Talk Title: Terahertz lasers at the frontier between electronics and optics

Keywords: Lasers, spectroscopy, terahertz, quantum cascade

Description of Research Interests:

The quantum optoelectronic group of Prof. J. Faist in ETH uses nanofabrication techniques and semiconductor bandstructure engineering towards for the achievement of novel devices based on quantum engineering. A special interest lies in the design and fabrication of new mid-infrared and terahertz optical sources such as the quantum cascade laser as well as on the demonstration of new quantum phenomena in solid-state utilizing strong light-matter coupling.

Institution: Kyoto University
Institute: Dept. Electronic Science and Engineering
Full name: Susumu Noda
Position: Full Professor

Talk Title: Recent Progress in Photonic Crystals

Keywords: Nano photonics, Photonic Crystals, Quantum Photonics, Optoelectronics Device Physics

Description of Research Interests:

Professor Susumu Noda received B.S., M.S., and Ph.D. degrees from Kyoto University, Kyoto, Japan, in 1982, 1984, and 1991, respectively, all in electronics. In 2006, he has received an honorary degree from Gent University, Gent, Belgium. From 1984 to 1988, he was with the Mitsubishi Electric Corporation, and he joined Kyoto University in 1988. Currently he is a full Professor with the Department of Electronic Science and Engineering and a director of Photonics and Electronics Science and Engineering Center (PESEC), Kyoto University. His research interest covers physics and applications of photonic and quantum nanostructures including photonic crystals and quantum dots. He received several awards including the IBM Science Award (2000), the Japan Society of Applied Physics Achievement Award on Quantum Electronics (2005), and OSA Joseph Fraunhofer Award/Robert M. Burley Prize (2006), IEEE Fellow (2008), and IEEE Nanotechnology Pioneering Award (2009).

Institution: ETH-Zurich
Department: Information Technology
Full name: Colombo Bolognesi
Position: Full Professor

Talk Title: mm-Wave / THz Transistor Research at ETH-Zurich

Keywords: Heterostructure bipolar transistors (HBTs), High electron mobility transistors (HEMTs), Indium Phosphide, Gallium Nitride

Description of Research Interests:

Development of millimeter-wave and terahertz compound transistors and circuits based on advanced materials such as GaAsSb/InP and AlGaInN for application in modern high-bandwidth telecommunication systems among others.

Institution: Kyoto University
Institute: Graduate School of Engineering
Full name: Mitsuru Funato
Position: Associate Professor

Talk Title: III-nitrides toward ultimate solid-state light emitters

Keywords: Widegap semiconductor optics

Description of Research Interests:

My current interests are in crystal growth and optical/structural properties of wide bandgap III-nitride semiconductors. Particularly, InGaN visible light emitters and AlGaN ultraviolet emitters are technologically important devices, and my research involves them. The final goal should be ultimate light emitters with, for example, a 100% efficiency and a designed spectrum, to which I contribute by providing device concepts based on fundamental understanding of the material properties.

Institution: Kyoto University
Institute: Department of Electronic Science and Engneering
Full name: Shuhei Ichikawa
Position: Master course student

Talk Title: High quality semipolar AlGaN/AlN quantum wells for deep ultraviolet emitters

Keywords: Nitride semiconductor, Crystal growth

Description of Research Interests:

My research interest is realization of harmless high-efficiency deep ultraviolet (DUV) light emitters, which have a wide range of potential applications such as air- and water-purification, high density optical storage, and so on. Though gas lasers and mercury lamps in current use as DUV light sources are toxic and have low efficiency, wide bandgap semiconductor material “AlGaN” is being promised as novel candidates for harmless high-efficiency DUV light emitters. I especially focus on crystal growth of high quality AlGaN, fabrication of device structures and characterization of their optical and structural properties.

Institution: ETHZ
Department: Physics
Full name: Atac Imamoglu
Position: Full Professor

Talk Title: Solid state quantum optics

Keywords: (max. 80 characters) Quantum optics, condensed-matter physics, quantum information processing

Description of Research Interests:

The Quantum Photonics Group of Atac Imamoglu investigates quantum optics of solid-state emitters, such as quantum dots embedded in photonic nano-structures, quantum well excitons and carbon nanotubes. Specific research goals include quantum control and manipulation of mesoscopic spin systems, realization of strong interactions between single photons, and investigation of many-body phenomena using quantum optical techniques.

Institution: Kyoto University
Institute: Graduate School of Engineering
Full name: Takuya Inoue
Position: Student

Talk Title: Demonstration of Narrow-bandwidth Mid-infrared Thermal Emitters Based on Quantum Wells and Photonic Crystals

Keywords: Thermal radiation control, Quantum Wells, Photonic Crystals

Description of Research Interests:

The research topics I am interested in are nanophotonics and quantum optics, and I am currently working on thermal radiation control based on quantum wells and photonic crystals. Thermal emitters generally exhibit a broad radiation spectrum, leading to low power utilization efficiency. However, proper manipulation of both electronic and photonic states enables us to obtain a narrowband thermal emission, which is important for various applications such as infrared sensing and thermo-photovoltaics. Recently, we have experimentally demonstrated a single-peak narrowband mid-infrared thermal emitter whose quality factor is over 100.

Institution: Kyoto University
Institute: Electronic Science and Engineering
Full name: Ryota Ishii
Position: Post-doctoral fellow

Talk Title: Strong electron-hole exchange interaction in AlN

Keywords: Optical properties of semiconductors

Description of Research Interests:

I'm interested in optical properties of solids. Especially, I expect the potential applications of excitons in widegap semiconductors. This is because they strongly interact with photons, which enables to emerge some novel physics or devices.

Institution: Ecole Polytechnique Fédérale de Lausanne EPFL
Department: SB-ICMP-LPQM
Full name: Tobias J. Kippenberg
Position: Full Professor

Talk Title: Chip-scale frequency combs

Description of Research Interests:

Optical frequency combs have revolutionized frequency Metrology and Spectroscopy and are finding widespread applications also in other fields. We review compact and chipscale combs generated in optical microresonators. These sources offer high repetition rate, broad bandwidth and allow significant miniaturization. The physics of these “Kerr” frequency combs will be described and work on SiN and MgF2 high Q resonators reviewed.

Institution: Kyoto University
Institute: Graduate School of Engineering
Full name: Ryotaro Konoike
Position: Student

Talk Title: Study of On-Demand Light Transfer Schemes among Distant Photonic Crystal Nanocavities
Keywords: Photonic crystal circuits, nanocavities

Description of Research Interests:

My research interests are photonic crystal nanocavities and its dynamic control. Photonic crystal nanocavities have attracted great interests as key components to realize advanced functional photonic circuits, because they can trap and store photons and induce interactions with gain or nonlinear materials such as quantum dots. With waveguides which are appropriately designed, multiple nanocavities which are separated by more than 100 wavelengths can strongly couple to each other, enabling coherent interaction among them. By applying dynamic (or temporal) controls over them, ultimate functionalities, e.g. photon transfer among distant nanocavities which is one of fundamental requirements for optical or quantum information processing, are expected to be achieved. My research goal is a formation of functional photonic circuits with strongly coupled photonic crystal nanocavities which can control status of photons with high degrees of freedom.

Institution: Kyoto University
Institute: Graduate School of Engineering
Full name: Masaya Nishimoto
Position: Ph.D Student

Talk Title: Fabrication of Photonic-Crystal Lasers by Molecular Beam Epitaxy

Keywords: Photonic crystal, Molecular Beam Epitaxy, Lasers

Description of Research Interests:

My research interests are in photonic-crystal surface-emitting lasers (PC-SELs) and crystal growth on patterned surfaces. PC-SELs, which possess two-dimentional refractive-index distributions adjacent to the active layer, have attracted much attentions as new semiconductor lasers that have the potential for high-power lasing. However, output power has been limited in the conventional fabrication method, wafer bonding techniques. I contribute to the issue in conventianal method by developing the new method, “MBE air-hole retained growth”.

Institution: Kyoto University
Institute: Graduate School of Engineering
Full name: Hiroki Niwa
Position: Doctor Student

Talk Title: Measurement of Impact Ionization Coefficients in 4H-SiC Toward Ultrahigh-Voltage Power Devices

Keywords: Widegap semiconductor, silicon carbide (SiC), impact ionization coefficient

Description of Research Interests:

My research interest is the fabrication and characterization of ultrahigh-voltage wide bandgap SiC devices for the future advanced power distribution and transmission systems. In SiC, physical properties such as impact ionization coefficients still have uncertainties which make difficulties in accurate calculation of breakdown voltage of a device. Therefore, my work focuses on precise measurements, including the temperature dependence, of impact ionization coefficients in SiC using photomultiplication measurement of a photodiode. These measurements will lead to the accurate characterization of blocking characteristics in a SiC power device.

Institution: Kyoto University
Institute: Department of Science and Engineering
Full name: Takuya Ozaki
Position: Graduated student

Talk Title: Exciton Hopping Dynamics in InGaN quantum well systems

Keywords: Indium Gallium Nitride, optical property, exciton, localization

Description of Research Interests:

Our research is to investigate optical properties of Indium Gallium Nitride (InGaN) alloy semiconductor quantum wells (QWs). InGaN is a much attractive material for the application of visible light emitters. Since its emission mechanisms have not been revealed yet due to the complex modulations of its luminescence characteristics induced by alloy compositional fluctuation and piezo-electric polarization, it is very important to completely understand the optical properties of InGaN QWs in order to achieve the high efficient light emitters. The emission of InGaN alloy materials has been assigned to the recombination of excitons localized at a potential minima induced by In compositional and/or well width fluctuation. Since such localized exciton systems strongly affect the quantum efficiency of InGaN materials, it is one of the most essential issues to clarify the exciton localization in the inhomogeneous QW systems.

Institution: Kyoto University
Institute: Department of Physics/ Institute for Integrated Cell-Material Sciences (iCeMS)
Full name: Koichiro Tanaka
Position: Professor

Talk Title: Transient spin polarized current induced by femtosecond pulse excitation in topological insulators"

Keywords: Ultrafast Spectroscopy of Solids, Terahertz Spectroscopy, Nonlinear Dynamics

Description of Research Interests:

Koichiro TANAKA (Dr.Sci., Physics, Kyoto University, Japan, 1990) is Professor of Department of Physics and Institute for Cell-Materials Integrated Systems (iCeMS), Kyoto University. He became a research associate in the laser physics division of the Institute for Solid State Physics, The University of Tokyo after graduation in 1990. He joined an ERATO 'HIrao-Active-Glass-Project' lead by Prof. Hirao in 1995 and returned to the department of physics in Kyoto University as an associate professor in 1997. He was promoted to full professor in 2004. Since 2008, he has been working at iCeMS in Kyoto University as a principal investigator. From 2013, he returned to the department of physics. The goals of his research are to explore materials of potential dynamic switches and to establish a new scientific field 'non-equilibrium condensed matter science' that covers not only light-induced dynamical phenomena but also non-equilibrium dynamics in soft materials. His laboratory has found a number of novel light-induced phase transition phenomena and developed novel spectroscopic techniques to explore dynamics in terahertz frequency region. Novel terahertz spectroscopic methods, Time-Domain Attenuated Total Reflection Spectroscopy (TD-ATR) and terahertz microscope, have been proposed and established for the first time. One of the main topic is strong terahertz wave generation and nonlinear THz spectroscopy in solids.

Institution: ETH Zurich
Department: Physics
Full name: Andreas Wallraff
Position: Full Professor

Talk Title: From single photon detection to teleportation with microwave frequency electronic circuits.

Keywords: Quantum Science and Technology

Description of Research Interests:

Our lab develops electronic circuits the properties of which are governed by the laws of quantum physics. We operate such circuits at GHz frequencies to demonstrate all basic elements of quantum information processing systems. We also develop sensing and detection systems with sensitivities reaching the quantum limit. Generally we are interested in novel instrumentation for state of the art quantum physics and solid state physics experiments.

Institution: Kyoto University
Institute: Electronic Science & Engineering
Full name: Hirofumi Yamada
Position: Associate Professor

Talk Title: Investigations of Nanoscale Electrical Properties at Solid-liquid Interfaces by Atomic Force Microscopy toward Energy Applications

Keywords: Nanoelectronics based on Organic Molecules including Bio-molecules, Surface and Interface Physics, Scanning Probe Microscopy

Description of Research Interests:

Current research covers nanometer-scale science and technology on organic materials such as structures and electrical properties of organic ultra-thin films on solid surfaces, instrumentation of scanning probe microscopies for functional sensing of various materials, high-resolution imaging of organic molecules including biomaterials, development of molecular-scale electronics/devices and nanocarbon electronics, and nanoscale transducers/sensors using organic molecules.
In particular, the recent research is oriented to molecular-scale functional visualization of bio- and nano-materials by AFM functional probes based on both high-resolution frequency modulation AFM and dual probe AFM techniques. The aim of the research is to develop a novel imaging method capable of visualizing molecular-scale bio-functions and to clarify the microscopic roles of various bio-molecules in cell physiological processes by this method. The developed technique is also applied to the molecular-scale investigations of various properties of wide variety of nanometer-scale functional materials.

Institution: Kyoto University
Institute: Graduate School of Engineering
Full name: Jun Suda
Position: Associate Professor

Title: Ultrahigh-Voltage SiC Power Devices for Green Society

Keywords: Widegap semiconductor, SiC, GaN, AlN, power devices, MEMS, MBE

Description of Research Interests:

My research interests include electrical properties of SiC, heteroepitaxial growth of III-N, functional integration of III-N and SiC materials by atomic-scale control, design and fabrication of SiC and GaN-based power devices, sensor devices and MEMS devices. One of main research objectives is to realize ultra-low-loss power devices by wide bandgap semiconductors for future green society. Our research activity covers materials science to device engineering. For example, we have developed high-quality heteroepitaxial growth of AlN on SiC, optical measurement technique for extended defects in SiC, point defects elimination process for SiC bipolar power devices, new edge termination structure for SiC ultra-high-voltage power devices, current gain enhancement of SiC bipolar junction transistors, AlGaN/GaN heterojunction bipolar transistors, ultra-high-quality-factor SiC MEMS resonators and so on.

Programme Session H5
Organic Chemistry and Materials Chemistry

Chairs: Prof. Motsuo SAWAMOTO, Kyoto University
Prof. Dieter SCHLÜTER, ETH Zurich

Room: ETH Hönggerberg, HCI J498

Thursday, 21 November

Research and Education at ETH and Kyoto University: Introductory Overview

13.30	Welcome to ETH	Dieter A. Schlüter
13:35	Introductory Remarks	Mitsuo Sawamoto
13:40	Overview (1) *Organic Chemistry at Kyoto U*	Norihiro Tokitoh
14:10	Overview (2) *Organic Chemistry at ETH*	Jeffrey Bode
14:40	Overview (3) *Biological Chemistry at Kyoto U*	Haruyuki Atomi
15:10	Overview (4) *Biological Chemistry at ETH*	Helma Wennemers
15:40	*Coffee Break (HIT Foyer E-Floor)*	
16:00	Overview (5) *Materials Chemistry at Kyoto U*	Mitsuo Sawamoto
16:30	Overview (6) *Materials Chemistry at ETH*	Dieter A. Schlüter
17:00	Adjourn	

Friday, 22 November

Cutting-Edge Research at ETH and Kyoto University: For Future Synergy

08:30	Lecture (1) Organic Chemistry	Norihiro Tokitoh
09:00	Lecture (2) Organic Chemistry	Jeffrey Bode
09:30	Lecture (3) Organic Chemistry	Aiichiro Nagaki
10:00	*Coffee Break (HIT Foyer G-Floor)*	
10:30	Lecture (4) Complex Materials	Andre Studart
11:00	Lecture (5) Biological Chemistry	Haruyuki Atomi
11:30	Lecture (6) Bioinspired Chemistry	Helma Wennemers
12:00	Adjourn / *Buffet Lunch (HIT Foyer G-Floor)*	

Cutting-Edge Research at ETH and Kyoto University: For Future Synergy

13:00	Lecture (7) Polymer Chemistry	Makoto Ouchi
13:30	Lecture (8) Polymer Chemistry	Dieter A. Schlüter
14:00	Break / Networking	

General Discussion: For Wrap-Up and Conclusions

14:20	General Discussion: Future Collaboration / Exchange	All Members
15:00	Wrap-Up and Report Preparation	All Members
15:30	Adjourn (to Join the Wrap-Up Session)	

Institution: ETH Zurich
Institute: Institute of Polymers
Full name: Dieter Schlüter
Position: Full Professor of Polymer Chemistry

Talk Title: Materials Chemistry at ETH

Keywords: Polymer Chemistry, Synthesis, Thickening of Polymer Chains, Two-Dimensional Polymers, Molecular Objects, Molecular Colloidal Particles

Description of Research Interests:

A. Dieter Schlüter is since 2004 Professor for polymer chemistry at the Materials Department of the ETH Zürich. He studied chemistry and geophysics at the U of Munich and received his PhD in 1984. After post-doctoral stays with Prof. K. P. C. Vollhardt (UC Berkeley, USA) and Prof. W. J. Feast (U of Durham, UK) he was head of the polymer synthesis research group in Prof. G. Wegner's department at the MPI für Polymerforschung (Mainz, Germany). 1991 he finished his habilitation, received a scholarship award of the Fonds der Chemischen Industrie (Dozentenstipendium) and started as Professor for polymer chemistry at the U of Karlsruhe. From 1992 to 2004 he was Full Professor at the Free U of Berlin. Since 2012 he is an elected member of the Swiss Academy of Engineering Sciences.
With core expertise in synthetic organic and macromolecular chemistry, he conducts internationally recognized research which led to >300 peer reviewed publications. He delivered invited lectures all over the world.

Institution: Kyoto University
Institute: Department of Polymer Chemistry, Grad. School of Engineering
Full name: Mitsuo Sawamoto
Position: Full Professor

Talk Title: Materials Chemistry at Kyoto U

Keywords: Polymer Chemistry / Precision Polymerization / Catalysts / Reaction Mechanism / Precision Polymer Synthesis / Functional Polymers / Polymeric Materials /

Description of Research Interests:
Mitsuo Sawamoto (b. 1951, Japan) received his B.S. (1974), M.S. (1976), and Ph.D. degrees (1979) in polymer chemistry from Kyoto University. After a postdoctoral research at The University of Akron, U. S. A. (1980–81), he joined the Department of Polymer Chemistry, Kyoto University in 1981 and is Professor of Polymer Chemistry since 1994.
He is an executive member of the Science Council of Japan (2005–), a titular member of IUPAC Polymer Division (2008–), the immediate past President of the Society of Polymer Science, Japan (SPSJ) (2008–2010), and one of the Editors of the Journal of Polymer Science, Part A, Polymer Chemistry (1995–). He was also the leader of the Kyoto University Global Center of Excellence (GCOE) Project “Integrated Materials Science” (2007–2011).
With >350 original papers, >30 reviews, and >12,000 total citations, he has received the Award of The Society of Polymer Science, Japan (1992); the Divisional Research Award of the Chemical Society of Japan (1999); the Arthur K. Doolittle Award of PMSE Division, the American Chemical Society (2002); the Macro Group UK Medal for Outstanding Achievement in Polymer Science, the Royal Society of Chemistry (2012); and the SPSJ Award for Outstanding Achievement in Polymer Science and Technology (2013).
His research interest includes development of precision polymerizations and catalysis, the synthesis of designed functional polymers, and most recently the sequence regulation in chain-growth polymerization. The first paper on his living radical polymerization has been cited over 2050 times (Macromolecules #2 most cited) and a review over 2200 times [Chemical Reviews top <1% ACS Highly Cited Papers (1998–2007)].

Institution: Kyoto University
Institute: Dept. Synthetic Chemistry and Biological Chemistry
Full name: Haruyuki Atomi
Position: Full Professor

Talk Title: Biological Chemistry at Kyoto U

Keywords: Archaea, genome, metabolism, transcriptional regulation

Description of Research Interests:

Our group is mainly engaged in research on Archaea, a group of organisms phylogenetically distinct to eukaryotes and bacteria. Although similar to bacteria in size and shape, archaea utilize unique mechanisms of metabolism and regulation not found in other organisms. Many archaea are also considered as extremophiles, organisms that thrive under remarkably high or low temperature, pH, high pressure, or high salt concentrations. Studies on these organisms have led to the discovery of enzymes with novel activity, atypical metabolic pathways, and new mechanisms of responding to environmental changes. We are particularly focused on the hyperthermophilic archaeon, Thermococcus kodakarensis, which displays an extremely high optimal growth temperature of 85˚C. We have determined the entire genome sequence, and with this organism have established the first gene disruption system for a hyperthermophile. The genome sequence, along with various biochemical/genetic tools, has allowed us to examine the physiology of this organism in detail.

Institution: ETH Zürich
Institute: Laboratory for Organic Chemistry
Full name: Jeffrey Bode
Position: Full Professor

Talk Title: Organic Chemistry at ETH

Keywords: Organic synthesis, peptides, proteins, chemical biology, bioconjugation, N-heterocycles, shapeshifting molecules

Description of Research Interests:

He is Chair of the Editorial Board of Organic and Biomolecular Chemistry, and Associate Editor for Amino Acids, and on the Advisory Boards of several other journals. He has contacts with both large and small companies and sits on the Board of Directors for BioBlocks, Inc. (San Diego and Budapest). His research and teaching have been recognized by numerous awards including the E. J. Corey Award (American Chemical Society, 2011), an ACS Cope Scholar Award (2008), and the Hirata Gold Medal (2010).
Research in the Bode Group features the development of new chemical reactions and their applications to the synthesis of complex organic molecules. A major focus is currently the chemical synthesis of proteins and protein–protein conjugates using a new class of amide-forming ligation reactions developed in his laboratories. Other projects including catalytic reactions including new methods for the synthesis of chiral N-heterocycles, combinatorial libraries syntheses, and the synthesis and applications of shapeshifting organic molecules. Students and postdocs use a wide variety of techniques ranging from DFT calculations to protein expression, but all projects feature the discovery, development and mechanistic understanding of novel reactions.

Institution: Kyoto University
Institute: Department of synthetic chemistry and biological chemistry
Full name: Aiichiro Nagaki
Position: Lecture

Talk Title: Organic Chemistry

Keywords: Organic synthesis, polymer synthesis, microreactor synthesis

Description of Research Interests:

My research interests include synthetic chemistry on the basis of reactive intermediates, organometallic reactions, polymerization and flow microreactor synthesis.

Institution: Kyoto University
Institute: Polymer Chemistry
Full name: Makoto Ouchi
Position: Associate Professor

Talk Title: Polymer Chemistry

Keywords: Polymers/Precision Polymerizations/Catalysts/Functional Polymers/Sequence

Description of Research Interests:

Advanced Precision Polymerizations: Control of Position, Sequence and Topology for Vinyl Polymers

Chain-growth polymerizations are very efficient polymerization tools to obtain vinyl polymers of high molecular weights. Developments of living polymerizations have allowed precise syntheses of polymeric architectures, such as end-functionalized polymers and block copolymers; however, even with the control methodologies, accuracy of structural control is still beyond for biopolymers. To approach functions of natural macromolecules, we would have to control position and sequence for monomers (functional groups) and topology of the chains. My research interests are thus to control these factors for vinyl polymers via molecular design for catalysts, initiators, and monomers.

Institution: ETH Zurich
Department: Department of Materials
Full name: André R Studart
Position: Assistant Professor

Talk Title: Microstructural design of bioinspired composites

Keywords: Composites, hybrid materials, mechanics, directed-assembly, platelets, polymers

Description of Research Interests:

André R. Studart obtained his doctoral degree in the area of refractory concretes and near-net-shape advanced ceramics at the Federal University of São Carlos, Brazil. From 2002 and 2007 he was postdoc and senior scientist at ETH Zurich, where he studied the mechanical properties of dental ceramics and the processing of porous materials through colloidal routes. In 2007 he joined Harvard University to work on porous inorganic materials obtained using microfluidic techniques. Since 2009 he is assistant professor at ETH Zurich and heads the Complex Materials group in the Department of Materials. Research in the Studart group is focused on the investigation of processing routes to create composite materials with complex hierarchical architectures and on the understanding of their structure-property relations at multiple length scales.

Institution: Kyoto University
Institute: Institute for Chemical Research
Full name: Norihiro Tokitoh
Position: Full Professor

Talk Title: Organic Chemistry

Keywords: Organoelement Chemistry, Organometallic Chemistry, Structural Organic Chemistry

Description of Research Interests:

Norihiro Tokitoh (Dr. Sci., organoelement chemistry, the University of Tokyo, Japan, 1985) is a Professor at the Institute for Chemical Research (ICR), Kyoto University. He was an assistant professor at Tsukuba Univ. and the Univ. of Tokyo and an associate professor at the Univ. of Tokyo. He was promoted to a full professor at the Institute for Fundamental Research of Organic Chemistry, Kyushu Univ. in 1998 and moved to ICR, Kyoto Univ. in 2000. Visiting Prof. at Technische Universität Braunschweig, (2004-2007) and Universität Bonn (2013-), Germany; Vice-director of ICR (2006-2008); Director of ICR (2008-2012); Editor-in-Chief of BCSJ (2013-).

He received the Progress Award in Synthetic Organic Chemistry, Japan (1992); Progress Award in Silicon Chemistry, Japan (1996); Japan IBM Science Award (1998); Chemical Society of Japan Award for Creative Work (2003); Alexander von Humboldt Research Award (2003); BCSJ Awards (2002, 2005, 2007, 2009, 2010 and 2013) Lectureship Award of National Science Council, Republic of China (2007); Kim Yong Hae Lectureship Award of KAIST, Korea (2010).

His main research interests are synthetic and structural chemistry of novel bondings and structures of heavier main group element compounds, and organometallic and coordination chemistry. He has achieved the first synthesis and isolation of a variety of stable heavy ketones, stable heavy aromatics, and also the heavy azo-compounds including the heaviest double-bond compounds, dibismuthenes. Recent his interest is focused on the creation of novel d-π conjugated systems having heavier double-bond unit as a π-spacer in the expectation of the development of new functional materials.

Institution: ETH Zürich
Department: Laboratory of Organic Chemistry, D-CHAB
Full name: Helma Wennemers
Position: Full Professor

Talk Title: Tailor-made silver nanostructures by peptidic templates

Keywords: Peptides, silver, nanoparticles, proline

Description of Research Interests:

The Wennemers laboratory focuses on the development of small molecules for functions that are fulfilled in nature by large macromolecules. We utilize the power of organic synthesis to access functionalities that nature might have not had in the repertoire of building blocks. This involves the development of asymmetric catalysts, bioinspired materials, cell penetrating compounds, and templates for the controlled formation of metal nanoparticles.

Programme Session Z1
Product Development and Manufacturing

Chairs: Prof. Atsushi MATSUBARA, Kyoto University
Prof. Konrad WEGENER, ETH Zurich
Room: ETH Zentrum, HG F33.5 (Thursday), LFW E15 (Friday)

Thursday, 21 November

13:00–17:00	Opening	Wegener
	R&D and New Education Challenge in Kyoto University	Matsubara
	Research and Education in Manufacturing at ETHZ	Wegener
	Energy efficiency in production	Weiss
	Labvisit ETH Center	Wegener
	Lab Visit Technopark	Wegener
14:30-15:30	*Coffee available (ETH HG Foyer F-Floor "Uhrenhalle")*	

Friday, 22 November

08:30–12:00	Research and Education in Product Development at ETHZ	Meboldt
	Research on Machine Tool Metrology in Kyoto University	Ibaraki
	Calibration and compensation of machine tools	Knapp
	Dynamical compensation of machine tools	Weikert
	Thermal behavior of machine tools - measuring and modeling	Mayr
	Machine tool calibration with high percision grid encoder	Eberherr
	Contact Mechanics in Machine Tools	Kono
10:00-11:00	*Coffee available (ETH HG Foyer F-Floor "Uhrenhalle")*	
12:00-13:00	*Lunch (ETH HG Foyer F-Floor "Uhrenhalle")*	
13:00-15:30	Analysis of Machine Tool Assembly	Ota
	Mineral Cast Technology for High Precision Machine Tools	Klotz
	Qualitätssicherung in der Addiven Fertigung	Schmid
	Nonconventional dressing of grinding wheels	Weingärtner
	Präzoplan–new machine tool concept for precision requirements	Wegener
	New virtual methods in the detection of design space and new concepts for a in-line quality control for forming systems	Hora

Institution: ETH Zurich
Department: Mechanical Engineering
Full name: Konrad Wegener
Position: Full Professor

Talk Title: Research and Education in Manufacturing at ETH Zurich
Präzoplan – new machine tool concept for precision requirements

Keywords: Machine tools, manufacturing, education

Description of Research Interests:

Optimization of machine tools: mechatronic design calibration, control, set point generation, dynamic behaviour, thermal behaviour, energy efficiency, modelling and simulation of machine tools. Manufacturing processes: cutting with geometrically defined and non defined cutting edges, laser materials processing, electro discharge machining, additive manufacturing, SLM, SLS, DMD, process simulation of mechanical and thermal processes.
Precision- and micro manufacturing, manufacturing challenges in electro mobility and renewable energy

Institution: Kyoto University
Institute: Graduate school of engineering
Full name: Atsushi Matsubara
Position: Full professor

Talk Title: R&D and New Education Challenge in Kyoto University

Keywords: Design, Control, Machine tools , Machining process

Description of Research Interests:

Modelling and Control with Applications for Production Systems and Manufacturing Processes, Design of Intelligent System for machine tools. Topics are as follows
1) CAE integrated CAM system
2) On the machine measurement and modification machining
3) Development of precision machines with high productivity
4) Non-contact and automated measurement method for the analysis of spindle stiffness
5) Friction analysis for rolling and hybrid guideways
6) Vibration free control for high speed and high acceleration feed drives
7) Analysis and design of machine tool assembly

Institution: **Heidemhain GmbH, Deutschland**
Department: **Marketing**
Full name: **Andreas Eberherr**
Position: **Senior Product Manager**

Talk Title: Machine tool Calibration with High Precision Grid Encoder

Keywords: KGM 182, cross talk of moving axes, thermal drift measurement

Description of Research Interests:

Machine tool performance from the point of view of compliance to tolerances, surface definition, etc., is determined essentially by the accuracy of machine movement.
For precision machining it is therefore important to measure and, if necessary, compensate for deviation in motion. Standards and directives for inspecting machine tools, such as ISO 230 - 2 to 4, stipulate a number of measuring methods for determining static and dynamic deviations.
In combination with a powerful evaluation software, the High Precision Grid Encoder for inspecting and acceptance testing of machine tools make precise and informative measurements of the machine possible.

Institution: Kyoto University
Institute: Dept. of Micro Engineering, Graduate School of Engineering.
Full name: Soichi Ibaraki
Position: Associate Professor

Talk Title: Research on Machine Tool Metrology in Kyoto University

Keywords: Metrology, machine tools, motion accuracy, three-dimensional positioning

Description of Research Interests:

My main research interests are in manufacturing and control fields. Current research projects in particular includes three-dimensional metrology for numerically controlled machine tools. High-precision measurement schemes for three-dimensional trajectory of the motion, or the three-dimensional geometry, within a large three-dimensional workspace up to several meters have been studied. My talk will be about a review on my works related to the multi-lateration based measurement of the volumetric accuracy of machine tools. The tracking interferometer is a laser interferometer with a steering mechanism to change the laser beam direction to follow a retroreflector ('target') attached to the machine spindle. Based on the multilateration principle, it measures the target's three-dimensional position at an arbitrary location in the workspace. We have been developing the concept of the 'open-loop' tracking interferometer, where the multi-lateration based three-dimensional position measurement can be performed without an automated tracking mechanism.

Institution: Fritz Studer AG
Department: Product Development, Research and Technology
Full name: Michael Klotz
Position: Project Leader Development

Talk Title: Mineral Cast Technology for High Precision Machine Tools

Keywords: Mineral Cast, Granitan®, Polymer Concrete, Machine Tools, Grinding

Description of Research Interests:

High precision Machine Tools
Measement and Simulation of structural, dynamic, thermal behavior of Machine Tools
Developments in Mineral Cast Technology in particular binding agent
Simulation of high grade filled composite materials and their properties
Grinding Machines, grinding Technology and Dressing Technology
Innovation and Development methods

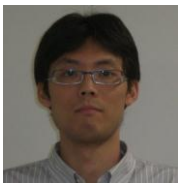
Institution: ETH Zurich
Department: Mechanical and Process Engineering
Full name: Wolfgang Knapp
Position: Head Metrology, Institute of Machine Tools and Manufacturing

Talk Title: Calibration and compensation of machine tools

Keywords: Geometric errors of and between individual axes, indirect measurements, uncertainty of results

Description of Research Interests:

Machine tool metrology
Coordinate measurements and coordinate measuring machines
Error budgeting
Measurement uncertainty



Institution: Kyoto University
Institute: Graduate school of engineering
Full name: Daisuke Kono
Position: Assistant professor

Talk Title: Contact Mechanics in Machine Tools

Keywords: Machine tools, Dynamic characteristic, Contact stiffness, Support

Description of Research Interests:

My current research interest is in the analysis of dynamic characteristic of machine tools. In our previous work, several methods have been proposed for analyzing the dynamic motion error of machine tools caused by the structural vibration mode. Recently, the stiffness of machine tool supports has been investigated because it greatly influences the dynamic performance of the machine in the low frequency range. It has been revealed that the contact stiffness of the support has an influence on the total stiffness of the supports. Therefore, I am now engaged on modeling of the stiffness of the support using the contact stiffness and identification of contact stiffness parameters. In the future work, the dynamic characteristic of 5-axis machine tools will be focused.

Institution: ETH Zurich
Department: DMAVT
Full name: Josef Mayr
Position: PostDoc

Talk Title: Research on thermal behavior of machine tools at ETH

Keywords: Machine tools, accuracy, thermal behavior

Description of Research Interests:

My research interest is on the field of the thermal behavior of machine tools. Topics of my research activities are measurement procedures, modeling and simulation, and compensation strategies. Simulation of temperature dependent errors during the design stage is done with Finite Element Method (FEM) and Finite Differences Method (FDM). Models build for compensations are linear models, using measurement inputs, physical machine tool models and phenomenological models.
In addition I supervise student projects in the field of electric mobility.

Institution: ETH Zurich
Department: Mechanical and Process Engineering (D-MAVT)
Full name: Mirko Meboldt
Position: Full Professor

Talk Title: Product Development – between people and technologies

Keywords: Engineering design, customers, additive manufacturing, 3D-Priniting, education

Description of Research Interests:

Product development and engineering design:
Design for additive manufacturing and 3D printing: Design strategies and methods for additive manufacturing: high performance applications, machine elements and medical applications.
Human behavior: physiological measurement in context of product usability and engineering design for e. g. based on eye tracking
Validation of technical systems - prototyping and iterations: fostering new validation testing approaches based on by rapid prototyping hardware/software-in-the-loop methods.

Institution: Kyoto University
Institute: Department of Micro Engineering
Full name: Keiichi Ota
Position: Doctor student

Talk Title: Analysis of Machine Tool Assembly

Keywords: Machine tools, Production management, Dynamic system

Description of Research Interests:

My main research interest is how we organize efficient machine tool production. Machine tool is a large and high-accuracy product and its production is high-mix low-volume production. With these characteristics machine tool production is dynamic because these characteristics often work as disincentive with uncertainty. One of the competences in machine tool production might be management at production site; however, the competence is implicit. Clear understanding of production complexity and implicit competence is valuable to improve productivity.

Institution: Inspire
Department: irpd
Full name: Manfred Schmid
Position: Manager R&D SLS

Talk Title: Additive Manufacturing - Quality Aspects on the Way to Industrialization

Keywords: Additive Manufacturing, Rapid Prototyping, 3D-Printing, Quality Management, Standards

Description of Research Interests:

Dr. M. Schmid studied chemistry at the university in Bayreuth (Germany) and finished with a PhD work in macromolecular chemistry (topic: light sensitive liquid crystalline polyurethanes).
17 years of work experience in different fields of polymer production, process development and polymer analysis for two Swiss companies. Polyamides and Biopolymers are focused during this period.
Since 5 years he is R&D-group leader for Selective Laser Sintering (SLS) at Inspire AG (Inspire AG is a non-profit research organisation and strategic partner of ETH Zürich for production technique). His work and research concentrate on thermoplastic polymers for SLS. SLS-processing, quality and analytical questions are focused.

Institution: ETH Zurich
Department: DMAVT
Full name: Sascha Weikert
Position: Post Doc

Talk Title: Measurement and modelling of dynamic behaviour of machine tools

Keywords: Machine tools, accuracy, dynamic behaviour

Description of Research Interests:

My research interest is in the field of machine tool behaviour. This area reaches from development of measurement procedures, modelling and simulation, and compensation strategies and covers influences on the machine tool accuracy given by thermal, static and dynamic effects. Based on the profound understanding of these effects ways to optimise machine tool design and or to compensate for these effects are to be developed. This leads to various applications in the field of control.

Institution: ETH Zurich
Department: Mechanical and Process Engineering
Full name: Eduardo Weingärtner
Position: Research Engineer

Talk Title: Nonconventional dressing of grinding wheels

Keywords: EDM, Laser, Diamond, CBN; metal bonded grinding wheels, Grinding

Description of Research Interests:

- Electrical discharge machining (wire cut EDM, die-sinking and EDM drilling)
- Grinding of advanced materials (high performance ceramics, carbides, etc.)
- Nonconventional dressing technologies (EDM, Laser, ELID)
- Modeling of Electrical Discharge Machining processes
- Laser manufacturing of cutting tools (ultrahard cutting materials such as PCD, CBN and CVD)
- Energy and resource efficient manufacturing

Institution: inspire AG / IWF ETH Zürich
Department: MAVT
Full name: Lukas Weiss
Position: Head of group machine tools

Talk Title: Energy efficiency in production

Keywords: Energy efficiency, machine tool, standardisation, system boundary, energy assessment

Description of Research Interests:

Machine tools are the backbone of manfacturing by metal cutting or forming. Energy supplied to machine tools is converted into heat, causing undesired thermal impact on the process, on the machines and eventually on the parts. Improvement of parts quality and lifetime expectance for machine tools creates a strong motivation for energy efficiency improvements. The system boundary for analysis must comprise all necessary components for the intended machine activity. Energy assessement preferably focusses on inefficiencies, bypassing the tricky quantification of the result achieved, necessary for efficiency calculation.

Programme Session Z2
Advanced Nano-/Biotechnology

Chairs: Prof. Hidetoshi KOTERA, Kyoto University
Prof. Andreas HIERLEMANN, ETH Zurich
Prof. Christofer HIEROLD, ETH Zurich

Room: ETH Zentrum, ML E13

Thursday, 21 November

13:30–14:00 Hirofumi Shintaku, Kyoto University
"Measurement Techniques for Electrokinetic Phenomena in Biomicrodevices"

14:00–14:30 Hyung Gyu Park, ETH Zurich
"Mass Transport in Graphitic Nanoenvironment"

14:30–15:00 Koichi Nakamura
"First-Principles Analysis of Material Properties in Nanosystems"

15:00-15:30 *Coffee Break (ETH HG Foyer F-Floor "Uhrenhalle")*

15:30–16:00 Daniel Müller, ETH Zurich
"Deciphering Molecular Mechanics Guiding Cellular Processes using Nanoscopic Assays"

16:00–16:30 Hidetoshi Kotera, Kyoto University
"Micro TAS for measuring cell communication and regenerative medicine"

16:30–17:00 Periklis Pantazis, ETH Zurich
"SHG nanoprobes: Advancing harmonic imaging in biology"

Friday, 22 November

09:00–10:00 Andreas Hierlemann, Christofer Hierold, ETH Zurich (30 min each)
"Introduction of D-BSSE and D-MAVT, overview of the research of both groups"

10:00-10:15 *Coffee Break (ETH HG Foyer F-Floor "Uhrenhalle")*

10:15–11:15 Lab-tour Hierold lab

11:30–12:30 Hierlemann, Hierold and all presenters of this session
"Discussion and Summary of areas of joint research interests; options for collaboration"

Preparing the report from the parallel sessions.

12:30-13:30 *Lunch (ETH HG Foyer F-Floor "Uhrenhalle")*

Institution: ETH Zurich
Department: BSSE
Full name: Andreas Hierlemann
Position: Full Professor

Talk Title: Research at D-BSSE and CMOS-Based Biomicrosystems
Keywords: Systems and Synthetic Biology, CMOS, Microsensors, Bioelectronics

Description of Research Interests:

Our research in general is rooted in Physics and in the Engineering disciplines and is targeted at developing microtechnological and microelectronics-based tools and methods (e.g., Complementary Metal Oxide Semiconductor, CMOS technology) to address issues and problems in Biology and Systems Biology. Our research interests at the Department of "Biosystems Science and Engineering" (BSSE) of ETH Zurich in Basel include the development of integrated chemical and biomicrosensor systems, the development of microfluidic techniques for cell handling and cell characterization, and the direct coupling of biological entities, such as neurons or heart cells, to microelectronic chips.

Institution: ETH Zürich
Department: Department of Mechanical and Process Engineering
Full name: Christofer Hierold
Position: Full Professor

Description of Research Interests:

Research in the Micro and Nanosystems Group is centered on three related areas: advanced microsystems, new materials for microelectromechanical systems (MEMS), and carbon nanotube sensors. Our projects focus on the exploration of novel fabrication and integration processes for the utilization of specific material properties in functional devices and future products. Our main topics include advanced MEMS and nanoelectricomechanical systems (NEMS) technologies with efforts invested in 3D integration, functional polymers, large-area thermoelectric energy harvesters and carbon nanotube transistors and sensors.

Institution: Kyoto University
Department: Graduate School of Engineering
Full name: Hidetoshi Kotera
Position: Executive Vice-President for External Strategy, Knowledge & Technology Transfer and Innovation, Full Professor

Keywords: Nanometrics, Micro-/ Nano Devices, Micro Electro Mechanical Systems (MEMS), Micro Total Analysis Systems (Micro TAS)

Description of Research Interests:
Prof. Kotera's main research interests are mechanical engineering, bio, micro and nanotechnology, Micro Total Analysis Systems (Micro TAS), Micro Electro-Mechanical Systems (MEMS), multi-physics numerical analysis theory and system and piezoelectric material. He is the author of 170 academic papers and over 220 papers for international conferences, and is the holder of 47 patents. He has received many awards and distinctions including the JSME Medal for Outstanding Paper, Japan Society of Mechanical Engineering (1996), the Best Paper Award, Japan Society of Applied Electromagnetics and Mechanics (2006) and the Award of the Funai Foundation of Information Technology (2008). In 2005 he became a fellow of the Japan Society of Mechanical Engineering.

Institution: ETH Zürich
Department: Biosystems Science and Engineering
Full name: Daniel J. Müller
Position: Full Professor of Biophysics

Talk Title: Deciphering Molecular Mechanics Guiding Cellular Processes using Nanoscopic Assays

Keywords: Mitosis, cell shape, cell adhesion, crosstalk, membrane receptors, screening

Description of Research Interests:

Microscopy at the sub-nanometer resolution (Nanoscopy) allows the characterization of basic cellular processes, ranging from the cellular to molecular scale. I will overview the use of new nanoscopic assays to characterize cellular mechanics underlying cell adhesion, cell migration, cell sorting and the drastic shape change of mitotic cells. AFM-based assays can be used to describe processes that control cellular mechanics and to identify cellular machines (proteins) that play commanding roles. AFM-based single-molecule techniques allow the imaging of cellular machines at sub-nanometer scale in their functional state, while they work. Simultaneously to sub-nanometer imaging multiparametric AFM allows the interactions that functionally regulate the cellular machinery to be quantified and localized. Future developments of force nanoscopy, together with advances in light microscopy and cell biological and genetic tools, will provide further insight into how the molecular machinery of the cell contributes to basic cellular processes.

Institution: Kyoto University
Institute: Center for Promotion of Interdisciplinary Education & Research
Full name: Koichi Nakamura
Position: Associate Professor

Talk Title: First-Principles Analysis of Material Properties in Nanosystems

Keywords: First-principles simulation; Quantum chemistry and physics; MEMS; Materials properties

Description of Research Interests:

He received his Ph. D. degrees from Kyoto University in molecular engineering for his theoretical studies on electronic processes in chemical reactions. His research background and interests are quantum chemistry and physics for basic science such as theory of electronic states, reactivity and mechanism of chemical reactions, molecular rotations and vibrations, relativistic spin-orbit coupling, etc. In addition, recent interests for application are first-principles theory and simulation of various materials properties in MEMS/NEMS devices such as piezoresistivity of semiconductors and permitivitty, piezoelectricity, and pyroelectricity of dielectrics at the nanoscale level. From July 2011, he is an Associate Professor at Center for the Promotion of Interdisciplinary Education and Research (C-PiER), Kyoto University, and also works in Department of Materials Science and Engineering, Egypt-Japan University of Science and Technology (E-JUST), Egypt, as a Tokunin Professor. Currently he lives in Alexandria, Egypt, mainly.

Institution: ETH Zurich
Department: Biosystems Science and Engineering
Full name: Periklis Pantazis
Position: Assistant Professor of Biosystems Analysis

Talk Title: SHG nanoprobes: Advancing harmonic imaging in biology

Keywords: Second harmonic generation, nonlinear crystals, animal imaging

Description of Research Interests:

We focus our efforts on the generation and application of novel imaging tools and methodologies to probe medically relevant hypotheses in intact organisms. Specifically, we take advantage of the animal models zebrafish and mouse to study in a systematic way both early developmental processes and adult stage tissue regeneration. Additionally, we are working to refine novel bioimaging reagents, Second Harmonic Generating (SHG) nanoprobes, for applications in biomedical imaging in vivo.

Institution: ETH Zurich
Department: Mechanical and Process Engineering
Full name: Hyung Gyu Park
Position: Assistant Professor (Tenure Track)

Talk Title: Mass Transport in Graphitic Nanoenvironment

Keywords: Nanometer-scale space, graphene, carbon nanotube, graphitic nanoenvironment, selective transport, water, gas, energy-efficient filtration

Description of Research Interests:

Prof. Dr. Hyung Gyu Park is interested in nanoscientific solutions of global energy and sustainability issues. Size controlled synthesis of carbon nanomaterials (such as graphene and carbon nanotubes) and transition metal dichalcogenides drives the applications in the energy- and clean technologies. Based on the strength in nanomaterials synthesis, his broad interest encompasses nano carbon membranes for water purification, gas separation and bioseparation, optoelectronic (plasmonic) chembio sensor, and energy storage devices.

Institution: Kyoto University
Institute: Department of Micro Engineering
Full name: Hirofumi Shintaku
Position: Assistant Professor

Talk Title: Measurement Techniques for Electrokinetic Phenomena in Biomicrodevices

Keywords: Microfluidics, Electrokinetics, Fluids engineering in micro/nano channels

Description of Research Interests:

We actively study problems involving fluid dynamics and transport phenomena in micro/nano confined space. The problems are inspired by microfluidic systems for biochemical analysis and cellular engineering. Especially, we are interested in electrokinetic phenomena, e.g., electrophoresis, electroosmotic flow, and electrowetting, of complex fluids including cells and biomacromolecules. We use various approaches of experiments, numerical simulation, and modeling to explore the problems. Optical flow observation based on micro-PIV (particle image velocimetry), high precision current/voltage measurement, and microfabrication are major methods in experiments. Theoretical and numerical analyses based on fluid mechanics are used to understand the physics underlying the phenomena observed in experiments.

Programme Session Z3

Energy

Chairs: Prof. Benjamin MCLELLAN, Kyoto University
Dr. Christian SCHAFFNER, ETH Zurich
Room: ETH Zentrum, HG F33.1 (Thursday), ML H37.1 (Friday)

Thursday, 21 November

13:30–14:00 **Introductions**
"Energy @ ETH Zurich", Marco Mazzotti
"Energy @ Kyoto University", Keiichi N. Ishihara

14:00–14:50 **Energy Session I: Energy Challenges Today and in the Future**
"The Swiss point of view", Konstantinos Boulouchos
"Future Energy Supply and Demand in Japan-Uncertainty and Planning", Tetsuo Tezuka
Discussion

14:50-15:10 *Coffee Break (ETH HG Foyer F-Floor "Uhrenhalle")*

15:10-17:00 **Energy Session II: Energy Research: Efficiency**
"Mobility", Fabrizio Noembrini
"Analysis for mixture formation and combustion processes in a diesel spray", Hiroshi Kawanabe
"Energy materials for Batteries and Fuel Cells", Takeshi Yao
"Zero Emission retrofit: From Building to Urban Scale", Arno Schlüter
Panel Discussion

Friday, 22 November

08:30–10:30 **Energy Session III: Energy Research: Renewables and low carbon technologies**
"Future Energy and Power Systems", Göran Andersson
"i-Energy: Smart Demand Side Energy Management", Takashi Matsuyama
"Recent progress in lignocellulosic biorefinery by supercritical/subcritical fluid science and technology", Shiro Saka
"Scientific Challenges in Wind Energy", Reza Abhari
Panel Discussion, Benjamin McLellan

10:30-10:50 *Coffee Break (ETH HG Foyer F-Floor "Uhrenhalle")*

10:50–12:20 **Energy Session IV: Energy Politics and Economics in Japan and Switzerland/Europe**
"Electricity liberalization in Japan and our Osaka Sakishima project", Aki-Hiro Sato
"Switzerland's Energy Strategy 2050", Matthias Gysler
"Future Nuclear Systems in Japan after the TEPCO Fukushima NPP Accident", Tsuyoshi Misawa
Panel Discussion, Christian Schaffner

12:20-13:20 *Lunch (ETH HG Foyer F-Floor "Uhrenhalle")*

13:20-14:20 **Energy Session V: Energy Education**
"Energy Education at ETH Zurich: Experiences, Challenges", Christian Schaffner

"Kyoto University's International Energy Science Course", Benjamin McLellan
Discussion

14:20-14:40 *Coffee Break*

14:40-15:30 **Energy Session VI: Collaborative Opportunities – immediate and strategic**
Discussions, all participants or nominated representatives

Institution: Swiss Federal Institute of Technology
Department: Department of Mechanical and Process Engineering (D-MAVT)
Full name: Marco Mazzotti
Position: Full Professor

Talk Title: Energy @ ETHZ

Keywords: Present and future Energy Research and Education at ETH Zurich

Description of Research Interests:

Marco Mazzotti, an Italian and Swiss citizen born in 1960, married, with two children, has been professor of process engineering at ETH Zurich since May 1997 (associate until March 2001 and Full Professor thereafter). He holds a Laurea (MSc, 1984) and a Ph.D. (1993), both in Chemical Engineering and from the Politecnico di Milano, Italy. Before joining ETH Zurich, he had worked five years in industry (1985-1990), and had been Assistant Professor at the Politecnico di Milano (1994–1997). He was coordinating lead author of the IPCC Special Report on CCS (2002-2005). He was President of
the International Adsorption Society (2010–2013) and is an active member of the Working Party on Crystallization of the EFCE. He is chairman of the Board of the Energy Science Center of the ETH Zurich (since 1.11.2011) and one of the six Executive Editors of Chemical Engineering Science (since 1.1.2012). He was a contributor to the Nobel Peace Prize for 2007 awarded to the Intergovernmental Panel on Climate Change (IPCC).

Institution: Kyoto University
Institute: Graduate School of Energy Science
Full name: Tetsuo Tezuka
Position: Full Professor

Talk Title: Future Energy Supply and Demand in Japan-Uncertainty and Planning

Keywords: Energy Systems Analysis and Design

Description of Research Interests:

His research interest lies in “Energy Systems Analysis and Design”. “Energy system” means “energy supply and demand system”, and what is important is that the system includes human as decision makers. This research topic comprises, therefore, three research fields, that is, Natural Science, Social Science and Humanities. The target of design is, for example, the framework design, that is, to decide the rules for regulation, taxation, new market, etc. Establishment of the meta-discipline for “Energy Study” is also his interest. The meta-discipline is a kind of fields where the researchers who are .interested in “Energy” can freely join the discussion and improve the idea for energy-related research.

Institution: Kyoto University
Institute: Graduate School of Energy Science
Full name: Benjamin Craig McLellan
Position: Associate Professor

Talk Title: Kyoto University's International Energy Science Course

Keywords: Energy, Sustainable Development, Minerals, Hydrogen, Greenhouse gas, Design, Technology Assessment, Policy, Industrial ecology

Description of Research Interests:

My research interests could be broadly summarized as development and application of methods for assessing the sustainability of minerals, industry and energy technologies and systems. My particular research interests currently are in the participatory design of future sustainable energy systems and the identification of sustainability implications of rare minerals and methane hydrate extraction from the deep ocean for energy applications. I am also interested in industrial ecology solutions to close material and energy cycles and improve environmental performance of industrial systems. I try to embrace both the social and natural sciences in identifying and developing solutions for key issues of energy and industrial development.

Institution: ETH Zurich
Institute: Mechanical and Process Engineering
Full name: Reza Abhari
Position: Full Professor

Talk Title: Scientific challenges in wind energy

Institution: ETH Zurich
Department: Department of Information Technology and Electrical Engineering
Full name: Göran Andersson
Position: Full Professor

Talk Title: Future Energy and Power Systems

Keywords: Energy systems, renewable energy sources, storage, demand response

Description of Research Interests:

During the last years a fundamental transformation of the electric power and integrated energy systems has been initiated in Europe and other industrialized countries. These new developments will drastically change the structure of these systems and the way they are operated. One can identify two main driving forces in this process. First, a massive introduction of distributed renewable power sources, i.e. mostly wind power and photo voltaics (PV), requires new system solutions. Since these sources are fluctuating and uncertain new methods for planning, managing, and operating the system must be developed and introduced. Second, information and communication technologies (ICT) offer new possibilities with regard to system control in general and management of distributed power sources and demand side response in particular.
This presentation will give an overview of the current developments in this field. The work at ETHZ concerning modeling of future energy systems will be presented. In particular the energy hub and power node will be described and their use in system analysis exemplified. Simulations from real system will be presented. The role of storage devices and demand side response will be elaborated.

Institution: ETH Zürich
Department: Mechanical and Process Engineering
Full name: Konstantinos Boulouchos
Position: Full Professor

Talk Title: Energy Future(s): The Swiss view. Strategic Paths towards a Sustainable Energy System. Challenges, Options and Research Priorities

Description of Research Interests:

Our research interests focus on fundamentals of chemically reactive systems in energy conversion technology with regard both to modeling and simulation of laminar and turbulent reactive flows and to non-intrusive diagnostic methods in combustion systems. Based thereupon the groups aims at transferring insight from basic research to industry for developing low-carbon, “near-zero” emission combustion technologies. Research in recent years includes also elaboration of optimal strategies for a sustainable future global and national energy system.

Institution: Swiss Federal Office of Energy
Department: Energy Economy Division
Full name: Matthias Gysler
Position: Deputy Head Energy Economy Division

Talk Title: Switzerland's Energy Strategy 2050

Keywords: Responsible for electricity and gas markets regulations ,socio-economic energy research and economic analysis of energy policy topics

Institution: Kyoto University
Institute: Graduate School of Energy Science
Full name: Keiichi N. Ishihara
Position: The Assistant to Executive Vice-president for research
Full Professor

Talk Title: Energy @ Kyoto University

Keywords: Energy Scenarios, Resource Depletion, Recycling, Materials for Energy

Description of Research Interests:

I am studying on the effective use of energy and resources and analyze the energy systems in order to build a sustainable social system for the earth and global environment. The main focus of my research is to develop new functional materials for improving resource productivity to provide a high quality life with as less resources (energy, minerals, land, etc.) as possible. Furthermore, as the representative of future energy scenario developing team, I have studies the zero-carbon energy scenarios in some regions and in the world.

Institution: Kyoto University
Institute: Energy Science
Full name: Hiroshi Kawanabe
Position: Associate Professor

Talk Title: Analysis for mixture formation and combustion processes in a diesel spray

Keywords: Engine Combustion, Turbulent Combustion, Laser Diagnostics, Computational Fluid Dynamics

Description of Research Interests:

In various combustion systems including heat engines, chemical energy contained in fuels is converted into thermal energy through combustion. To improve the conversion efficiencies and suppress the environmental impacts, it is required to elucidate the fundamental mechanisms of fuel-air mixing and combustion. Fundamental studies are performed on steady and transient flames by means of visualization, laser diagnostics and numerical analysis. Furthermore, to utilize future fuels, research is carried out on the basic combustion characteristics and the application to engines.

Institution: Kyoto University
Institute: Graduate School of Informatics
Full name: Takashi Matsuyama
Position: Full Professor

Talk Title: i-Energy: Smart Demand Side Energy Management

Keywords: Smart Energy Management, Demand-Side Energy Management, Smart Community, Automatic Demand Response

Description of Research Interests:

We proposed the concept of i-Energy for smart demand side energy management, which differs much from the Smart Grid; the former aims at energy management from the consumer's viewpoint while the latter from the supplier's viewpoint. We have been conducting four step technology developments to embody the i-Energy concept: 1) Smart Tap Network for monitoring detailed power consumption patterns of individual appliances and dynamic activities of people in homes, offices, and factories, 2) Energy on Demand Protocol to realize the priority-based best-effort power supply mechanism as well as the automatic ceiling mechanism of power consumption in both Watts and Watt hours, 3) Power Flow Coloring to allow versatile power flow controls depending on types and costs of power sources, and 4) Smart Community for bi-directional energy trading in a local community. With these technologies, we are now studying interfaces between supply-side smart grid systems and demand-side i-Energy systems to realize so called Automatic Demand Response systems.

Institution: Kyoto University
Institute: Research Reactor Institute
Full name: Tsuyoshi Misawa
Position: Full Professor

Talk Title: Future Nuclear Systems in Japan after the TEPCO Fukushima NPP Accident

Keywords: Reactor physics, Research reactor experiment, Radiation measurement

Description of Research Interests:

My major research field is reactor physics and radiation measurement. I have been engaged in nuclear reactor physics experiments using a critical assembly, namely a low power research nuclear reactor, for several purposes; criticality safety research to assure safety handling of nuclear fissile materials, development of neutron noise analysis techniques for measuring reactor kinetics parameters, study on accelerator driven system for transmutation of radioactive materials and so. One of my recent research interests is an application of radiation measurement technique combined with reactor physics theory for detection of illicit materials such as fissile materials which are hidden intentionally, for example, inside a cargo container.

Institution: Kyoto University
Institute: Graduate School of Energy Science
Full name: Shiro Saka
Position: Full Professor

Talk Title: Recent progress in lignocellulosic biorefinery by supercritical/subcritical fluid science and technology

Keywords: Biomass, Biofuel, Bioethanol, Biodiesel, Biorefinery, Supercritical Fluid

Description of Research Interests:

I have been carrying out bioenergy studies based on my own specialty in biomass science in order to establish new advanced processes for bioenergy such as bioethanol and biodiesel. To achieve my aims, I have been researching supercritical fluid science and technology. With this science and technology, I have invented advanced non-catalytic production processes with hot-compressed water treatment for lignocellulosics. The decomposed products were then fermented to acetic acid by Clostridium thermoaceticum and C. thermocellum which was further converted to bioethanol through hydrogenolysis reaction. For biodiesel production from oils/fats, advanced processes with supercritical methanol, methyl acetate and dimethyl carbonate methods have been proposed. Furthermore, for these biofuels, various kinds of biomass resources have been studied for their chemical composition from a taxonomic viewpoint so as to know the most suitable feedstock. This line of study has further expanded into a study for establishing biorefinery system so as to mitigate environmental loading.

Institution: Kyoto University
Institute: Graduate School of Informatics
Full name: Aki-Hiro Sato
Position: Assistant Professor

Talk Title: Electricity liberalization in Japan and our Osaka Sakishima project

Keywords: Risk assessment, extreme events, high-frequency data analysis of financial markets, data-centric social sciences

Description of Research Interests:

My research interest is an issue of microscopic dynamics and statistical properties in complex socio-economic systems. I am interested in a data-driven investigation of financial markets and real economy. From a practical point of view, risk assessment of complex socio-economic systems is of crucial issues in order to make our decision in actual environments. My interests are in understanding both external and internal environments of our society such as cognitive patterns of market participants in financial markets, production-consumption of goods driven by demand-supply imbalance, risk assessments under uncertain environments. I attempt to shed light on the problems from viewpoints of similarity, causality, and universality.

Institution: ETH Zurich
Department: Energy Science Center (ESC)
Full name: Christian Schaffner
Position: Executive Director

Talk Title: Energy Education at ETH Zurich: Experiences, Challenges

Keywords: Energy Education
Master of Energy Science and Technology (MEST)

Description of Research Interests:

Dr. Schaffner studied electrical engineering at ETH Zurich, where he received his diploma (1999) and then his PhD (2005), working at the Power Systems Laboratory. In his dissertation, titled " Valuation of Controllable Devices in Liberalized Electricity Markets", he analyzed price setting in liberalized electricity markets, including new technologies. After experiences in research and in the private sector both in Switzerland and abroad, Dr. Schaffner joined the Swiss Federal Office of Energy (BFE) in 2007, where he has been active until August 2013 as head of the grid section, responsible for the grid expansion strategy of Switzerland. He was also member of the Swiss delegation to the bilateral negotiations with the EU on energy agreements. Since September 2013, Dr. Schaffner is Executive Director of the Energy Science Center (ESC) at ETH Zurich. His goals are to move forward inter disciplinary energy research at ETH and incentivize collaborations with industry, other universities, and governmental organizations.

Institution: ETH Zurich
Institute: Faculty of Architecture
Full name: Arno Schlueter
Position: Assistant Professor

Talk Title: Zero Emissions retrofit: From Building to Urban Scale

Keywords: Sustainable buildings, renewable energy, building technologies, zero emission

Description of Research Interests:

To achieve the ambitious goals necessary to mitigate climate change and to facilitate the transition to a new energy future, the retrofit of the existing building stock becomes increasingly important. The objective of zero emissions in operation entails energy efficiency and the employment of local renewable energy sources. Optimal measures span different scales from components to buildings up to the urban fabric. Especially the district / neighborhood scale bears great potentials for environmentally and economically optimal retrofit strategies. Such strategies need to combine aspects of energy infrastructures and technologies with implications on architectural / urban design to deliver satisfying solutions. To uncover potentials, employ technologies and provide integrated design on different scales, new methods and toolsets are necessary.

Institution: Kyoto University
Institute: Graduate School of Energy Science
Full name: Takeshi Yao
Position: Full Professor

Talk Title: Energy materials for Batteries and Fuel Cells

Keywords: Rechargeable Lithium Ion Batteries, Solid Oxide Fuel Cells, X-ray Crystallography

Description of Research Interests:

I have been studying analysis, design and synthesis of functional solid material for rechargeable lithium ion batteries and solid oxide fuel cells. Electrochemical energy is effective for the use of limited resources with high energy conversion efficiency and for protection of the environment. I have newly invented “Relaxation Analysis” in which we analyze the transition from kinetic state to equilibrium state of electrode material for rechargeable lithium ion batteries after the insertion or extraction of lithium. Novel electrolyte material was developed for single chamber solid oxide fuel cells. I have been carrying out precise structural analysis and designing of functional solid material based on the theory of crystal chemistry by using X-ray crystallography.

Programme Session Z4
Astrophysics

Chairs: Prof. Daisaku NOGAMI, Kyoto University
Prof. Pascale JABLONKA, EPF Lausanne

Room: ETH Zentrum, HG D5.1 (Thursday), HG F26.1 (Friday)

Thursday, 21 November

13:30-14:00	T. Matsuo, Kyoto University “Exoplanets and instrument development”
14:15-14:45	M. Meyer, ETH Zurich “Stars and planet formation”
14:30-16:00	*Coffee available (ETH HG Foyer F-Floor “Uhrenhalle”)*
15:00-15:30	J.P Kneib “Large extragalactic spectroscopic surveys”
15:45-16:15	K. Schawinski, ETH Zurich “Black holes in galaxies”
16:30-17:00	F. Courbin, EPF Lausanne “Gravitational lensing and cosmological parameters”

Friday, 22 November

8:30-9:00	D. Nogami, Kyoto University “Transient Objects and Phenomena”
9:15-9:45	P. Jablonka, EPF Lausanne “Formation and evolution of galaxies”
9:30-10:30	*Coffee available (ETH HG Foyer F-Floor “Uhrenhalle”)*
10:00-10:30	M. Nobukawa, Kyoto University “Central region of the Galaxy”
10:45-11:15	B. Moore, University of Zurich “Comoslogical simulations”
12:00-13:00	*Lunch (ETH HG Foyer F-Floor “Uhrenhalle”)*

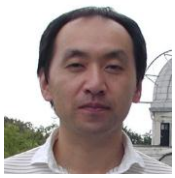
Institution: Ecole Polytechnique Fédérale de Lausanne (EPFL)
Department: LASTRO
Full name: Pascale Jablonka
Position: Scientific Collaborator

Talk Title: The fate of the molecular gas in galaxy clusters

Keywords: Formation and evolution of galaxies, Cold gas

Description of Research Interests:

Some of the cosmological parameters are now constrained with unprecedented accuracy; the growth of the cosmic structures and their evolution can be traced with detailed physics; the distribution and properties of thousands of nearby galaxies are observed, and their precursors are traced up to a redshift of ~8. However, many questions remain open. Indeed while the theory tracing the development of dark matter structures is now well mastered, the evolution of gas and stars is not easily linked to the evolution of non-baryonic matter. The processes of gas accretion, heating, cooling, and star formation are still poorly understood, from both theoretical and observational points of view.
Star formation occurs in massive dense and cold gravitationally bound giant molecular clouds. But how does star formation proceed on a global galactic scale? How does it depend on cosmic time, on large-scale environment, and on the mass and sub-structures of the galaxies? Is the initial mass function universal, or does it vary? What are the nature and properties of proto- stars and -galaxies? These are some of the questions tackled at LASTRO.



Institution: Kyoto University
Institute: Kwasan and Hida Observatories
Full name: Daisaku Nogami
Position: Assistant Professor

Talk Title: Transient Objects and Phenomena

Keywords: Observational Study of Transient Phenomena and Objects

Description of Research Interests:

My main research interest is mechanisms of various types of transient phenomena and objects, such as cataclysmic variables, X-ray binaries, gamma-ray bursts, solar and stellar flares, and so on. Our group has recently found many `superflares' in G-type main sequence stars in the photometric data obtained by the Kepler spacecraft. Although the mechanism of the superflare is thought to be basically the same as that of the solar flare, the total energy of the superflare reaches 10^36 erg, about 10^4 times larger than that of the largest solar flare ever recorded. A superflare could cause severe damage to our current civilization. We are doing research on the property of superflares, and superflare stars to clarify whether our Sun can show a superflare or not.

Institution: Ecole Polytechnique Fédérale de Lausanne (EPFL)
Department: Laboratory of Astrophysics
Full name: Frédéric Courbin
Position: Senior Scientist (MER)

Talk Title: The ESA Euclid Mission: the Nature of Dark Energy and Dark Matter

Keywords: Dark Matter, Dark Energy, Gravitational Lensing, Galaxy Surveys, Cosmological Parameters, Image Processing, Subaru Telescope

Description of Research Interests:

My main subjects of interest are:

- Observational Cosmology
- Gravitational Lensing
- Image Processing
- Image Deconvolution
- Galaxy Formation and Evolution
- Dark Matter
- Dark Energy
- Extragalactic Astrophysics
- Study of Quasars and Black Holes

Institution: Kyoto University
Institute: Department of Astronomy
Full name: Taro Matsuo
Position: Associate Professor

Talk Title: Exoplanets and instrument development

Keywords: Terrestrial Exoplanet, Biomarker, Future Extremely Large Telescope

Description of Research Interests:

Dr. Matsuo has been conducting direct imaging of Extrasolar planets around nearby stars on Subaru and also developing innovative techniques for future high contrast observation. Dr Matsuo's research includes wavefront sensing techniques for Adaptive Optics, and interferometry. Dr Matsuo is currently leading a high contrast instrument project on one of the next generation extremely large telescopes, Thirty Meter Telescope, aiming at direct detection and characterization of terrestrial planets.

Institution: ETH Zurich
Department: Physics
Full name: Michael R. Meyer
Position: Full Professor

Talk Title: The Joy of Making Planets in Circumstellar Disks: Dynamical and Chemical Recipes

Keywords: Extra-solar planets, circumstellar disks, young stars, star formation, stellar clusters

Description of Research Interests:

The Star and Planet Formation Research Group in the Institute for Astronomy, ETH Zurich is engaged in a wide range of studies from the formation and evolution of young star clusters, structure and evolution of circumstellar disks around young stars, and the search for and characterization of extrasolar planets. While most of our work is observational in nature, some colleagues focus on theoretical studies as well as the development of novel instrumentation in support of our scientific work.

Institution: University of Zurich
Department: Institute for Theoretical Physics
Full name: Ben Moore
Position: Full Professor

Talk Title: Simulating the Universe

Description of Research Interests:

Cosmology: the origin of structure in the universe, from large to small scales.
Astroparticle physics: nature of dark matter and dark energy
Planet formation: the origin of the solar system, exo-planetary systems.
Supercomputing: astrophysics simulation codes, parallel visualisation and analysis.

Institution: Kyoto University
Institute: The Hakubi center for advanced research
Full name: Masayoshi Nobukawa
Position: Assistant Professor

Talk Title: Central region of the Galaxy

Keywords: Central Region of the Milky Way Galaxy, X-ray Observation, Super-massive black hole Sagittarius A*, molecular clouds, X-ray reflection nebulae

Description of Research Interests:

Recently, we have known that all the galaxies have a supermassive black hole million to ten billion times as massive as the Sun at their dynamical center. Sagittarius A* is the supermassive black hole in Our Galaxy and the mass is measured to be about four million times that of the Sun by motion of the surrounding stars. However, Sagittarius A* is very dim in X-ray, and whose luminosity is almost comparable with those of regular stars. The low luminosity is one of big mysteries. We have found a relic of the past activity from X-ray observations of giant molecular clouds in the hundreds light-years vicinity. The molecular clouds emit X-rays. We found that the X-rays were generated by reflection of X-rays from Sagittarius A* in the past active phase, about hundreds years ago.

Institution: ETH Zurich
Department: Institute for Astronomy
Full name: Kevin Schawinski
Position: Assistant Professor

Talk Title: The mysterious connection between galaxies and their supermassive black holes

Keywords: Extragalactic astrophysics, high energy astrophysics, galaxy evolution

Description of Research Interests:

My group works on understanding the origin of supermassive black holes, their growth and their influence on the evolutionary trajectories of their host galaxies. The energy liberated by growing black holes is sufficient to violently alter the balance of heating and cooling of baryonic matter as galaxies convert gas into stars. But does such black hole “feedback” actually happen? Do active galaxy phases during which black holes release energy really correspond to turning points in the evolution of galaxies like our Milky Way? And how does the physics of the accreting black hole relate to events at galaxy scales?

Programme Session Z5
AI and Robotics

Chairs: Prof. Fumitoshi MATSUNO, Kyoto University
Prof. Hannes BLEULER, EPF Lausanne

Room: ETH Zentrum, HG E42

Thursday, 21 November

13:30-14:00 Short Self-Introduction

14:00-14:30 Swiss 1 Chair

14:30-15:00 Kyoto 1 Chair

15:00-15:30 *Coffee Break (ETH HG Foyer F-Floor "Uhrenhalle")*

15:30-16:00 Swiss 2

16:00-16:30 Kyoto 2

16:30-17:00 Swiss 3

Friday, 22 November

8:30-9:00 Kyoto 3

9:00-9:30 Swiss 4

9:30-10:00 Kyoto 4

10:00-10:30 *Coffee Break (ETH HG Foyer F-Floor "Uhrenhalle")*

10:30-11:00 Swiss 5

11:00-11:30 Kyoto 5

11:30-12:00 Discussion

12:00-13:00 *Lunch (ETH HG Foyer F-Floor "Uhrenhalle")*

13:00－15:30 Lab Tour & Discussion

Institution: EPFL
Department: Robotic Systems Lab LSRO
Full name: Hannes Bleuler
Position: Full Professor

Description of Research Interests:

Robotics, especially biomedical robotics (surgery, telemanipulators, rehabilitation, assistive devices) and, in this context, Man-Machine Interface, haptics & haptic interfaces, BMI, connection of robotics and cognitive neuroscience, force-feedback, exoskeletons

Institution: Kyoto University
Institute: Department of Mechanical Engineering and Science
Full name: Fumitoshi Matsuno
Position: Full Professor

Keywords: Rescue Robot Systems, Swarm Robotics and Intelligence, Bio-Inspired Robotics, Flexible Mechanical Systems

Description of Research Interests:

His research interests include the following topics related to robotics:

1. Rescue Robot Systems:
He has developed Intelligent rescue systems with information and communications technologies (ICT) and robotics technology (RT) to mitigate disaster damages after the 1995 Hanshin-Awaji Earthquake in Japan.

2. Swarm Robotics and Intelligence:
He has studied decentralized control strategies for robotic swarm and developed ant-like robots with chemical communication. He is also interested in modular robots and has developed 3-legged modular robots.

3. Bio-Inspired Robotics:
He has studied intelligent mobility of animals based on dynamics and developed an acrobat robot, snake-like robots, 4-legged robots etc.

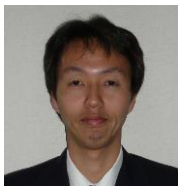
4. Flexible Mechanical Systems:
Based on distributed parameter system model of flexible structures he has proposed a simple control strategy PDS control that can ensure the closed-loop stability of the original PDEs.

Institution: Kyoto University
Institute: Graduate School of Engineering
Full name: Shinya Aoi
Position: Assistant Professor

Keywords: Legged robot, Neuromusculoskeletal model, Locomotion

Description of Research Interests:

My research interests include the dynamics and control of legged robots, and the analysis and simulations of locomotion in biological systems. In particular, to elucidate the underlying mechanism to generate adaptive locomotor behavior in biological systems, we analyze the measured data during locomotion in biological systems, and construct neuromusculoskeletal models of biological systems by integrating the musculoskeletal model based on anatomical data and the nervous system model based on physiological findings. In addition, we develop simple legged robots and their control system by incorporating biomechanical findings into the mechanical system and physiological findings into the control system to produce adaptive locomotor behavior of the robots.



Institution: Kyoto University
Institute: Department of Astronautics and Aeronautics
Full name: Kenji Fujimoto
Position: Full Professor

Keywords: Nonlinear control, stochastic systems, Electro-mechanical systems

Description of Research Interests:

His research interests include the following topics related to control theory:
1. Control of Hamiltonian systems: Hamiltonian systems are often used to describe physical ones such as robots and electro-mechanical systems. He has developed both feedback and learning control methods for those systems based on passivity and symmetry.
2. Nonlinear systems theory: He also worked on systems theory including model order reduction and parameterizations of stabilizing plant-controller pairs for nonlinear systems.
3. Statistical learning and stochastic control: A novel framework of modeling and control of linear stochastic systems is also provided by merging statistical learning theory and stochastic optimal control together.

Institution: ETH Zurich
Department: Dept. of Computer Science
Full name: Andreas Krause
Position: Assistant Professor

Talk Title: Optimizing Sensing

Keywords: Machine learning, optimization, decision making under uncertainty

Description of Research Interests:

Our research is in learning and adaptive systems that actively acquire information, reason and make decisions in large, distributed and uncertain domains, such as sensor networks and the Web. The theoretical aspects include statistical machine learning (online, active, large-scale, ...), probabilistic reasoning and optimization (in particular submodular and non-convex optimization). We devise new algorithms, build models, analyze large and complex data sets and develop systems that can automatically acquire and reason about highly uncertain information. Our application domains include community seismic and traffic sensing, autonomous robotic monitoring, optimal experimental design and information gathering on the web.

Institution: Kyoto University
Institute: Department of Mechanical Engineering and Science
Full name: Hiroaki Nakanishi
Position: Lecturer

Keywords: Flight control, Unmanned aerial vehicle, Computational Intelligence

Description of Research Interests:

Flight control of unmanned helicopter.
Development of autonomous unmanned helicopter.
Navigation and flight control system.
Application of autonomous unmanned helicopter for disaster prevention and disaster mitigation.
Computational Intelligence and its application to designing control system.
Signal processing for human's motion analysis.

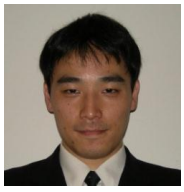
Institution: ETH Zurich
Department: Mechanical and Process Eng., Health Sciences and Tech.
Full name: Brad Nelson
Position: Professor

Talk Title: MicroRobotics and NanoMedicine

Keywords: Medical Robotics, Microrobotics, Nanorobotics

Description of Research Interests:

Professor Nelson's Multi-Scale Robotics Lab pursues a dynamic research program that maintains a strong robotics research focus on several emerging areas of science and technology. A major component of MSRL research leverages advanced robotics for creating intelligent machines that operate at micron and nanometer scales. MSRL research develops the tools and processes required to fabricate and assemble micron sized robots and nanometer scale robotic components. Many of these systems are used for robotic exploration within biomedical and biological domains.



Institution: Kyoto University
Institute: The Hakubi Center for Advanced Research
Full name: Shun Nishide
Position: Assistant Professor

Keywords: Recurrent Neural Networks, Developmental Robotics, Affordance

Description of Research Interests:

My research interests focus on developmental learning for humanoid robots, vision based control, and motion learning with recurrent neural networks. The work is specifically aimed to create robots that develop their perception/motion generation mechanisms based on their own experience with the environment. My approach towards this goal is to apply the developmental process of human infants to the robot's learning mechanisms. One of the key ideas to creating such system is affordance theory, where the environment itself is said to provide behavioral information to humans. Several experiments have been conducted based on this approach, such as tool using for humanoid robots, developmental learning of robot through interaction with human, predictability based motion generation and learning, and self-organization of prominent features for object perception.

Institution: EPFL
Department: IMT
Full name: Herbert Shea
Position: Associate Professor

Talk Title: Artificial Muscles for soft robotics
Keywords: Dielectric Elastomer Actuators, Grippers, artificial muscle,

Description of Research Interests:

Using miniaturized dielectric elastomer actuators, we develop stretchable actuators and sensors ranging from compliant grippers for grabbing space debris, to control surfaces for small remote controlled airplanes, to arrays of 100µm-sized devices to apply mechanical strain to biological cells. The dielectric elastomers can also act as energy harvesters, and we have made miniaturized harvesting systems that are completely soft.
Our research goal is making reliable self-powered, high strain (>50%), high energy-density, actuators out of silicone elastomers, with integrated sensing and self-switching for fully flexible smart machines.

Institution: ETH Zurich
Department: Architecture and Digital Fabrication
Full name: Volker Helm
Position: Researcher

Talk Title: Robotic Fabrication in Architecture

Keywords: In-situ, additive fabrication, robotic manufacturing, computational design, non-standard architectural structures

Description of Research Interests:

In our research we examine the changes in architectural production requirements that result from introducing digital manufacturing techniques. Our special interest lies in combining data and material and the resulting implications this has on the architectural design. The possibility of directly fabricating building components described on the computer expands not only the spectrum of possibilities for construction, but, by the direct implementation of material and production logic into the design process, it establishes a unique architectural expression and a new aesthetic.

Programme Session Z6
Natural Hazards and Disaster Prevention Research

Chairs: Prof. Kaoru TAKARA, Kyoto University
Prof. Dieter RICKENMANN, Swiss Federal Research Institute WSL, Mountain Hydrology and Mass Movements, Birmensdorf, Switzerland

Room: ETH Zentrum, HG F50.3

Friday, 22 November

Chairman ***Dr. Kaoru Takara***

08:15-08:35	Dr. Kaoru Takara	Division of Disaster Management for Safe and Secure Society, Disaster Prevention Research Institute, Kyoto University	"Frequency analysis of extreme events and water-related disasters"
08:35-08:55	Dr. Tetsuya Sumi	Division of Socio and Eco Environment Risk Management, Disaster Prevention Research Institute, Kyoto University	"Recent extreme flood events and challenges for integrated sediment management in Japan"
08:55-09:15	Dr. Kazuyoshi Nishijima	Division of Wind Engineering and Wind Resistant Structure, Disaster Prevention Research Institute, Kyoto University	"Real-time decision optimization in slowly evolving natural hazard events"
09:15-09:35	Dr. Daizo Tsutsumi	Field Research Section for Fluvial and Coastal Hazards, Disaster Prevention Research Institute, Kyoto University	"Estimation of sediment production from bare slopes and runoff monitoring in mountainous streams in Japan and Switzerland"
09:35-09:55	Dr. James Jiro Mori	Division of Earthquake Hazards, Disaster Prevention Research Institute, Kyoto University	"Earthquake Early Warning System in Japan and Performance during the 2011 Tohoku Earthquake"
09:55-10:20	*Coffee Break (ETH HG Foyer F-Floor "Uhrenhalle")*		

Chairman	***Dr. Dieter RICKENMANN***		
10:20-10:40	Dr. Volker Weitbrecht	Laboratory of Hydraulics, Hydrology and Glaciology (VAW), ETH Zurich	"Retention of floating debris to improve flood safety"
10:40-11:00	Dr. Thessa Tormann	Swiss Seismological Service, ETH Zurich	"The b-value stress-meter: Imaging stress distributions on different scales, from crustal faults to subducting plates"
11:00-11:20	Dr. Jan Laue	Institute for Geotechnical Engineering (IGT), ETH Zurich	"Investigations on non-linear soil behaviour and site effects under moderate seismic conditions in an Alpine environment."
11:20-11:40	Dr. Holger Frey	Institute of Geography, University of Zurich	"From mass movement modeling to an Early Warning System: The example of Laguna 513, Cordillera Blanca, Peru'"
11:40-12:00	Dr. Dieter Rickenmann	Swiss Federal Research Institute WSL, Mountain Hydrology and Mass Movements, Birmensdorf, Switzerland	"Sediment loads transported during flood events in Swiss mountain streams and debris- flow torrents"
12:00-13:00	*Lunch (ETH HG Foyer F-Floor "Uhrenhalle")*		

Institution: Swiss Federal Research Institute WSL
Department: Mountain Hydrology and Mass Movements
Full name: Dieter Rickenmann
Position: Senior Scientist

Talk Title: Sediment loads transported during flood events in Swiss mountain streams and debris- flow torrents

Keywords: Floods, bedload transport, hazard assessment, sediment disasters

Description of Research Interests:

Sediment transport in mountain streams:
Sediment transport and erosion processes in steep streams (torrents). Modelling of sediment transfer and aggradation/degradation processes in torrents and mountain rivers. Morphology of mountain streams. Measuring techniques of bedload transport.
Hydraulics of mountain streams:
Flow resistance in mountain streams and torrents.
Debris flows:
Dynamics of flow behavior and deposition. Empirical approaches for hazard assessment.
Hazard assessment related to sediment transfer processes in mountain streams:
Procedures for hazard assessment of sediment transporting flood events and debris flows. Sediment transfer processes during flood events in mountain catchments. Evaluation of protection measures against sediment disasters.

Institution: Kyoto University
Institute: Disaster Prevention Research Institute
Full name: Kaoru Takara
Position: Full Professor

Talk Title: Frequency analysis of extreme events and water-related disasters

Keywords: Hydrology, Water resources, Frequency analysis of extremes, Rainfall-runoff modelling

Description of Research Interests:

Professor Kaoru Takara has been interested in stochastic hydrological analysis, using state-space modeling of river basins with advanced technologies such as the Kalman filter, radar raingauge, satellite remote sensing, geographic information systems (GIS) and computer intensive statistics. Modeling and forecasting of heavy rainfalls, floods and landslides are key to prevent and reduce the disaster risks in river basins. His current interests include: probable maximum precipitation (PMP), probable maximum flood (PMF), frequency analysis of meteorological and hydrological extremes with parametric and non-parametric methods, downscaling of global climate model (GCM) outputs for applications at basin scale. He has been contributing to international cooperation research activities through UNESCO International Hydrological Progaramme (IHP), Asia Pacific Association of hydrology and Water Resources (APHW), International Association of Hydrological Sciences (IAHS), International Water Resources Association (IWRA), and International Consortium on Landslides (ICL), as well as Associate Editor of the International Journal of Flood Risk Management.

Institution: University of Zurich
Department: Department of Geography
Full name: Holger Frey
Position: Research Associate

Talk Title: From mass movement modeling to an Early Warning System: The example of Laguna 513, Cordillera Blanca, Peru

Keywords: Glacier hazards, RAMMS, rock-/ice avalanche, debris flow, Early Warning System

Description of Research Interests:

My research focuses on climate change impacts on high-mountain environments. This includes the evolution of glacier related natural hazards, i.e. emerging from glacier lakes; but also glacier mapping, ice volume estimations, glacier change assessments. For my work I apply remote sensing data, digital terrain information, mass movement models, and field investigations. I am conducting research in the European Alps, High Mountain Asia, and in the Peruvian Andes.

Institution: ETH Zürich
Department: Civil Engineering – Institute for Geotechnical Engineering
Full name: Jan Laue
Position: Lecturer, Senior research scientist

Talk Title: Frequency analysis of extreme events and water-related disasters

Keywords: Investigation in non-linear soil behaviour and site effects under moderate seismic conditions in an Alpine environment. Geotechnical earthquake engineering

Description of Research Interests:

The research interest of the professorship for geotechnics in the institute for geotechnical engineering focus on the geotechnical aspects of natural hazards (gravity driven landslides, earthquakes, heavy rainfalls, permafrost) making use of field testing, physical modelling in the geotechnical drum centrifuge and advanced laboratory investigations. One focus is given to the behaviour soils soil-structures and the soil-structure interaction under moderate earthquake conditions. Other topics include the investigation of soft lacustrine soils and their respective ground improvement methods.

Institution: Kyoto University
Institute: Disaster Prevention Research Institute
Full name: James J. Mori
Position: Full Professor

Talk Title: Earthquake Early Warning System in Japan and Performance during the 2011 Tohoku Earthquake

Keywords: Earthquakes, volcanoes, tsunamis, hazards, seismology

Description of Research Interests:

I have been involved with a broad range of earthquake and volcano research over the last 30 years. I worked with the Earthquake Hazards program of the USGS in Southern California and led post-earthquake studies for the 1994 Northridge earthquakes. I was also part of the USGS team that at Mt. Pinatubo, Philippines, that predicted the large eruption in 1991 and enabled successful evacuations.

Recently, I was co-chief of the Japan Trench Fast Drilling Project (JFAST), in which a seafloor borehole was drilled to the fault of the recent 2011 Tohoku earthquake. The fault samples and temperature observations showed that there was very low friction on this shallow portion of the fault. The low friction contributed to the huge slip that produced the tsunami that devastated much of northeast Japan.

Institution: Kyoto University
Institute: Disaster Prevention Research Institute
Full name: Kazuyoshi Nishijima
Position: Associate Professor

Talk Title: Real-time decision optimization in slowly evolving natural hazard events

Keywords: Engineering decision analysis, natural hazard risk management, wind engineering

Description of Research Interests:

Dr. Kazuyoshi Nishijima worked at ETH Zurich (2004-2010) and at Technical University of Denmark (2011-2013). During these periods his main research interest has been engineering decision analysis. As its applications he has been working on various types of engineering decision problems, including: strategic decisions on adaptation of civil infrastructure to changing climate; real-time decision for technical facility operations as well as evacuations of people and assets in emerging natural hazard events; decisions on maintenance of deteriorating structures. In parallel, he also has been working on modeling of typhoon-induced wind risks in corporation with the insurance industry.

Since September 2013 he is working at Disaster Prevention Research Institute, Kyoto University. His research there is directed to better understand physical and socio-economical processes leading to consequences of individual buildings as well as communities at different levels, which facilitate decisions on sustainable development in societies under changing environment.

Institution: Kyoto University
Institute: Disaster Prevention Research Institute
Full name: Tetsuya Sumi
Position: Full Professor

Talk Title: Recent extreme flood events and challenges for integrated sediment management in Japan

Keywords: Integrated sediment management in river basins, reservoir sedimentation, asset management of dams, flood mitigation dams, river restoration, sediment transport

Description of Research Interests:

My main topic is sediment management for reservoir sustainability. Japan and Switzerland have a common situation such as steep rivers, high potential for hydropower, high sediment yield rate, limited storage volume of reservoirs and high rate of storage loss by reservoir sedimentation. In order to realize sustainable management of limited water resources, innovative approach is needed for sediment management in reservoirs. I have stayed ETH-VAW during 1992-1993 as a visiting scholar to study sediment management in Swiss Alpine reservoirs. Environmental management during sediment flushing was a main target at that time. I'm keeping good contact with Swiss researchers at ETH and EPFL such as research project on hydraulic design of sediment bypass system. I'm contributing to several international associations and conferences such as ICOLD, IAHR, ISRS and ISE. Flood management by flood mitigation dams, river restoration, water resources management under climate change are also my research topics.

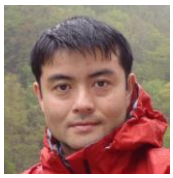
Institution: ETH Zurich
Department: Swiss Seismological Service
Full name: Thessa Tormann
Position: Senior Assistent

Talk Title: The b-value stress-meter: Imaging stress distributions on different scales, from crustal faults to subducting plates

Keywords: Statistical seismology, earthquake size distribution, stress heterogeneity, seismic hazard

Description of Research Interests:

Within the field of statistical seismology, my current research focus is the analysis of the size distribution of earthquakes (i.e. Gutenberg-Richter b-value). Beyond methodical aspects of resolving and imaging spatial and temporal variation along crustal faults and subduction zones, I am particularly interested in the physical interpretation of this statistical parameter and its potential to characterize locations, sizes, and loading states of asperities.



Institution: Kyoto University
Institute: Disaster Prevention Research Institute
Full name: Daizo Tsutsumi
Position: Associate Professor

Talk Title: Estimation of sediment production from bare slopes and runoff monitoring in mountainous streams in Japan and Switzerland

Keywords: Sediment production, bedload monitoring, landslide analysis, sediment related disasters monitoring

Description of Research Interests:

Bedload monitoring by Japanese pipe hydrophone and Swiss plate geophones in mountainous streams, and comparison between responses from those two systems.
Study on sediment production due to freeze and thaw process from exposed bedrock on bare slopes by field observation and numerical simulation, and its application to estimate the total amount of sediment production in a catchment.
Study on landslide triggering mechanism by modeling approach; considering rainwater infiltration with preferential flow, critical slip surface variation, and multi-phased sliding process.
Study on snow melting type mud-flow due to volcanic eruption by experimental and modeling approaches; and its application to mud-flow prediction.

Institution: ETH Zurich
Institute: Laboratory of Hydraulics, Hydrology and Glaciology (VAW)
Full name: Volker Weitbrecht
Position: Head of Research Group “River Engineering”

Talk Title: Retention of floating debris to improve flood safety

Keywords: Laboratory Experiments, Sediment Transport

Description of Research Interests:

The River Engineering division of VAW deals with questions of flood protection, driftwood and sediment transport as well as river revitalization aspects. The VAW laboratory of about 1800 m² in total size is of utmost importance for our work.

The main focus of our basic research projects are flow and transport processes to determine and to improve design criteria for different river engineering measures as e.g. for block ramps or driftwood and sediment retention constructions. This basic understanding is also needed to describe morphodynamic processes in river reaches to predict their long-term behavior.
We perform contract research, using hydraulic scale models, to test and optimize the design of planned river engineering measures. Of increased importance are hybrid models as a combination of numerical simulations and laboratory experiments.

Programme Session U1
Virtual Ape

Chairs: Prof. Takeshi NISHIMURA, Kyoto University
Prof. Christoph ZOLLIKOFER, University of Zurich

Room: University of Zurich Irchel Campus, Y13-L-18

Thursday, 21 November

14:00-14:30 Marcia Ponce de León, University of Zurich
"The Virtual Ape Project"

14:30-15:00 Naoki Morimoto, Kyoto University
"Chimpanzees meet virtual and real dissection: what does the gluteus muscle tell about evolution of bipedality?"

15:00-1530 *Coffee Break (Room Y13-G-100)*

15:30-16:00 Jean-Michel Hatt, University of Zurich
„The role of diagnostic imaging in the clinical evaluation of primates"

16:00-16:30 Takeshi Nishimura, Kyoto University
"Ditigal archives of medical imaging scans for non-human primates: contributions to comparative anatomy"

16:30-17:00 Christoph Zollikofer, University of Zurich
"The Virtual Ape: where to go (climb) from here?"

Friday, 22 November

09:00-09:30 Masato Nakatsukasa, Kyoto University
"Microcolobus (Primates: Colobinae) from Nakali, Kenya and early colobine a daptation"

09:30-10:00 Steffen Ross, University of Zurich
"CSI Zurich – Virtual Autopsy made in Switzerland"

10:00-10:30 *Coffee Break* (*Y13-M-Foyer)*

10:30-11.00 Eishi Hirasaki, Kyoto University
"Development of a markerless 3D motion capture method for kinematic analysis of animal locomotion"

11:00-11:30 Ines Carrera, University of Zurich
"Brain Magnetic Resonance Spectroscopy: applications in dogs"

12:30 *Lunch (Restaurant Neubühl, Irchel Campus)*

Afternoon Collection, Lab and Museum Visits

Institution: University of Zurich
Department: Anthropological Institute
Full name: Christoph P. E. Zollikofer
Position: Full Professor

Talk Title: The Virtual Ape: where to go (climb) from here?

Keywords: Primatology, human evolution, biomedical imaging, computer graphics, morphometry

Description of Research Interests:

Christoph P. E. Zollikofer has a PhD in neurobiology and is Professor of Anthropology at the Anthropological Institute of the University of Zurich. His main research field is computer-assisted paleoanthropology, encompassing the investigation of patterns of morphological variability and evolutionary diversification in primates, computational modeling of morphogenetic and dispersal processes, and development of image-based analytical tools for anthropology.

Institution: Kyoto University
Institute: Primate Research Institute
Full name: Takeshi Nishimura,
Position: Associate Professor

Talk Title: Digital archives of medical imaging scans for non-human primates: contributions to comparative anatomy

Keywords: Primates, speech evolution, paranasal sinus, vocal apparatus, CT scans

Description of Research Interests:

I have studied comparative morphology and physiology of the vocal apparatus and nasal region in primates including humans, using gross anatomy, imaging (CT and MRI), bioacoustics, or bioengineering simulation, to understand the evolution of human speech and nasal function. I also join the field survey of mammalian fossils including non-human primates from the Eocene and Plio-Pleistocene in Myanmar. I also have studied fossil morphology curated at museums in Europe, China, and United States, using CT scanning, to understand the evolutionary process of Eurasian Old World Monkeys. We are preparing the CT scans database, Digital Morphology Museum, KUPRI, to provide the scans to researchers and public.

Institution: Vetsuisse Faculty, University of Zurich
Department: Diagnostic Imaging
Full name: Inés Carrera
Position: Senior lecture

Talk Title: Brain Magnetic Resonance Spectroscopy in dogs

Keywords: MRS, brain, dogs

Description of Research Interests:

My Research Interest is focused in Magnetic Resonance Imaging of Small Animals (dogs and cats). Currently I am doing a PhD about MR Spectroscopy of the brain in dogs.

Institution: University of Zurich, Vetsuisse Faculty
Department: Clinic for Zoo Animals, Exotic Pets and Wildlife
Full name: Jean-Michel Hatt
Position: Full Professor

Talk Title: The role of diagnostic imaging in the clinical evaluation of primates.

Keywords: Primates, diagnostic imaging, radiography, computertomography, magnetic resonance imaging, ultrasound, endoscopy, zoo

Description of Research Interests:

As a professor and zoo veterinarian working in a multispecies environment involvement in a variety of research projects. The main focus however is in prevention (e.g. nutrition of zoo animals and nutrition related diseases) and surgery (e.g. advancement of osteosynthesis in avian medicine).

Institution: Kyoto University
Institute: Primate Research Institute
Full name: Eishi Hirasaki
Position: Associate Professor

Talk Title: Development of a markerless 3D motion capture method for kinematic analysis of animal locomotion

Keywords: Locomotion, biomechanics, functional morphology, primates, posture

Description of Research Interests:

My main research area is functional morphology of primates. I am particularly working on morphology of locomotor apparatus and locomotor biomechanics of primate including humans, to understand the origin(s), evolution and adaptation of human bipedal walking. Tools I am using are comparative anatomy, kinematic analyses and observations in the field, experimental approaches in the laboratory (kinematics, kinetics, EMG etc.) and biomechanical modeling. Another interest is in the strategy of postural control during locomotion. I have been studying on coordinated movements of the eyes, head and body during bipedal walking in humans. Morphological studies of the semicircular canals using the CT images are another approach we are taking to this topic. Recently, I am also working, with one of my colleagues, on developing a non-invasive way to capture animal motions in 3D using high-resolution video images.

Institution: Kyoto University
Institute: Laboratory of Physical Anthropology
Full name: Naoki Morimoto
Position: Post-doctoral fellow

Talk Title: Chimpanzees meet virtual and real dissection: what does the gluteus muscle tell about evolution of bipedality

Keywords: Human evolution, primate anatomy, geometric morphometrics, virtual dissection

Description of Research Interests:

Bipedality is one of the defining features of humans. My research focuses on how this important feature of humans evolved. Comparing the musculoskeletal structures of humans and our close relatives, great apes, provides great insights into the evolutionary history of locomotor behaviors in this “family”. To tackle this still age-old problem, I use two strategies. Methods of geometric morphometrics are useful tools to quantify the skeletal morphology. Specifically, I developed so-called morphometric mapping methods. On the other hand, methods of virtual dissection are powerful tools for comparative anatomy. Virtual dissection is an ideal means to study great ape anatomy, because great ape cadavers, which are indeed highly valuable, can be analyzed without sacrificing them.

Institution: Kyoto University
Institute: Physical Anthropology
Full name: Masato Nakatsukasa
Position: Professor

Talk Title: Microcolobus (Primates: Colobinae) from Nakali, Kenya and early colobine adaptation

Keywords: Paleontology, Paleoanthropology, Human evolution, Fossils, Africa

Description of Research Interests:

My specialty is comparative/functional macro anatomy of the limb and torso skeleton of living and fossil primates, especially the Old World monkeys, apes and humans. I am especially interested in the paleoenvironments and interaction among primate community through the emergence of living great ape and human clades. I started my research on fossil hominoid (=apes and humans) evolution in 1989 as a member of a paleoanthropological project organized by my supervisor. Since 2002, I have directed my own project at Nakali, Kenya. This expedition discovered a new 10 million years-old great ape and several other new primate species, and is successfully filling the primate fossil gap in Africa between 14 and 7 million years ago.

Institution: University of Zurich
Institute: Anthropological Insitute and Museum
Full name: Marcia Ponce de León
Position: Senior Lecturer

Talk Title: The Virtual Ape Project

Keywords: CT, MRI, biomedical imaging, virtual dissection, comparative anatomy, digital collection.

Description of Research Interests:

My research focuses on the evolutionary developmental biology of fossil and modern humans and apes, especially the evolution of birth. Further research topics are new methods for morphometric analysis of three-dimensional patterns of craniofacial shape variation, paleopathology and forensic osteology, and the out of Africa dispersals of hominids.

Institution: Zurich University
Institute: Institute of Forensic Medicine
Full name: Steffen Ross
Position: P Forensic Radiologist

Talk Title: CSI Zurich – Virtual Autopsy made in Switzerland

Keywords: Post mortem, Radiology, Forensic Medicine, CT, MRI, Angiography, Robotics

Description of Research Interests:

The main areas of my personal research are:

1. Forensic Radiology in general
2. Post mortem CT Angiography in natural and traumatic causes of death
3. Post mortem MRI in trauma
4. Image guided biopsy
5. Application of new interfaces for touch free interaction with radiological data

Programme Session U2

Plant and Environment

Chairs: Prof. Ikuko HARA-NISHIMURA, Kyoto University
Prof. Kentaro SHIMIZU, University of Zurich

Room: Thursday, 21 November: University of Zurich Irchel Campus, Y34-J-01
Friday, 22 November: UZH Botanical Garden, BOT-P1-40

Thursday, 21 November

13:30 Michael Schaepmann, University of Zurich
"Advanced remote sensing of the plant pigment system"

14:00 Takao Itioka, Kyoto University
"Tropical Ecosystems"

14:30 Michael Schmidt, University of Zurich
"The terrestrial carbon cycle in a changing world: plant-soil-atmosphere system"

15:00 *Coffee Break (Room Y13-G-100)*

15:30 Yuji Isagi, Kyoto University
"Conservation of endangered plant species based on information obtained by complete genotyping for all extant plant individuals"

16:00 Chris J. Kettle, ETH Zurich
"Managing tropical forest landscapes for ecological resilience"

16:30 Samuel Zeeman, ETH Zurich
"Carbon assimilation and partitioning into starch in plants"

Friday, 22 November

8:30 Ikuko Hara-Nishimura, Kyoto University
"Endomembrane dynamics and its role for plant defense"

9:00 Kentaro Shimizu, University of Zurich
"Interdisciplinary collaboration supported in Kyoto and in Zurich: integrating plant molecular genetics and ecology to study polyploid Arabidopsis and tropical trees"

9:30 Hiroshi Kudoh, Kyoto University
"Molecular phenology: seasonal control of flowering-time genes under natural conditions"

10:00 *Coffee Break (in front of room BOT-P1-40)*

10:30 Enrico Martinoia, University of Zurich
"Transport of strigolactones, phytohormones with a multitude of functions"

11:00 Akira Nagatani, Kyoto University
"Plant responses to light mediated by phytochrome"

11:30 Stefan Hörtensteiner, University of Zurich
„Chlorophyll degradation in *Arabidopsis thaliana*"

12:00 *Lunch (Buffet in front of room BOT-P1-40)*

13:00 Ueli Grossniklaus, University of Zurich
"A role for epigenetic variation in adaptation"

13:30 Takayuki Kohchi, Kyoto University
"Molecular genetics of the liverwort *Marchantia polymorpha*"

14:00 Florian Schiestl, University of Zurich
"Pollinator-mediated evolution of floral signals"

14:30 Junji Takabayashi, Kyoto University
"Leaf volatile ecology: Multitrophic interaction/information networks mediated by leaf volatiles"

15:00 Bernhard Schmid, University of Zurich
"A biodiversity approach to improve plant production"

Institution: University of Zurich
Department: Institute of Evolutionary Biology and Environmental Studies
Full name: Kentaro Shimizu
Position: Associate Professor

Talk Title: Interdisciplinary collaboration supported in Kyoto and in Zurich: integrating plant molecular genetics and ecology to study polyploid Arabidopsis and tropical trees

Keywords: Evolutionary and Ecological Genomics, Arabidopsis kamchatica, Dipterocarpaceae

Description of Research Interests:

My major interest is integrating molecular genetics, ecology and genomics to understand molecular basis of biodiversity. I would like to emphasize that both Kyoto and Zurich are ideal places for interdisciplinary collaboration, because of strength in plant molecular biology and in ecology.
During my PhD time in Kyoto, I started to collect natural polyploid Arabidopsis kamchatica distributed in Japan in collaboration with Prof. Kudoh. Since then, the species have provided a unique opportunity to study polyploid speciation and self-fertilization. I have also studied synchronous flowering of Dipterocarpaceae at the field site in Lambir Hills National Park established by Kyoto University.

Institution: Kyoto University
Institute: Graduate School of Science
Full name: Ikuko Hara-Nishimura
Position: Full Professor

Talk Title: Endomembrane dynamics and its role for plant defense

Keywords: Plant cell biology, endomembrane dynamics, plant defense, cell death, vesicle trafficking, peptide hormone

Description of Research Interests:

Her research interest lies in plant cell biology, especially endomembrane dynamics and its physiological roles against environmental stresses and pathogens. The target subcellular organelles are endoplasmic reticulum having the largest membrane surface in the eukaryotic cell and vacuoles having the largest volume in the plant cell. Plants have evolved their unique strategies against external stresses and invading pathogens by using these organelles. A significant feature of plant cell is the intracellular motility involving rapid organelle trafficking, traditionally defined as cytoplasmic streaming. The research topic also comprises the dynamic aspects of endoplasmic reticulum and the nuclei: how and for what these organelles move with in the cell and how the endoplasmic reticulum forms the beautiful network structures and generates the endoplasmic reticulum-derived organelles with specific roles.

Institution: University of Zurich
Department: Institute of Plant Biology
Full name: Ueli Grossniklaus
Position: Full Professor

Talk Title: A role for epigenetic variation in adaptation

Keywords: Reproduction, development, genetics, evolution

Description of Research Interests:

Work in the Department of Plant Developmental Genetics, led by Ueli Grossniklaus, addresses fundamental aspects of developmental biology related to cell specification, positional information, and cell-cell communication during plant reproduction, but also includes translational aspects such as the engineering of apomixis in maize. Much emphasis is given to the elucidation of epigenetic processes, both regarding their role in development but also in an ecological and evolutionary context. In recent years, a new research focus, which relies on the close collaboration of physicist, engineers and industrial partners, has been established to investigate the mechanical basis underlying cellular growth.

Institution: University of Zurich
Department: Biology, Plant Biology
Full name: Stefan Hörtensteiner
Position: Adjunct Professor

Talk Title: Chlorophyll degradation in *Arabidopsis thaliana*

Keywords: Chlorophyll catabolites, detoxification, senescence, tetrapyrrole

Description of Research Interests:

My group is interested in elucidating the mechanism of chlorophyll breakdown during leaf senescence and fruit ripening. During the past years we could establish a multi-step pathway of degradation that is common in higher plants and that leads to the conversion of chlorophyll to colorless tetrapyrroles, termed phyllobilins. Using biochemical, molecular and analytical tools, we investigate the genes, enzymes, breakdown catabolites and regulatory aspects of the pathway.

Institution: Kyoto University
Institute: Forest Biology
Full name: Yuji Isagi
Position: Full Professor

Talk Title: Conservation of endangered plant species based on information obtained by complete genotyping for all extant plant individuals

Keywords: Biodiversity, biological conservation, conservation genetics, endangered species

Description of Research Interests:

My major research interest is to elucidate regeneration processes of plant populations and conservation of biodiversity using a variety of genetic markers. As for biological conservation, I have been conducting genetic analysis for as many as ca. 50 critically endangered plant species whose remnant individuals are less than hundreds. For these species, we had determined their habitats and genotypes for all individuals growing in the wild. By taking advantage of information from doing complete genotyping for all known wild individuals, we will be able to evaluate genetic traits of plants regenerated, select appropriate plant individuals for artificial crossing, determine appropriate places of transplantation based on genetic structure, detect genetic pollution, prevent illegal digging of plants and evaluate sustainability of populations.

Institution: Kyoto University
Institute: Graduate School of Human and Environmental Studies
Full name: Takao Itioka
Position: Professor

Talk Title: Tropical Ecosystems

Keywords: Animal-plant interactions, Ecological entomology, Tropical biology, Population ecology

Description of Research Interests:

The main purposes of my study are to clarify the features, dynamics and functions of the web of various interspecific interactions in biological communities in the wild for better understanding of how the web has influenced on the evolutionary processes of the organism traits, how it contributes to the maintenance of the biodiversity, and how it functions in the ecosystem. Recently, in Bornean tropical rain forests, I concentrate my research efforts on insect-plant interactions, effects of predation on behaviors, life histories and population traits of preys, effects of the supra-annual climatic change on the temporal trends in insect community, and human impacts on the biodiversity loss.

Institution: ETH Zurich
Institute: Environmental Systems Science
Full name: Chris J Kettle
Position: Group Leader in Conservation Genetics

Talk Title: Managing tropical forest landscapes for ecological resilience

Keywords: Fragmentation, gene flow, pollen and seed dispersal, forest restoration

Description of Research Interests:

Chris Kettle works on plant reproductive ecology in natural and human dominated landscapes. Research on the reproductive ecology of plants within fragmented landscapes seeks to understand how land use change and plant population density affect pollination, seed production, seed dispersal and genetic diversity. This work is underway in temperate and tropical regions. Our research has demonstrated that seed production and gene flow is affected by an interaction of habitat fragmentation, patch quality and local plant densities. Other work addresses the ecological and genetic implications of different pollination strategies, and consequent effects on plant population viability. Our work has strong applied relevance particularly with respect to pollination services, forest genetic resource conservation, and agroforestry intensification. The broader objective is to apply this ecological knowledge to improve conservation and resilience of complex human dominated landscapes.

Institution: Kyoto University
Institute: Graduate School of Biostudies
Full name: Takayuki Kohchi
Position: Professor

Talk Title: Molecular genetics of the liverwort *Marchantia polymorpha*

Keywords: Plant molecular genetics, genomics, evo devo, light signaling, liverwort

Description of Research Interests:

The emergence of land plants from an aquatic ancestor was one of the most critical evolutionary events for life on Earth. The most recent molecular phylogenetic analyses strongly support the sister relationship of liverworts to all other extant land plants. Therefore, liverworts are considered to be a key group to understand the genetic basis of the critical innovations that allowed green plants to evolve from an aquatic ancestor and to adapt to the terrestrial environment. Marchantia polymorpha is a dioecious liverwort species. The haploid generation is dominant in the life cycle, which provides advantages over diploid vascular plants for genetic analysis. An ongoing M. polymorpha genome sequencing project indicates that many of the biological mechanisms found in other land plants are conserved in a less complex form. Thus, we study molecular and cellular developmental processes in environmental adaption with M. polymorpha as an emerging model organism.

Institution: Kyoto University
Institute: Center for Ecological Research
Full name: Hiroshi Kudoh
Position: Full Professor

Talk Title: Molecular phenology: seasonal control of flowering-time genes under natural conditions

Keywords: *Arabidopsis* wiled relatives, *Cardamine*, Eco genomics, Flowering –time control, Plant ecology, Phenology in gene expression,

Description of Research Interests:

In natural environment, seasonal changes of temperature exist as a long-term trend. Actual changes of temperature are more complex, involving day-and-night, day-by-day, and week-by-week fluctuations. Therefore, to know the season from temperature, plants have to remember the long term trend of past temperature. We conducted 'molecular phenology' study on a homolog of Flowering Locus C (FLC) in a natural population of Arabidopsis halleri subsp. gemmifera. By analyzing the relationship between the gene expression and past temperature, we revealed that this key gene for flowering-time control is regulated in response to temperature over past six-weeks (Aikawa et al., 2010 PNAS). We are now conducting seasonal transcriptome analyses using RNA-seq technique in the natural population of for 2 y by visiting the field site at 1-wk intervals. Our study will demonstrate that 'in natura'study provide us more comprehensive understanding of gene functions.

Institution: Zurich University
Institute: Institut Plant Biology
Full name: Enrico Martinoia
Position:

Talk Title: Transport of strigolactones, phytohormones with a multitude of functions

Keywords: Transport, strigolactone, phytohormone, mycorrhiza, shoot branching

Description of Research Interests:

In general: Membrane transport
Specifically:
- Transport of Phytohormones and hormone conjugates
-Transport and detoxification of heavy metals
-Vacuolar Transport of secondary metabolites
-Vacuolar transport of metabolites, with special emphasis on malate/anion transport mechanism and homeostasis

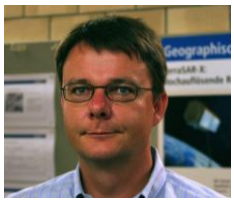
Institution: Kyoto University
Institute: Graduate School of Science,
Full name: Akira Nagatani
Position: Full Professor

Talk Title: Plant responses to light mediated by phytochrome

Keywords: Plant, photoreceptor, photomorphogenesis, phytochrome, phototropin

Description of Research Interests:

We are interested in molecualr mechnaisms by which plants perceive light stimuli and respond to them. Our recent efforts are aimed at three research topics: 1) Structural and evolutional analyses of phytochrome specialization, which has produced a highly sensitive photo-perception system mediated by phyA. Our recent results suggest that phyA is modularly structured to incorporate multiple characters required for the specialization. 2) Spatial and temporal regulatory networks underlying the whole plant responses to light. With the aid of the femto-second laser dissection technique, we have shown that an unknown long-distance signal is transduced from cotyledons to the hypocotyl to alter the responsiveness of the hypocotyl to auxin. 3) Molecular mechanism of phototropin signal transduction. Our working hypothesis is that phototropin directly affects endomembrane trafficking, which is hinted by our observation that phototropin associates with the Golgi apparatus and interacts with a factor involved in the endomembrane trafficking.



Institution: University of Zurich
Department: Department of Geography, Remote Sensing Laboratories
Full name: Michael E. Schaepman
Position: Full Professor / Director, Univ. Research Priority Program on 'Global Change and Biodiversity'

Talk Title: Advanced remote sensing of the plant pigment system

Keywords: Remote sensing, imaging spectroscopy, laser, biochemistry, pigments, 3D modeling, radiative transfer

Description of Research Interests:

Earth system science, global change drivers, vegetation-atmosphere interactions, biodiversity, remote sensing, imaging spectroscopy, plant pigment system, scales, interactions, feedback mechanisms
I focus on developing new methods to assess the plant pigment system using remote sensing approaches. My interest is in assessing state variables such as Chlorophyll fluorescence using airborne and spaceborne imaging instruments as well as assessing vegetation status from biochemistry (Chlorophyll, Xanthophyll, Anthocyanin, leaf water) and structure (Leaf Area Index, leaf inclination angle, gap fraction). This will lead to measuring plant functional traits at geographically extended areas. Net Primary Production (NPP) is derived at different scales using those advanced measurements to assess productivity changes from short-lived to long-lived biospheric processes. Ultimately, this leads to a set of essential variables allowing to quantitatively assessing changes in functional diversity and provisioning ecosystem services.

Institution: University of Zürich
Department: Institute of Systematic Botany
Full name: Florian P Schiestl
Position: Associate Professor

Talk Title: Pollinator-mediated evolution of floral signals

Description of Research Interests:

I am interested in the effect of biotic interaction on the evolution of floral signals in plants, with particular focus on floral scent. I am also working on the impact of floral signals on plant diversification and evolution of floral mimicry and deception. I use model systems such as orchids and Brassicaceae, and the respective pollinators, and a combination of molecular and ecological tools to address specific research questions.

Institution: Zurich University
Department: Evolutionary Biology and Environmental Studies
Full name: Bernhard Schmid
Position: Full Professor

Talk Title: A biodiversity approach to improve plant production

Keywords: Species diversity, genetic diversity, stand productivity, complementarity effects

Description of Research Interests:

Plant decision making; Plant growth and competition; Invasion biology; Ecology and genetics of small populations; Life-history evolution of clonal organisms; Transgene x environment interactions; Evolutionary plant genetics and epigenetics; Mechanisms of plant competition and coexistence; Plant–animal interactions; Community assembly; Community genetics and evolution; Biodiversity–ecosystem functioning relationships

Institution: Zurich University
Department: Department of Geography, Soil Science and Biogeochemistry
Full name: Michael W. I. Schmidt
Position: Associate Professor

Talk Title: The terrestrial carbon cycle in a changing world: plant-soil-atmosphere system

Keywords: Soil organic carbon cycling, molecular marker, light isotopes, wildfire, black carbon, biochar

Description of Research Interests:

We are an interdisciplinary group of scientists with backgrounds in geography, geology, biology, agronomy, environmental science and analytical chemistry. We seek to understand how global climate change affects the multiple interactions of vegetation, soil, and the terrestrial carbon cycle. These processes are investigated with several complementary state-of-the-art biogeochemical methods in field and greenhouse experiments. Our teaching is research inspired and we aim to involve students early into practical projects.

http://www.geo.uzh.ch/en/units/physische-geographie-boden-biogeographie

Institution: Kyoto University
Institute: Center for Ecological Research
Full name: Junji Takabayashi
Position: Full Professor

Talk Title: Leaf volatile ecology: Multitrophic interaction/information networks mediated by leaf volatiles

Keywords: Titrophic interactions, chemical ecology, plant volatiles, parasitic wasps, biological control plant-plant signaling

Description of Research Interests:

I am interested in chemical communication among organisms.
I am currently working on:
(1) Tritrophic interactions of plants, herbivorous arthropods and carnivorous natural enemies of herbivores mediated by herbivore-induced plant volatiles.
(1)-1 Mechanisms involved in the production of HIPVs in plants (key words: phytooxilipin pathway, green leaf volatiles, terpenoids, jasmonic acids, elicitors).
(1)-2 Plants-carnivore, and plant-herbivore interactions mediated by HIPVs (enemy free space, enemy dense space, encounter-dilution effects, oviposition preference, learning, fitness).
(1)-3 Application of specific blend of HIPVs for pest control diamondback moth, parasitic wasps, population dynamics).
(2) Plant-plant signaling mediated by plant volatiles.
(2)-1 Mechanisms involved in the reception of volatiles by plants (green leaf volatiles, volatile recruiting/receiving systems, receptors).
(2)-2 Effects of plant-plant signaling on the community structure of arthropods on plants (plant fitness, species specificity, sensitivity).
(2)-3 Application of plant-plant signaling for pest control (rice plants, bean plants, herbivore communities, production).

Institution: ETH Zurich
Department: Plant Biochemistry
Full name: Samuel C Zeeman
Position: Associate Professor and Plant Science Centre President

Talk Title: Carbon assimilation and partitioning into starch in plants.

Keywords: Photosynthesis, starch biosynthesis, carbohydrate metabolism.

Description of Research Interests:

Our research has three primary goals. First, we aim to discover how plants synthesize the key carbohydrate product, starch. Our research strives to understand how the synthetic enzymes act in a coordinated way to generate the semi-crystalline structures found in starch granules. Secondly, we are studying how starch is remobilized in plant cells to release the stored carbon for metabolism. Third, we are working to understand how the diurnal turnover of starch is integrated with the rest of metabolism and tailored to optimize growth in different environmental conditions. We are using the model plant Arabidopsis thaliana, as our experimental system. This plant accumulates starch through photosynthesis during the day and remobilizes it during the night, allowing both processes to be easily studied. Using this system also allows us to exploit the annotated genome sequence and the array of post-genomic facilities. Knowledge gained from Arabidopsis about how this vital plant product is made can then be transferred to other species to improve and diversify starch crops.

Programme Session U3
Finance and Risk

Chairs: Prof. Chiaki HARA , Kyoto University
Prof. Walter FARKAS, University of Zurich

Room: University of Zurich Zentrum Campus, Main Building KOL-G-217

Thursday, 21 November

9:55-10:00 Walter Farkas and Chiaki Hara (Organizers)
Opening and Welcome

Chair: Josef Teichmann

10:00-10:30 Chiaki Hara, Kyoto University
"Asset demand and ambiguity aversion"

10:30-11:00 Marc Paolella, University of Zurich
"Large scale multivariate non-elliptical asset return density prediction and fast portfolio construction"

11:00-11:30 *Coffee Break (in front of room KOL-G-217)*

Chair: Chiaki Hara

11:30-12:00 Martin Schweizer, ETH Zurich
"Some ideas on bubbles"

12:00-12:30 Yoshihiko Nishiyama, Kyoto University
" A simple specification test for ergodic Markov processes"

12:30-14:00 *Lunch Break (ETH Main Building Foyer HG F30)*

Chair: Thorsten Hens

14:00-14:30 Josef Teichmann, ETH Zurich
„When roll-overs do not qualify as numéraire: bond markets beyond short rate paradigms"

14:30-15:00 Tomoyuki Nakajima, Kyoto University
"tbd"

15:00-15:30 Walter Farkas, University of Zurich
"Risk measures with defaultable reference assets"

15:30-16:00 *Coffee Break (in front of room KOL-G-217)*

Chair: Tomoyuki Nakajima

16:00-16:30 Mete Soner, ETH Zurich
"Hedging in markets with model ambiguity"

16:30-17:00 Aki-Hiro Sato, Kyoto University
"Recursive segmentation procedure based on the Akaike information criterion test: an application to multivariate financial time series"

17:00-17:30 Thorsten Hens, University of Zurich
"Financial markets: behavioral equilibrium and evolutionary dynamics"

Institution: University of Zurich
Department: Banking and Finance
Full name: Walter Farkas
Position: Associate Professor for Quantitative Finance

Talk Title: Risk measures with defaultable reference assets

Keywords: Risk measures, acceptance sets, general eligible assets, defaultable bonds, cash subadditivity, quasiconvexity, Value-at-Risk, Tail Value-at-Risk

Description of Research Interests:

A first research focus is on risk measures representing the minimum amount of capital a financial institution needs to raise and invest in a pre-specified eligible asset to ensure it is adequately capitalized. Most of the literature has focused on cash-additive risk measures, for which the eligible asset is a risk-free bond, on the grounds that the general case can be reduced to the cash-additive case by a change of numeraire. However, discounting does not work in all financially relevant situations, typically when the eligible asset is a defaultable bond. Several ongoing projects with Dr. Pablo Koch (University of Zurich) and Cosimo Munari (ETH Zurich) are dedicated to these aspects and will be partly presented during the workshop.

A second focus is on option pricing and volatility modeling. In this context we mention that the standard stochastic volatility models -- which focus on the modeling of instantaneous variance -- are unable to fit the entire term structure of VIX futures as well as the entire VIX options surface. Recently we proposed together with Dr. Gabriel Drimus to model directly the VIX index, in a mean-reverting local volatility-of-volatility model, which provides a global fit to the VIX market.

Institution: Kyoto University
Institute: Institute of Economic Research
Full name: Chiaki Hara
Position: Professor

Talk Title: Asset demand and ambiguity aversion

Keywords: Microeconomics, finance, general equilibrium theory, asset pricing

Description of Research Interests:

I have been working on the theory of asset pricing based on the techniques of general equilibrium theory. My works covered such topics as the problem of the optimal design of futures contracts by an exchange that maximizes the total commission revenue, and the impact of heterogeneous risk attitudes and impatience on asset prices. The most recent work solves the portfolio selection problem of ambiguity-averse investors and assesses the validity of the mutual fund theorem and the security market line when such investors participate in the asset trades.

Institution: University of Zurich
Department: Banking and Finance
Full name: Thorsten Hens
Position: Full Professor

Talk Title: Financial markets: behavioral equilibrium and evolutionary dynamics:

Keywords: Financial markets, behavioral equilibrium, evolutionary dynamic, market selection

Description of Research Interests:

We study the interaction of investment strategies on financial markets. The strategies can be generated by rational or behavioural rules. Even though the resulting dynamical system is very complex we are able to prove that a simple fundamental investment strategy has the best chances for survival.

Institution: Kyoto University
Institute: Institute of Economic Research
Full name: Tomoyuki Nakajima
Position: Professor

Talk Title:

Keywords: Macroeconomics and Public Economics.

Description of Research Interests:

The research topics that I am currently pursuing are: (i) liquidity crisis; (ii) sovereign debt crisis; (iii) optimal monetary and fiscal policy under a global liquidity trap; (iv) optimal taxation with incomplete asset markets; (v) financial intermediation in the presence of enforcement and/or informational problems.

Institution: Kyoto University
Institute: Institute of Economic Research
Full name: Yoshihiko Nishiyama
Position: Full Professor

Talk Title: A simple specification test for ergodic Markov processes

Keywords: Nonparametric/semiparametric methods, Asymptotic theory, Specification test, goodness of fit, Applied econometrics

Description of Research Interests:

My research interests are econometric theory and applied econometrics. Topics such as asymptotic theory for nonparametric and semiparametric statistical methods and specification tests in econometrics are my main theme. Also, I work on productivity analysis using micro or panel data applying such statistical methods.

Institution: University of Zurich
Department: Institute of Banking and Finance
Full name: Marc Paolella
Position: Full Professor

Talk Title: Large scale multivariate non-elliptical asset return density prediction and fast portfolio construction

Keywords: CCC, Density Forecasting, EM-Algorithm, Fat Tails, GARCH, Laplace Distribution, Multivariate Generalized Hyperbolic Distribution

Description of Research Interests:

Univariate and Multivariate Return Density Prediction, Saddlepoint Approximation Methods, Portfolio Optimization, Computational Statistics, Empirical Finance.

Institution: Kyoto University
Institute: Graduate School of Informatics
Full name: Aki-Hiro Sato
Position: Assistant Professor

Talk Title: Recursive segmentation procedure based on the Akaike information criterion test: an application to multivariate financial time series

Keywords: Risk assessment, extreme events, high-frequency data analysis of financial markets, data-centric social sciences

Description of Research Interests:

My research interest is an issue of microscopic dynamics and statistical properties in complex socio-economic systems. I am interested in a data-driven investigation of financial markets and real economy. From a practical point of view, risk assessment of complex socio-economic systems is of crucial issues in order to make our decision in actual environments. My interests are in understanding both external and internal environments of our society such as cognitive patterns of market participants in financial markets, production-consumption of goods driven by demand-supply imbalance, risk assessments under uncertain environments. I attempt to shed light on the problems from viewpoints of similarity, causality, and universality.

Institution: ETH Zurich
Department: Mathematics
Full name: Martin Schweizer
Position: Full Professor

Talk Title: Some ideas on bubbles

Keywords: We present some ideas on how to define and analyse financial market models with bubbles. The main idea is to start from an economically natural concept and then show how that naturally leads to connections with strict local martingales. This is ongoing and joint work with Martin Herdegen (ETH Zurich).

Description of Research Interests:

– mathematical finance and its connections to stochastic calculus, martingale theory and stochastic control
– in particular, approaches to hedging and portfolio optimisation in incomplete markets

Institution: ETH Zurich
Department: Mathematics
Full name: Halil Mete Soner
Position: Full Professor

Talk Title: Hedging in markets with model ambiguity

Keywords: Duality, Robust hedging, Super-replication

Description of Research Interests:

Mathematical methods, Partial Differential Equations, Stochastic Optimal Control, Dynamic Programming.

Institution: ETH Zurich
Department: Mathematics
Full name: Josef Teichmann
Position: Full Professor

Talk Title: When roll-overs do not qualify as numéraire: bond markets beyond short rate paradigms

Keywords: We relate the concepts of a numeraire and of a bubble in models for financial markets. Several applications to bond markets are discussed.

Description of Research Interests:

Mathematical Finance, Stochastic Analysis, Malliavin Calculus, Numerical methods for PDEs and SPDEs.

Programme Session U4
Extentialismus heute

Chairs: Prof. Hiroshi ABE, Kyoto University
Dr. Simone MÜLLER, University of Zurich

Room: Thursday, 21 November: Visit to the “Stiftsbibliothek St. Gallen”
Friday, 22 November: University of Zurich Center Campus, KOL-N-1

Friday, 22 November

8:30-8:45	Begrüssung
8:45-9:30	Hiroshi Abe: „Ist Existenzphilosophie heute möglich?“
9:30-10:15	Yuta Sakazume: „Existenzvollzug als der geschichtliche Augenblick“
10:15-10:45	*Kaffeepause (KOL-N-1)*
10:45-11:30	Hoko Nakagawa: „Der Zusammenhang zwischen der Existenz und der Fremdheit des Seins in Heideggers Denken“
11:30-12:15	Namiko Holzapfel: „Existenzphilosophische Elemente in Hannah Arendts politischer Theorie“
12:15-13:15	*Mittagspause (Buffet ETH Zentrum HG F-Floor, „Uhrenhalle“)*
13:15-14:00	Dominique Kuenzle: „Verantwortung in Kierkegaards Modell der unbedingten Hingabe“
14:00-14:45	Simone Müller: „Existentialismus und Verantwortung im Intellektuellendiskurs der japanischen Nachkriegszeit“
14:45-15:00	*Kaffeepause (KOL-N-1)*
15:00-16:00	Abschlussdiskussion mit Inputreferat von Anton Hügli: Jaspers, Sartre und die Frage der Transzendenz oder: von der ungebrochenen Aktualität existenz-philosophischen Denkens

Institution: Universität Zürich
Department: Asien-Orient-Institut (Japanologie)
Full name: Simone Müller
Position: Privatdozentin / Oberassistentin

Talk Title: Existentialismus und Verantwortung im Intellektuellendiskurs der japanischen Nachkriegszeit

Keywords: Existentialismus, Verantwortung, Jean-Paul Sartre, Intellektuellendiskurs

Description of Research Interests:

Japanische Literatur und Geistesgeschichte der Zwischen- und Nachkriegszeit, Literaturtheorien, Literaturdebatten, ästhetische Kommunikations- und Diskursformen, Intellektuellendiskurs, Verantwortungsdiskurs, Existentialismus

Institution: Kyoto University
Institute: Graduate School for Human and Environmental Studies
Full name: Hiroshi Abe
Position: Associate Professor

Talk Title: Ist Existenzphilosophie heute möglich?

Keywords: Philosophy, environmental thought, logic

Description of Research Interests:

Hiroshi Abe is an associate professor at the Graduate School of Human and Environmental Studies, Kyoto University (Kyoto, Japan), specialising in philosophy and environmental ethics. He received his MA and PhD in Human and Environmental Studies from Kyoto University. Previous positions include a research fellowship at the Japan Society for the Promotion of Science (1996-98) and assistant professorships at Kyoto University in the Graduate School of Human and Environmental Studies (2000-03) and the Research Institute for Humanity and Nature (2003-06). In 2011-12, he was a research fellow of the Alexander von Humboldt Foundation (Ludwig-Maximilians-University, Munich, Germany).
His publications include: From Symbiosis (kyôsei) to the Ontology of 'Arising Both from Oneself and from Another (gûshô)', in Environmental Ethics in Asian Philosophy, ed. Baird Callicott et al., SUNY Press, Albany (Forthcoming); Umweltethik im modernen Japan, in: Begriff und Bild der modernen japanischen Philosophie, ed. Christian Steineck et al., Frommann-Holzboog, Stuttgart (Forthcoming); Nishida und Heidegger über das Selbstsein, in: Nishida Kitaro in der Philosophie des 20. Jahrhunderts, ed. Rolf Elberfeld et al., Karl Alber, Freiburg (Forthcoming); Gen — sono Rogosu to Êtosu. Heidegger eno Ôtô [The There (Das Da) — its Logos and Ethos. A Response to Heidegger], Kôyô-Shobô, Kyoto, 2002; Kyôtogakuha no Isan — Sei to Shi to Kankyô [The Heritage of Kyoto-School's Philosophy. Life, Death and Environment] (Coauthor), Kôyô-Shobô, Kyoto, 2008.

Institution: University of Zurich
Institute: Institute of Asian and Oriental Studies/Department of Japanese
Full name: Namiko Josefine Holzapfel
Position: Research Assistant

Talk Title: Existenzphilosophische Elemente in Hannah Arendts politischer Theorie

Keywords: Action, freedom, natality, plurality, public realm, world, Heidegger, Jaspers

Description of Research Interests:

Intellectual History, Political and Moral Philosophy
M.A. Thesis: On the Reception of the Concept of Labour in Hannah Arendt's "The Human Conditon" in Japan (Zur Rezeption des Arbeitsbegriffs in Hannah Arendts „Vita activa oder Vom tätigen Leben" in Japan)

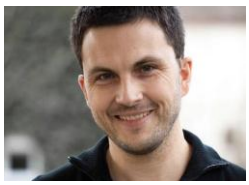
Institution: Universität Basel
Department: Philosophie
Full name: Anton Hügli
Position: Em. Professor

Talk Title: Jaspers, Sartre und die Frage der Transzendenz oder: von der ungebrochenen Aktualität existenz-philosophischen Denkens

Keywords: Glaube, Wissen, Atheismus, Transzendenz, Ethik, Moral, Entscheidung

Description of Research Interests:

Praktische Philosophie, Bildungsphilosophie, Begriffs- und Ideengeschichte, Jaspers-Forschung



Institution: University of Zürich
Department: Philosophy
Full name: Dominique Kuenzle
Position: Privatdozent

Talk Title: Verantwortung in Kierkegaards Modell der unbedingten Hingabe

Keywords: Philosophy, existentialism, responsibility, decision, commitment, Kierkegaard

Description of Research Interests:

Sprachphilosophie: vor allem pragmatistische Versuche, sprachliche Bedeutung zu erhellen, indem der Gebrauch der Sprache beschrieben wird (Wittgenstein, Brandom)
Erkenntnistheorie: vor allem (meta-erkenntnistheoretische) Fragen zu den Zielen und Erfolgskriterien der Erkenntnistheorie
Existentialismus: vor allem neuere, „analytisch" orientierte Zugänge, mit Schwerpunkt auf den Konsequenzen der Ansätze von Kierkegaard, Nietzsche, Heidegger, Sartre für unser Verständnis von Rationalität und Ethik
Feministische Philosophie: vor allem feministische Erkenntnistheorie, Sprachphilosophie und Metaphysik in der „analytischen" Tradition (z. B. Sally Haslanger)

Institution: Kyoto University
Institute: Graduate School of Human and Environmental Studies
Full name: Hoko Nakagawa
Position: Doctoral student

Talk Title: Der Zusammenhang zwischen der Existenz und der Fremdheit des Seins in Heideggers Denken

Keywords: philosophy, Martin Heidegger, metaphysics, existentialism, phenomenology

Description of Research Interests:

I'm especially interested in Martin Heidegger's difficult conflicts with the forgetfulness of being of traditional metaphysics (though it comes from our tendency of the understanding of being) and occasionally also even with the metaphysical side of his own thinking (e.g. "metaphysical time" of his thought (1929)). For exactly as contrasted with the metaphysical thinking the primal originality of his question of being is radicalized step by step and it's clarified, what kind of characteristic of being leads us to consider it as something to ask particularly.
Concretely speaking, in order to confront traditional metaphysics and to ask the question of being, negative moments (death, nothing, concealment, refusal, etc.) of being play an important part because those make it unstable or going out of itself (ek-statisch) or not self-evident and in this way activate the question of being. Besides, it's remarkable that such moments are connected with our "thrownness (Geworfenheit)".

Institution:	Kyoto University
Institute:	Graduate School of Human and Environmental Studies
Full name:	Yuta Sakazume
Position:	Doctoral Student

Talk Title: Existenzvollzug als der geschichtliche Augenblick

Keywords: Phenomenology/ Ontology/ Heidegger

Description of Research Interests:

Martin Heidegger(1889-1976) is one of the greatest philosophers of the 20th Century. His Philosophy has a huge impact not only on the philosophical world, but also on theology, literature, psychology, sociology, historical study, and so on. I am interested in Heideggers philosophical method, or more specifically, the unique historical phenomenology of his early thoughts and its function in his magnum opus Being and Time. My research project consists of the following two points.

1. To explicate, through his early thoughts, the meaning of “formal indication”, the heart of Heideggers phenomenological method, as the method in order to understand this-one-timeness of our historical being.
2. To define the roll of the formal indication in Being and Time and interpret exactly the meaning of the historicity for “the question of Being”.

In this project it is my purpose to clarify the significance of the historicity in Heideggers philosophy through these considerations.

Programme Session U5
Materials for Energy, Environment, and Life

Chairs: Prof. Susumu KITAGAWA, Kyoto University
Prof. Roger ALBERTO, University of Zurich

Room: University of Zurich Irchel Campus: Y25-H-79

Thursday, 21 November

11:30-11:35 Roger Alberto and Susumu Kitagawa
„Welcome“

11:35-12:00 Hiroshi Imahori, Kyoto University
„Photoinduced charge separation for molecular photovoltaics and therapy”

12:00-12:25 Roger Alberto, University of Zurich
„Homogeneous Water Reduction with Poly-Pyridine-based Cobalt Catalysts”

12:25-12:50 Susumu Kitagawa, Kyoto University
„Porous coordination polymers/metal-organic frameworks for gas biology”

12:50-13:15 Greta Patzke, University of Zurich
„New Strategies for Water Oxidation Catalysts: From Molecules to Nanomaterials”

13:15-13:45 *Lunch (Buffet Y24 Lichthof Galerie H2)*

13:45-14:10 Easan Sivaniah, Kyoto University
„Advanced polymer membranes for liquid and gas separation”

14:10-14:35 Karl-Heinz Ernst, Swiss Federal Laboratories for Materials Science and Technology
“Model studies over model catalysts for CO2 hydrogenation”

14:35-15:00 Franklin Kim, Kyoto University
„Constructing nanomaterials into 3D macrostructures through interfacial polyionic complexation”

15:00-15:25 Hiroshi Kitagawa, Kyoto University
“Elemental strategy for new nanomaterials”

15:25-15:50 Gilles Gasser, University of Zurich
„Photodynamic Therapy“

15:50-16:00 Roland Sigel and Susumu Kitagawa
„Final remarks and Good Bye”

16:00-17:00 Visit to the Alfred Werner Exhibition

Institution: University of Zurich
Department: Inorganic Chemistry
Full name: Roger Alberto
Position: Full Professor

Talk Title: Homogeneous Water Reduction with Poly-Pyridine-based Cobalt Catalysts

Description of Research Interests:

The research in the Alberto group is mainly focused on molecular imaging with technetium complexes and related fundamental organometallic chemistry in water. We are particularly interested in theranostic agents, i.e. the combination of medicinal inorganic compounds with rhenium for therapy and homologues with technetium for diagnosis. We cover the field from the basics up to in vivo studies. Research is done in this context with vitamin B12, quantum dots and magnetic nanoparticles, artificial amino acids, cell nucleus targeting agents and other bioactive carriers. Due to our interest in rhenium chemistry, the group diversified towards photocatalytic water splitting since some years. We developed novel chelators for cobalt and investigated them in depth, e.g. their kinetics and reaction mechanisms with ultrafast ir spectroscopy. Development of long term stable and efficient ligands and complexes for homo- and heterogeneous water splitting are in the focus of current research. The studies are done within a newly founded research focus at the University called LightChEC. The consortium consists of research groups from Physics, Chemistry and the Swiss Federal Laboratories for Materials Science and Technology, EMPA.

Institution: Kyoto University
Institute: Institute for Integrated Cell-Material Sciences (iCeMS)
Full name: Susumu Kitagawa
Position: Director / Professor

Talk Title: Porous coordination polymers/metal-organic frameworks for gas biology

Keywords: Porous Coordination Polymers, Metal-Organic Frameworks

Description of Research Interests:

Professor Susumu Kitagawa was the first to discover and to demonstrate “porosity” for coordination polymer materials with gas sorption experiments (1997), which are called porous coordination polymers (PCPs) or metal-organic frameworks (MOFs). To date, MOFs are classified as a new category of porous materials, as opposed to the conventional classifications of inorganic and carbon materials. His main interest is the functional aspects of MOFs, and he discovered flexible MOFs and coined soft porous crystals, dissimilar to those of other porous crystalline materials. He synthesized a wide variety of MOFs and developed the comprehensive structural and functional chemistry towards practical use in purification, storage, and transportation, separation, and conversion, focusing mainly on gas substances. His recent research is directed to not only industrial application but also biological one, for instance, bioactive gas control for gasbiology.

Institution: Empa
Department: Nanoscale Materials Science
Full name: Karl-Heinz Ernst
Position: Senior Scientist

Talk Title: Model studies over model catalysts for CO2 hydrogenation

Description of Research Interests:

Empa's Molecular Surface Science (MSS) group performs state of the art research on molecular surface systems with the scope of providing more insight into molecular self-assembly, crystallization phenomenaand molecular surface dynamics. Investigating well-defined two-dimensional model systems with scanning tunneling microscopy (STM) and other surface methods allows a better understanding of complex mechanisms in materials science in general and will help to find new approaches in materials and devices design where molecular self-assembly plays an important role.
MSSG is committed to education within the ETH domain and at Swiss univerities and schools in order to i) share our knowledge with the society and ii) to keep our own knowledge updated for best performance in research.

Institution: University of Zurich
Department: Institute of Inorganic Chemistry
Full name: Gilles Gasser
Position: Assistant Professor

Talk Title: Photodynamic Therapy

Keywords: Medicinal Inorganic Chemistry, Inorganic Chemical Biology, Photodynamic Therapy

Description of Research Interests:

Photodynamic Therapy (PDT) is an approved medical technique, which is based on the combination of a photosensitizer and light to induce cell death through the formation of reactive oxygen species. Since PDT offers the opportunity to kill cancer cells with a spatial and temporal control, the severe side-effects observed with well-known chemotherapeutic agents such as Cisplatin are significantly reduced. However, the current photosensitizers on the market are porphyrin-based and suffer from important drawbacks (e.g. tedious synthesis, purification, prolonged light sensitivity for the patient). Our group is currently assessing the use of luminescent ReI and RuII complexes as photosensitizers.

Institution: Kyoto University
Institute: Institute for Integrated Cell-Material Sciences (iCeMS)
Full name: Hiroshi Imahori
Position: Full Professor

Talk Title: Photoinduced charge separation for molecular photovoltaics and therapy

Keywords: Artificial photosynthesis, Organic solar cell, Drug delivery system, Porphyrin, Fullerene

Description of Research Interests:

Our group has been working on artificial photosynthesis and solar energy conversion. In particular, we have demonstrated small reorganization energies of fullerenes, which is favorable for efficient solar energy conversion. Namely, they have made it possible to produce a long-lived charge-separated state with a high quantum yield in donor-acceptor systems. The elucidation of basic electron transfer properties of fullerenes has provided us with an important basis for high performance of fullerene-based organic electronics. Meanwhile, the shortage of fossil fuels and the degradation of the global environment have focused research attention on organic solar cells. Organic solar cells would be promising candidates if they fulfill their promising potential. Our group has been creating various organic solar cells and a power conversion efficiency of >10% has been achieved on our porphyrin-sensitized solar cells. At the WPI-iCeMS, we have initiated new multidisciplinary research projects based on organic chemistry, photochemistry, and cell biology.

Institution: Kyoto University
Institute: Institute for Integrated Cell-Material Sciences (iCeMS)
Full name: Franklin Kim
Position: iCeMS Kyoto Fellow / Independent assistant professor

Talk Title: Constructing nanomaterials into 3D macrostructures through interfacial polyionic complexation

Keywords: Nano-chemistry, self-assembly, interfacial assembly, graphene

Description of Research Interests:

Our research group is focused in the assembly of various nanomaterials and macromolecules into functional nano/mesoscale structures, with emphasis in applications for cell-biological studies.
Nanomaterials in general show unique physical and chemical properties which can be useful in many different ways. However, one of the main challenges in their practical applications is constructing the small building blocks into functional macrostructures which can be integrated into conventional real-life devices. To address this issue, we are exploring various assembly methods. For example, we demonstrated that negatively charged nanosheets could be constructed into architectures such as thin film, fiber, and capsules through polyionic complexation with oppositely charged polyelectrolytes at air-liquid and liquid-liquid interfaces. The assembled structures are further explored for biological applications such as cell culture scaffolds and sensors.

Institution: Kyoto University
Institute: Solid-state Chemistry
Full name: Hiroshi Kitagawa
Position: Full Professor

Talk Title: Elemental strategy for new nanomaterials

Keywords: Molecular conductor, Solid-state protonics, Nanomaterials for hydrogen storage & catalysis

Description of Research Interests:

Research in the Kitagawa group is solid-state chemistry, including inorganic chemistry, coordination chemistry, and nano-science. I have studied 1) molecular conductors including π-d hybrid, MX/MMX chains, and electron-proton coupled systems, 2) low-dimensional electron/spin system situated in dimensional crossover region (ladders and tubes), 3) solid-state protonics and nano-ionics using metal-organic frameworks (MOFs) or AgI nanoparticles, 4) functional MOFs, 5) nano alloys for catalysis and hydrogen storage. In my on-going project (JST/CREST) on "Efficient Utilization of Elements", I am to establish the inter-element-fusion science to create innovative functional materials where the immiscible metallic elements in the bulk state are mixing at the atomic level using nanotechnology. I promote ambitious and challenging materials research with a multidisciplinary integration of physics, chemistry, engineering, and materials science.

Institution: University of Zurich
Department: Inorganic Chemistry
Full name: Greta R. Patzke
Position: Associate Professor

Talk Title: New Strategies for Water Oxidation Catalysts: From Molecules to Nanomaterials

Description of Research Interests:

Our research activities are focused on the development of new materials for tomorrow's major challenges, such as deprivation of fossil fuels, environmental pollution and global healthcare. We work on the targeted design of low-cost oxide materials to address these issues with polyoxometalates (POMs) and nanoscale oxides as flexible building blocks. Visible-light-driven water oxidation for artificial photosynthesis is the main driving force for our straightforward synthetic approaches to transition metal-based POMs and spinel-type oxides, preferably containing Co and Mn as active centers. As a complementary strategy towards clean solar fuels, we furthermore optimize ceria materials for thermochemical water splitting.

Institution: University of Zurich
Department: Inorganic Chemistry
Full name: Roland K. O. Sigel
Position: Associate Professor

Keywords: RNA/DNA; metal ions; bioinorganic chemistry; NMR; smFRET; ribozyme/riboswitch

Description of Research Interests:

Our scientific interests center around the manifold aspects of metal ion binding to large nucleic acids, i.e. how they guide folding, structure and catalysis. Most research in our lab currently focuses on the structural and catalytic role of metal ions in nucleic acids, especially group II intron ribozymes. Riboswitches, which are gene regulatory elements occurring mostly in bacteria, as well as specific structural motives like three-way junctions and quadruplex structures, are further topics of our research. As bioinorganic chemists, we apply a broad combination of technical and analytical tools, including (bio)chemical syntheses, single molecule fluorescence (smFRET), and NMR spectroscopy.

Institution: Kyoto University
Institute: Institute for Integrated Cell-Material Sciences (iCeMS)
Full name: Easan Sivaniah
Position: Associate Professor

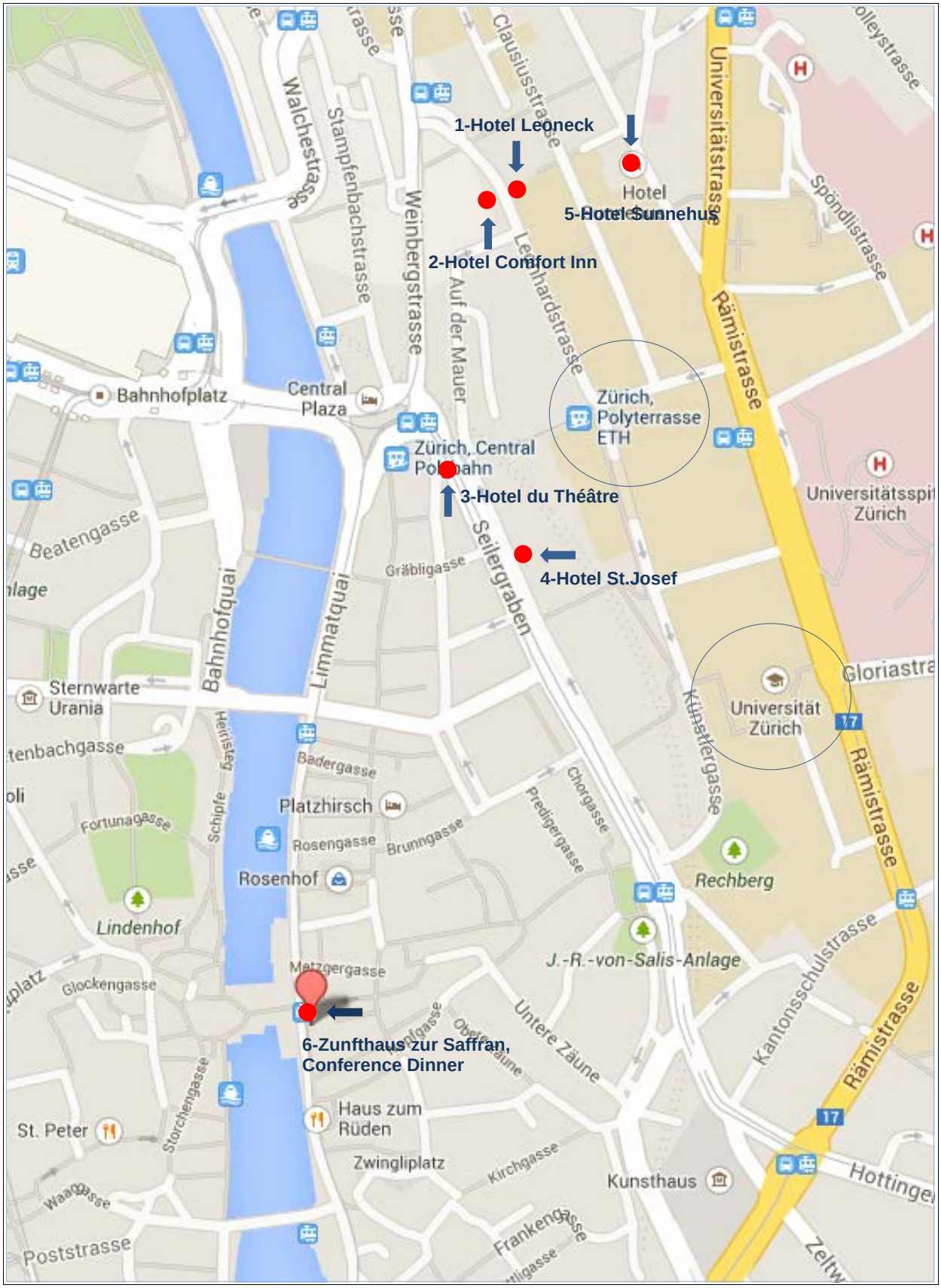
Talk Title: Advanced polymer membranes for liquid and gas separation

Keywords: Materials for Sustainability, Energy Efficiency and Cell Studies

Description of Research Interests:

The Sivaniah group manipulates materials with synthetic and biological approaches whilst seeking to establish a viable interface between the two.
On example is the controlled generation of spatially variant stiffness in 2D gels to interrogate cell mechanotaxis (*Adv. Mater.* 24, 6059–6064, 2012). Moreover our group studies the generation of bioplastics using bacterial and enzymatic tools (Adv. Mater. 25, 2661-2665, 2013). Through such works, we will develop practical principles that can support our vision of generating industrially relevant processes via bionanotechnology.
Although soft-matter bionanotechnology forms one key part of our research, we mix both synthetic and biosynthetic materials development (with a current focus in achieving energy efficiency and environmental targets in separation technology). Examples include a transformative platform technology for generating nanoporous materials (*Nature Materials* 11, 53–57, 2012) and high performance microporous membranes for separation of important environmental gases (Nature Commun. DOI: 10.1038/ncomms2942 (2013))

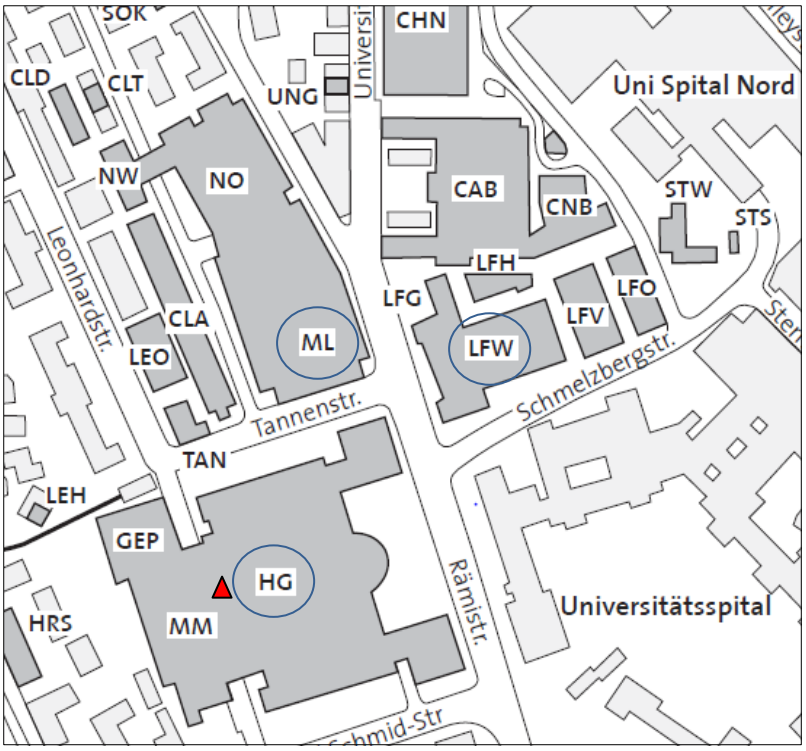
Overview Hotels, Plenaries and Conference Dinner



1-Hotel Leoneck, Leonhardstrasse 6, 8001 Zurich
2-Hotel Comfort Inn, Leonhardstrasse 1, 8001 Zurich
3-Hotel du Théâtre, Seilergraben 69, 8001 Zurich
4-Hotel St. Josef, Hirschengraben 64/68, 8001 Zurich
5-Hotel Sunnehus, Sonneggstrasse 17, 8006 Zurich
6-Zunfthaus zur Saffran, Limmatquai 54, 8001 Zurich

ETH Zurich Zentrum Campus

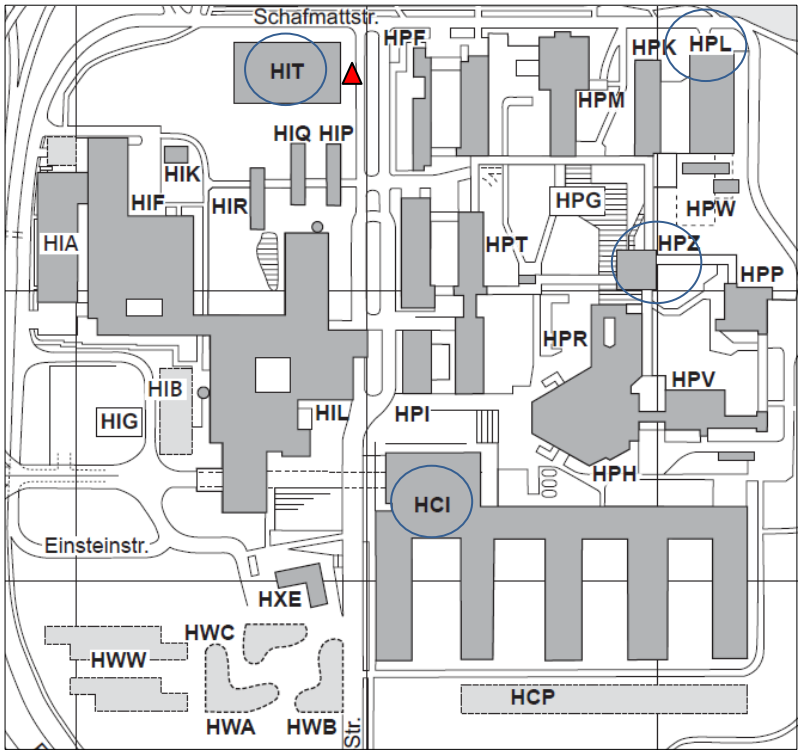
Parallel Sessions building locations: HG, ML and LFW



▲ Bus stop C-floor accessible by elevator (underground passage)

ETH Zurich Hönggerberg Campus

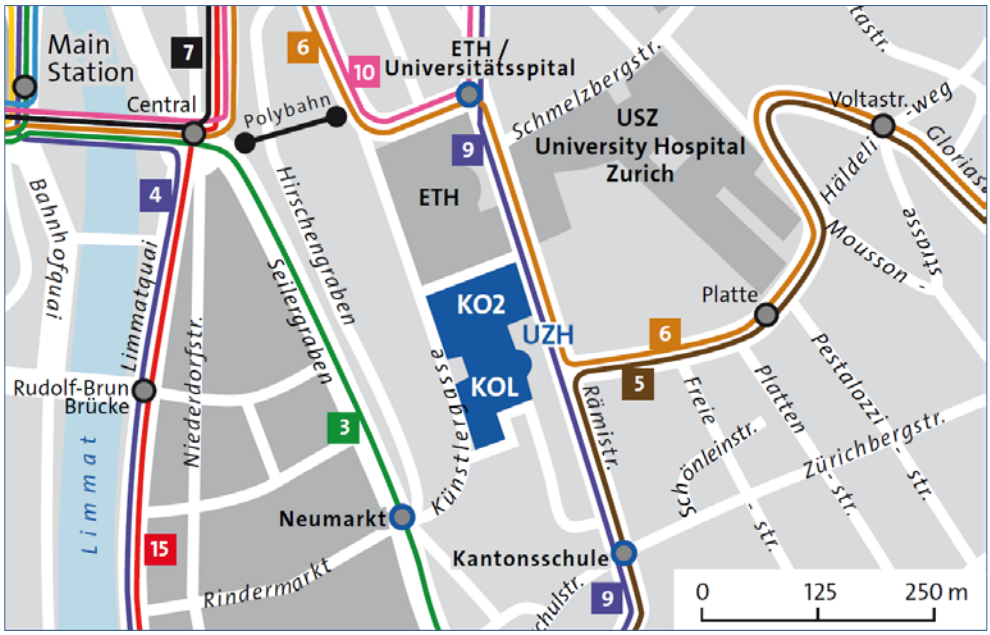
Parallel Sessions building locations: HPL, HIT, HPZ and HCI



▲ Bus stop in front of HIT building

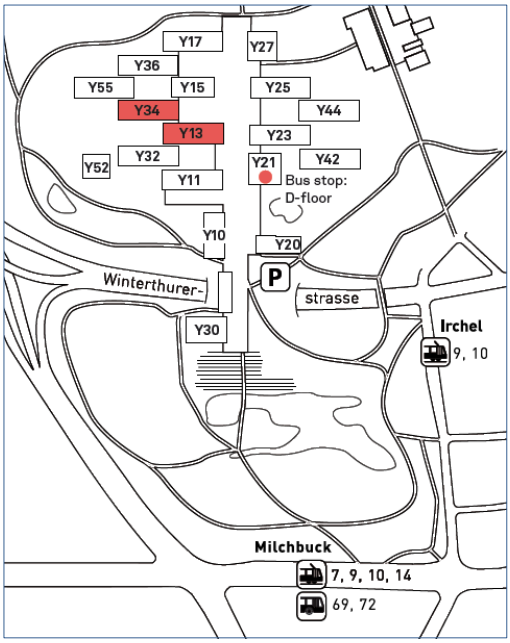
University of Zurich Zentrum Campus

Parallel Sessions building locations: KOL and KO2 for Closing Plenary



University of Zurich Irchel Campus

Parallel Sessions building locations: Y13, Y24/25, Y34



General Information

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WLAN access will be available throughout all campuses and symposium locations at ETH Zurich and the University of Zurich. For access please proceed as detailed below.

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In your WLAN selection choose “public”
Open your internet browser, you are automatically connected to the login page of ETH Zurich (enter.ethz.ch/welcome) and can enter the following:
Login: ethzurich
Password: swisskyoto

University of Zurich
Login on: https://www.uzh.ch/id/cl/dl/admin/ssl-dir/guestaccounts/index.php
Event-ID: 13SKS1438
Help: http://support.uzh.ch, e-mail: support@id.uzh.ch, phone +41 44 634 33 33

Conference Office and Contacts

ETH Zurich Zentrum Campus
During Morning Session 21 November: Registration Desk outside HG F30 in ETH Main Building, Rämistrasse 101
Afterwards: Conference Office HG F13 in ETH Main Building

Contact person: Lucia Arpagaus 044 632 31 94 or 079 760 49 90

ETH Zurich Hönggerberg Campus
Conference Office: HIT Building, E-Floor outside room HIT E51

Contact person: Rahel Byland 079 713 92 77
Christina van Ligten 076 503 01 10

University of Zurich
Welcome Desk at Main Entrance of Main Building KOL, Rämistrasse 71

Contact person: Xenia Goślicka 044 634 22 06

Participants List

Status	First name	Last name	Institution	Session
P	Hiroshi	ABE	Kyoto University	Existentialismus heute
VIP	Karl	ABERER	EPF Lausanne	Opening
P	Reza	ABHARI	ETH Zurich	Energy
P	Adriano	AGUZZI	University of Zurich	Molecular and Cellular Basis of Development, Tissue Repair and Disease
R	Ismail	ALBAYRAK	ETH Zurich	Natural Hazards and Disaster Prevention Research
P	Roger	ALBERTO	University of Zurich	Materials for Energy, Environment, and Life
P	Frederic	ALLAIN	ETH Zurich	Magnetic Resonance
R	Patrick	ALTMANN	IBM Research Zurich	Nanoelectronics and Nanophotonics
P	Göran	ANDERSSON	ETH Zurich	Energy
P	Shinya	AOI	Kyoto University	Artificial Intelligence and Robotics
R	Gen	AOTO	Toyota AG	Energy
P	Kazushi	AOYAMA	Kyoto University	Condensed Matter Physics
S	Lucia	ARPAGAUS	ETH Zurich	staff
P	Haruyuki	ATOMI	Kyoto University	Organic Chemistry and Materials Chemistry
R	Christian	AUEL	ETH Zurich	Natural Hazards and Disaster Prevention Research
VIP	Jean-Luc	BARRAS	Swiss National Science Foundation	Funding
P	Bertram	BATLOGG	ETH Zurich	Condensed Matter Physics
R	Cristina	BENEA	ETH Zurich	Nanoelectronics and Nanophotonics
P	Aeneas	BERNARDI	ETH Zurich	Molecular and Cellular Basis of Development, Tissue Repair and Disease
R	Magali	BEUCHAT	University of Zurich	Existentialismus heute
R	Michael	BIELMANN	The Bridge Bielmann Consulting	Energy
P	Gianni	BLATTER	ETH Zurich	Condensed Matter Physics
P	Hannes	BLEULER	EPF Lausanne	Artificial Intelligence and Robotics
P	Jeffrey	BODE	ETH Zurich	Organic Chemistry and Materials Chemistry
R	Robert	BOES	ETH Zurich	Natural Hazards and Disaster Prevention Research
P	Colombo	BOLOGNESI	ETH Zurich	Nanoelectronics and Nanophotonics
R	Paul	BÖRNER	ETH Zurich	Product Development and Manufacturing
P	Konstantinos	BOULOUCHOS	ETH Zurich	Energy
R	Keiko	BRAND	University of Zurich	Virtual Ape
R	Mollie	BROOKS	University of Zurich	Plant and Environment
S	Simone	BUCHER	ETH Zurich	staff
S	Rahel	BYLAND	ETH Zurich	staff
P	Ines	CARRERA	University of Zurich	Virtual Ape
R	Alexandra	CIORCIARO	University of Zurich	Existentialismus heute
R	Diego	CITRAN	University of Zurich	Finance and Risk
P	Frederic	COURBIN	EPF Lausanne	Astrophysics
P	Leo	DEGIORGI	ETH Zurich	Condensed Matter Physics
R	Karl	DEIBEL	ETH Zurich	Product Development and Manufacturing
P	Hugo	DIL	EPF Lausanne	Condensed Matter Physics
P	Andreas	EBERHERR	Heidenhain	Product Development and Manufacturing
VIP	Ralph	EICHLER	ETH Zurich	Opening
P	Klaus	ENSSLIN	ETH Zurich	Condensed Matter Physics
P	Matthias	ERNST	ETH Zurich	Magnetic Resonance
P	Karl-Heinz	ERNST	EMPA	Materials for Energy, Environment, and Life
P	Jerome	FAIST	ETH Zurich	Nanoelectronics and Nanophotonics
P	Walter	FARKAS	University of Zurich	Finance and Risk
P	Markus	FÄSSLER	Heidenhain	Product Development and Manufacturing
R	Parviz	FATEHI	University of Zurich	Plant and Environment
P	Manfred	FIEBIG	ETH Zurich	Condensed Matter Physics
VIP	Andreas	FISCHER	University of Zurich	Opening/Closing
P	Holger	FREY	University of Zurich	Natural Hazards and Disaster Prevention Research
P	Kenji	FUJIMOTO	Kyoto University	Artificial Intelligence and Robotics
P	Satoshi	FUJIMOTO	Kyoto University	Condensed Matter Physics
P	Takashi	FUJITA	Kyoto University	Molecular and Cellular Basis of Development, Tissue Repair and Disease
P	Mitsuru	FUNATO	Kyoto University	Nanoelectronics and Nanophotonics
P	Irene	GARONNA	University of Zurich	Plant and Environment
P	Gilles	GASSER	University of Zurich	Materials for Energy, Environment, and Life
R	Markus	GEISER	ETH Zurich	Nanoelectronics and Nanophotonics
P	Dima	GESHKENBEIN	ETH Zurich	Condensed Matter Physics
P	Jaboury	GHAZOUL	ETH Zurich	Plant and Environment
S	Xenia	GOSLICKA	University of Zurich	staff
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R	Thibaud	GRUBER	Université de Neuchâtel	Virtual Ape
P	Wilhelm	GRUISSEM	ETH Zurich	Plant and Environment
R	Robert	GUERY	Mobifit GmbH	Energy
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P	Ikuko	HARA-NISHIMURA	Kyoto University	Plant and Environment
R	William	HARTLEY	ETH Zurich	Astrophysics
R	Masaomi	HATAKEYAMA	Kyoto University	Plant and Environment
P	Jean-Michel	HATT	University of Zurich	Virtual Ape
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P	Volker	HELM	ETH Zurich	Artificial Intelligence and Robotics
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S	Patricia	HEUBERGER	ETH Zurich	staff
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R	Borislav	HINKOV	ETH Zurich	Nanoelectronics and Nanophotonics
P	Eishi	HIRASAKI	Kyoto University	Virtual Ape
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P	Pavel	HORA	ETH Zurich	Product Development and Manufacturing
P	Stefan	HÖRTENSTEINER	University of Zurich	Plant and Environment
P	Sebastian	HUBER	ETH Zurich	Condensed Matter Physics
P	Anton	HÜGLI	Unviersity of Basel	Existentialismus heute
R	Alik	HUSEYNOV	University of Zurich	Virtual Ape
P	Soichi	IBARAKI	Kyoto University	Product Development and Manufacturing
P	Shuhei	ICHIKAWA	Kyoto University	Nanoelectronics and Nanophotonics
P	Tatsushi	IGAKI	Kyoto University	Molecular and Cellular Basis of Development, Tissue Repair and Disease
P	Hiroaki	IKEDA	Kyoto University	Condensed Matter Physics

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P	Atac	IMAMOGLU	ETH Zurich	Nanoelectronics and Nanophotonics
S	Yasmine	INAUEN	University of Zurich	staff
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P	Yuji	ISAGI	Kyoto University	Plant and Environment
P	Kenji	ISHIDA	Kyoto University	Condensed Matter Physics
P	Keiichi	ISHIHARA	Kyoto University	Energy
P	Ryota	ISHII	Kyoto University	Nanoelectronics and Nanophotonics
P	Takao	ITIOKA	Kyoto University	Plant and Environment
R	Norimasa	IWANAMI	Max-Planck Institute	Molecular and Cellular Basis of Development, Tissue Repair and Disease
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R	Achint	JAIN	ETH Zurich	Nanoelectronics and Nanophotonics
P	S	JAUMANN	Industrie	Product Development and Manufacturing
P	Gunnar	JESCHKE	ETH Zurich	Magnetic Resonance
R	Pierre	JOUY	ETH Zurich	Nanoelectronics and Nanophotonics
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P	Hironori	KAJI	Kyoto University	Magnetic Resonance
R	Hiroyuki	KAKUI	University of Zurich	Plant and Environment
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P	Jean-Paul	KNEIB	EPF Lausanne	Astrophysics
R	Mathias	KNEUBÜHLER	University of Zurich	Plant and Environment
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P	Ryotaro	KONOIKE	Kyoto University	Nanoelectronics and Nanophotonics
P	Daisuke	KONO	Kyoto University	Product Development and Manufacturing
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P	Sebastian	KOZERKE	ETH Zurich	Magnetic Resonance
P	Andreas	KRAUSE	ETH Zurich	Artificial Intelligence and Robotics
P	Wilhelm	KREK	ETH Zurich	Molecular and Cellular Basis of Development, Tissue Repair and Disease
P	Reto	KREUZER	ETH Zurich	Opening
P	Hiroshi	KUDO	Kyoto University	Plant and Environment
P	Dominique	KUENZLE	University of Zurich	Existentialismus heute
R	Svitlana	KURINNA	ETH Zurich	Molecular and Cellular Basis of Development, Tissue Repair and Disease
R	Sarah	KURMULIS	ETH Zurich	Nanoelectronics and Nanophotonics
R	Zachary	LAPIN	ETH Zurich	Nanoelectronics and Nanophotonics
P	Jan	LAUE	ETH Zurich	Natural Hazards and Disaster Prevention Research
R	Matthias	LEISS	ETH Zurich	Finance and Risk
R	Reik	LEITERER	University of Zurich	Plant and Environment
R	Raphaël	LELOUVIER	ETH Zurich	Artificial Intelligence and Robotics
R	Mario	LENZ	ETH Zurich	Advanced Nano-/Biotechnology
R	Peter	LIU	ETH Zurich	Nanoelectronics and Nanophotonics
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P	Yoshiteru	MAENO	Kyoto University	Condensed Matter Physics
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R	Masakazu	MATSUBARA	ETH Zurich	Condensed Matter Physics
P	Atsushi	MATSUBARA	Kyoto University	Product Development and Manufacturing
P	Yuji	MATSUDA	Kyoto University	Condensed Matter Physics
P	Michiyuki	MATSUDA	Kyoto University	Molecular and Cellular Basis of Development, Tissue Repair and Disease
VIP	Hiroshi	MATSUMOTO	Kyoto University	Opening
P	Fumitoshi	MATSUNO	Kyoto University	Artificial Intelligence and Robotics
P	Taro	MATSUO	Kyoto University	Astrophysics
P	Takashi	MATSUYAMA	Kyoto University	Energy
P	Josef	MAYR	ETH Zurich	Product Development and Manufacturing
P	Marco	MAZZOTTI	ETH Zurich	Energy
P	Benjamin Craig	MCLELLAN	Kyoto University	Energy
P	Mirko	MEBOLDT	ETH Zurich	Product Development and Manufacturing
P	Beat	MEIER	ETH Zurich	Magnetic Resonance
R	Linus	MEIER	ETH Zurich	Product Development and Manufacturing
P	Michael	MEYER	ETH Zurich	Astrophysics
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P	Tsuyoshi	MISAWA	Kyoto University	Energy
VIP	Michiaki	MISHIMA	Kyoto University	Closing
R	Lucas	MOHN	University of Zurich	Plant and Environment
P	Ben	MOORE	University of Zurich	Astrophysics
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P	Naoki	MORIMOTO	Kyoto University	Virtual Ape
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P	Daniel	MÜLLER	ETH Zurich	Advanced Nano-/Biotechnology
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P	Takashi	NAGASAWA	Kyoto University	Molecular and Cellular Basis of Development, Tissue Repair and Disease
P	Shigekazu	NAGATA	Kyoto University	Molecular and Cellular Basis of Development, Tissue Repair and Disease
P	Akira	NAGATANI	Kyoto University	Plant and Environment

P	Hoko	NAKAGAWA	Kyoto University	Existentialismus heute
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P	Koichi	NAKAMURA	Kyoto University	Advanced Nano-/Biotechnology
P	Hiroaki	NAKANISHI	Kyoto University	Artificial Intelligence and Robotics
P	Masato	NAKATSUKASA	Kyoto University	Virtual Ape
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R	Selamnesh	NIDA	ETH Zurich	Nanoelectronics and Nanophotonics
P	Shun	NISHIDE	Kyoto University	Artificial Intelligence and Robotics
P	Kazuyoshi	NISHIJIMA	Kyoto University	Natural Hazards and Disaster Prevention Research
P	Masaya	NISHIMOTO	Kyoto University	Nanoelectronics and Nanophotonics
P	Takeshi	NISHIMURA	Kyoto University	Virtual Ape
S	Aoi	NISHIMURA	Kyoto University	staff
P	Yoshihiko	NISHIYAMA	Kyoto University	Finance and Risk
P	Hiroki	NIWA	Kyoto University	Nanoelectronics and Nanophotonics
P	Masayoshi	NOBUKAWA	Kyoto University	Astrophysics
P	Susumu	NODA	Kyoto University	Nanoelectronics and Nanophotonics
P	Daisaku	NOGAMI	Kyoto University	Astrophysics
S	Tomoe	NOJIRI	Kyoto University	staff
S	Takahiro	OKAMOTO	Kyoto University	staff
P	Jürg	OSTERWALDER	University of Zurich	Condensed Matter Physics
R	Robin	OSWALD	ETH Zurich	Opening
P	Keiichi	OTA	Kyoto University	Product Development and Manufacturing
R	Keita	OTANI	ETH Zurich	Nanoelectronics and Nanophotonics
R	Shotaro	OTSUKA	European Molecular Biology Laboratory	Advanced Nano-/Biotechnology
P	Makoto	OUCHI	Kyoto University	Organic Chemistry and Materials Chemistry
P	Takuya	OZAKI	Kyoto University	Nanoelectronics and Nanophotonics
P	Periklis	PANTAZIS	ETH Zurich	Advanced Nano-/Biotechnology
P	Marc	PAOLELLA	University of Zurich	Finance and Risk
P	Hyung Gyu	PARK	ETH Zurich	Advanced Nano-/Biotechnology
R	Timothy	PATEY	ABB Corporate Research	Energy
P	Greta	PATZKE	University of Zurich	Materials for Energy, Environment, and Life
R	Sarah	PELLKOFER	University of Zurich	Plant and Environment
R	Rafayel	PETROSYAN	ETH Zurich	Advanced Nano-/Biotechnology
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P	Klaas	PRUESSMANN	ETH Zurich	Magnetic Resonance
P	Freddy	RADTKE	EPF Lausanne	Molecular and Cellular Basis of Development, Tissue Repair and Disease
P	Dieter	RICKENMANN	WSL	Natural Hazards and Disaster Prevention Research
R	Sabine	RIEDI	ETH Zurich	Nanoelectronics and Nanophotonics
P	Roland	RIEK	ETH Zurich	Magnetic Resonance
R	Fabio	RINALDI	University of Zurich	Artificial Intelligence and Robotics
P	Henrik	RONNOW	EPF Lausanne	Condensed Matter Physics
R	Markus	RÖSCH	ETH Zurich	Nanoelectronics and Nanophotonics
P	Steffen	ROSS	University of Zurich	Virtual Ape
P	Christian	RÜEGG	Paul Scherrer Institut	Condensed Matter Physics
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R	Romana	RUTZ	ETH Zurich	Energy
S	Romana	RUTZ	ETH Zurich	staff
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R	Philippe	SANER	University of Zurich	Plant and Environment
P	Aki-Hiro	SATO	Kyoto University	Energy
P	Aki-Hiro	SATO	Kyoto University	Finance and Risk
R	Michika	Satoshi	University Hospital Basel	Molecular and Cellular Basis of Development, Tissue Repair and Disease
P	Mitsuo	SAWAMOTO	Kyoto University	Organic Chemistry and Materials Chemistry
VIP	Tetsuo	SAWARAGI	Kyoto University	Closing
R	Giacomo	SCALARI	ETH Zurich	Nanoelectronics and Nanophotonics
P	Michael	SCHAEPMAN	University of Zurich	Plant and Environment
P	Christian	SCHAFFNER	ETH Zurich	Energy
R	Jörg	SCHANZE	IBM Schweiz	Energy
P	Kevin	SCHAWINSKI	ETH Zurich	Astrophysics
P	Florian	SCHIESTL	University of Zurich	Plant and Environment
P	Andreas	SCHILLING	University of Zurich	Condensed Matter Physics
P	Arno	SCHLÜTER	ETH Zurich	Energy
P	Dieter	SCHLÜTER	ETH Zurich	Organic Chemistry and Materials Chemistry
P	Bernhard	SCHMID	University of Zurich	Plant and Environment
P	Manfred	SCHMID	ETH Zurich	Product Development and Manufacturing
R	Michael	SCHMIDT	University of Zurich	Plant and Environment
P	Michael	SCHMIDT	University of Zurich	Plant and Environment
VIP	Gerhard	SCHMITT	ETH Zurich	Closing
P	Thorsten	SCHMITT	Paul Scherrer Institut	Condensed Matter Physics
R	Rolf	SCHMITZ	Swiss Federal Office of Energy	Energy
P	Timm	SCHRÖDER	ETH Zurich	Molecular and Cellular Basis of Development, Tissue Repair and Disease
P	Martin	SCHWEIZER	ETH Zurich	Finance and Risk
R	Khalid	SEDEEK	University of Zurich	Plant and Environment
P	Badmavady	SEGARANE	Unviersity Hospital Zurich	Opening
R	Takuya	SEGAWA	ETH Zurich	Magnetic Resonance
P	Atsuko	SEHARA-FUJISAWA	Kyoto University	Molecular and Cellular Basis of Development, Tissue Repair and Disease
P	Herbert	SHEA	EPF Lausanne	Artificial Intelligence and Robotics
P	Takasada	SHIBAUCHI	Kyoto University	Condensed Matter Physics
P	Akira	SHIMIZU	Kyoto University	Molecular and Cellular Basis of Development, Tissue Repair and Disease
P	Kentaro	SHIMIZU	University of Zurich	Plant and Environment
R	Rie	SHIMIZU-INATSUGI	University of Zurich	Plant and Environment
P	Hirofumi	SHINTAKU	Kyoto University	Advanced Nano-/Biotechnology
VIP	Roland	SIEGWART	ETH Zurich	Opening
P	Roland	SIGEL	University of Zurich	Materials for Energy, Environment, and Life
P	Manfred	SIGRIST	ETH Zurich	Condensed Matter Physics
P	Easan	SIVANIAH	Kyoto University	Materials for Energy, Environment, and Life
R	Simon	SKOK	ETH Zurich	Finance and Risk
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P	Mete	SONER	ETH Zurich	Finance and Risk
R	Ziyul	SONG	EurasiaTour.Info	Natural Hazards and Disaster Prevention Research
R	Martina	SPAHNI	IWF	Product Development and Manufacturing
P	Nicola	SPALDIN	ETH Zurich	Condensed Matter Physics
R	Etienne	STAEHELIN	University of Zurich	Existentialismus heute
P	Andre	STUDART	ETH Zurich	Organic Chemistry and Materials Chemistry
R	Andreas	STEMMER	ETH Zurich	Nanoelectronics and Nanophotonics

R	Bozidar	STOJADINOVIC	ETH Zurich	Natural Hazards and Disaster Prevention Research
P	Jun	SUDA	Kyoto University	Nanoelectronics and Nanophotonics
S	Tadashi	SUGIHARA	Kyoto University	staff
S	Keiko	SUGISAKA	Kyoto University	staff
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R	Nicolò	SUZANI	Università della Svizzera Italiana	Artificial Intelligence and Robotics
P	Junji	TAKABAYASHI	Kyoto University	Plant and Environment
VIP	Yuko	TAKAHASHI	JSPS	Funding
R	Hiroki	TAKAHASHI	ETH Zurich	Magnetic Resonance
P	Yoshiko	TAKAHASHI	Kyoto University	Molecular and Cellular Basis of Development, Tissue Repair and Disease
P	Ryosuke	TAKAHASHI	Kyoto University	Molecular and Cellular Basis of Development, Tissue Repair and Disease
P	Kaoru	TAKARA	Kyoto University	Natural Hazards and Disaster Prevention Research
P	Muneo	TAKATANI	Kyoto University	Molecular and Cellular Basis of Development, Tissue Repair and Disease
R	Junko	TAKEUCHI	World Intellectual Property Organization	Finance and Risk
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P	Koichiro	TANAKA	Kyoto University	Nanoelectronics and Nanophotonics
P	Josef	TEICHMANN	ETH Zurich	Finance and Risk
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P	Tetsuo	TEZUKA	Kyoto University	Energy
P	Kazuyuki	TAKEDA	Kyoto University	Magnetic Resonance
P	Hidehito	TOCHIO	Kyoto University	Magnetic Resonance
P	Norihiro	TOKITOH	Kyoto University	Organic Chemistry and Materials Chemistry
P	Thessa	TORMANN	ETH Zurich	Natural Hazards and Disaster Prevention Research
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R	Federico	VALMORRA	ETH Zurich	Nanoelectronics and Nanophotonics
R	Robert	VAN LIGTEN	Vanell Associates	Energy
S	Christina	VAN LIGTEN	ETH Zurich	staff
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R	Isabelle	VAUTRAVERS	Sanitas Health Insurance	Finance and Risk
R	Cameron	WAGG	University of Zurich	Plant and Environment
P	Andreas	WALLRAFF	ETH Zurich	Nanoelectronics and Nanophotonics
P	Dai	WATANABE	Kyoto University	Molecular and Cellular Basis of Development, Tissue Repair and Disease
P	Konrad	WEGENER	ETH Zurich	Product Development and Manufacturing
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P	Eduardo	WEINGÄRTNER	ETH Zurich	Product Development and Manufacturing
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R	John	WEISSSMANN	University of Zurich	Virtual Ape
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P	Helma	WENNEMERS	ETH Zurich	Organic Chemistry and Materials Chemistry
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P	Oleg	YAZYEV	EPF Lausanne	Condensed Matter Physics
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