

Semester project, Bachelor Thesis, Master thesis

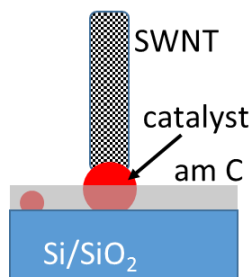
Optimization of SWNT synthesis from ferritin precursors embedded in amorphous carbon film

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 the optimization of conditions for synthesis of SWNTs from ferritin precursors embedded in amorphous carbon film utilizing CVD equipment localized at the Binnig and Rohrer Nanotechnology Center in Rüschlikon/Zürich. The main goal is to reach narrow diameter distribution of CNTs at acceptable yield.



SWNTs grow only from uncovered catalyst.

Learning Opportunities

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

Work Description

1. Ferritin, catalyst precursor will be adsorbed onto substrates and transformed to catalyst particles by calcination prior to SWNT growth.
2. Catalyst precursor will be covered by thin layer of amorphous carbon.
3. SWNTs will be synthesized by CVD method under various conditions.
4. Visualization and characterization of the nanotubes by SEM, AFM and Raman spectroscopy.
5. Writing and defending of a 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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