Personal information

05.01.1968 Born in Mannheim, Germany
Unmarried

Education

10/1989-1995 Chemistry undergraduate and graduate studies, Universität (TH) Karlsruhe
1/1995 Diploma Thesis in Chemical Physics, AG Prof.Kappes
10/1995-2000 Research staff member at Institut für Physikalische Chemie, AG Prof. Kappes
10/2000 Dr. rer. nat (PhD), magna cum laude
since 1/2001 Research staff member at Institut für Nanotechnologie (INT), KIT, Campus Nord, AG Prof. Kappes
7/2002-11/2002 Research stay in the group of Prof. Dr. Smalley at the Chemistry Department, Rice University Houston Texas

PhD Thesis

„Spektroskopie an Fullerenen, Fullerendimeren und Kohlenstoffnanoröhren“ (Spectroscopy of Fullerenes, Fullerenedimers, Carbon nanotubes), Thesis advisor: Prof. Dr. M. M. Kappes

C_{60}, higher fullerenes up to C_{82}, fullereneoxides ($C_{60}O$, $C_{70}O$) and fullerenedimers connected via oxygen ($C_{120}O$, $C_{130}O$) were produced in isomerically pure form and characterized with ^{13}C NMR, UV-vis-NIR-, IR- and Raman-spectroscopy. Quantum chemical calculations based on DFT were used to successfully predict spectroscopic properties of most of the characterized fullerene samples.

For producing single wall carbon nanotubes a modified Smalley laser oven was built up which produces 100 mg raw material/h. A separate purification method was developed and succeeded in cleaning up the material to purities of 99%. The nanotube material thus received was characterized by SEM, UV-vis-NIR-, IR- and Raman-spectroscopy. In this work chemical derivatization was also used to convert acid-cut nanotube pieces to samples, which are soluble in standard organic solvents.

Research Experience

Extensive experience in the production (arc discharge), extraction and separation (HPLC) of fullerenes and fullerene derivatives, production and purification of single wall carbon nanotubes. Extensive experience in analytical methods ^{13}C NMR-, UV-vis-NIR-, IR- and Raman spectroscopy;

Good experimental skills in working with different types of lasers (pulsed and cw);

Broad scientific background in using various kinds of analytical methods like UV-vis-NIR-, IR- (DRIFT, FTIR), Raman-, NMR- spectroscopy and some basic knowledge in using various kinds of additional analytical methods like SEM, TEM, AFM, STM and mass spectrometry;

Computer skills in data analysis and quantum chemical modelling (PM3, DFT); Familiar with PCs and UNIX mainframes. Basic knowledge in computer languages like C and VisualBasic;

Teaching Experience

since 1995 Teaching assistant for experimental courses in physical chemistry for undergraduate students in chemistry, physics and engineers.

Awards

July, 2004: Erwin Schrödinger Prize, Helmhotzgesellschaft