ETH zürich

ICB seminar series 2015/16
chairman: Prof. Dr. Andrew deMello

MICROSCALE ELECTROKINETICS – FROM ENHANCED BIOCHEMICAL ANALYSIS TO CONFIGURABLE MICROSTRUCTURES

Prof. Dr. Moran Bercovici

Faculty of Mechanical Engineering, Russell Berrie Nanotechnology Institute, Technion

ETH Hönggerberg, 30/11/2016
HCI J 4, 15.00 h

The Seminar will be followed by an Apéro

Abstract. The unique physicochemistry of fluids at the microscale holds both challenges in the understating of basic phenomena and opportunities in leveraging these phenomena toward new technologies. My team's work at Technion's Microfluidic Technologies Laboratory combines experimental, analytical, and computational tools to study microfluidic problems characterized by coupling between fluid mechanics, electric fields, chemical reactions, and biological processes. A central theme in our lab is the development of novel lab-on-a-chip techniques, devices, and assays for research and clinical applications in life and medical sciences. In the first part of the seminar, I will present our work on leveraging isotachophoresis (an electrokinetic focusing technique) to accelerate reaction kinetics by several orders of magnitude, enabling rapid and highly sensitive biosensing assays. In the second part, I will present our ongoing work studying the interaction between non-uniform electroosmotic flows and elastic surfaces, with the goal of realizing dynamically configurable microstructures.

Speaker highlights. Moran Bercovici is an Assistant Professor in Mechanical Engineering at Technion and heads the Microfluidic Technologies Laboratory. His research focuses on the physics of microscale transport phenomena, with applications to life and medical sciences. He received his BSc and MSc from the Faculty of Aerospace Engineering at Technion. Between 2001 and 2006 he was a Research Engineer at RAFAEL – Advanced Defense Systems, working on experimental and computational aerodynamics. He received his Ph.D. from Stanford University (2011), and spent a short postdoctoral period in the Department of Urology at Stanford School of Medicine before joining Technion. He is the recipient of the 2015 ERC starting award, the Krill Prize for Excellence in Scientific Research from the Wolf Foundation, and the Yanai Prize for Excellence in Academic Education.

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