

Semester project, Bachelor Thesis, Master thesis

Optimization of SWNT growth for integration into nanodevices

Motivation

Single Walled Carbon Nanotubes (SWNTs) possess many outstanding properties promising revolutionary applications in the near future. The efficiency of production of these devices can be dramatically increased if the nanotubes with targeted properties are grown.

Goal

This project will be focused on synthesis and characterization of single walled carbon nanotubes utilizing CVD systems localized at the Binnig and Rohrer Nanotechnology Center in Rüschlikon/Zürich.



Scheme of CNTs (black line) grown on MEMS structures dedicated for dry CNT transfer into future devices.

Learning Opportunities

Become familiar with catalytic CVD methods for SWNT synthesis. Hands-on experimental work in the BRNC cleanrooms. Use of state-of-the-art characterization methods and equipment (Raman spectroscopy, SEM, AFM).

Work Description

1. Ferritin, catalyst precursor will be adsorbed onto MEMS structures and transformed to catalyst particles by calcination prior to SWNT growth.
2. SWNTs will be synthesized by CVD method under varying conditions.
3. Visualization and characterization of the nanotubes by SEM and Raman spectroscopy.
4. Writing and defending your scientific report.

Your profile

You are a student of micro process engineering, mechanical engineering, material science or chemistry with an interest in CVD, carbon nanotube synthesis and nanotechnology. You should be able to work independently in an organized manner. Patience, persistence, responsibility, creativity and enjoying working in laboratory and with technical equipment are desired personal qualities.

Contact

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