

DPG-School on Physics

Supported by the Wilhelm and Else Heraeus-Foundation

Single Molecule Spectroscopy

18 – 23 September, 2011, Physikzentrum Bad Honnef, Germany
Jürgen Köhler and Matthias Weiss (both University Bayreuth)

About 150 years after Ernst Mach's famous statement "Atoms and molecules..., did you ever see one?", imaging of single molecules and determining their physicochemical properties has become a state-of-the-art approach in many laboratories. A variety of techniques that have been developed over the last 20 years allow one to accurately measure positions and conformations of single molecules as well as the associated forces. Single-molecule approaches have been applied not only in solid-state physics and chemistry, but also in the context of biological specimen. This DPG School is intended to give insights to young researchers into the field of single molecule detection and single molecule spectroscopy. The lectures will range from basic concepts to current research topics, and they will be presented by renowned experts in the field.

Invited speakers:

Thomas Basché (Mainz)

Carlos Bustamante (Berkeley)

Hermann E. Gaub (Munich)

Enrico Gratton (Irvine)

Jürgen Köhler (Bayreuth)

W. E. Moerner (Stanford)

Antoine van Oijen (Groningen)

Michael Orrit (Leiden)

Thomas Schmidt (Leiden)

Vahid Sandoghdar (Zurich)

C. Schultz (Heidelberg)

Paul R. Selvin (Urbana-Champaign)

Matthias Weiss (Bayreuth)

Topics:

Bio-compatible dyes & reporter molecules

Single-particle tracking

Low-temperature single molecule spectroscopy

Nanooptics

Super resolution optical microscopy

Atomic Force Microscopy (AFM)

Fluorescence Correlation Spectroscopy (FCS)

Single-molecule force spectroscopy

Fluorescence Lifetime Imaging (FLIM)

Fees

Covering full board and lodging at the Physikzentrum Bad Honnef 475 €
(for DPG members 375 €), for students 315 € (for DPG members 215 €), without lodging 210 €.

Application & more information at www.pbh.de

Deutsche Physikalische Gesellschaft



Advanced DPG Physics School
Supported by the Wilhelm and Else Heraeus-Foundation

Nanoantennas and Hybrid Quantum Systems

25 – 30 September, 2011, Physikzentrum Bad Honnef, Germany
Harald Giessen (Stuttgart) and Stefan Maier (Imperial College, London)

Plasmonic nanoantennas have recently gained tremendous attention in the field of nanooptics. Antenna theory from the electrical engineering perspective and its transfer into the optical world, impedance matching, light concentration, emission and reception enhancement as well as increased directionality, tailoring of the local density of states, coupling to quantum emitters such as quantum dots and NV centers, the Purcell effect near nanoantennas, nonlinear effects, visible as well as near- and midinfrared applications, nanomanipulation of objects with light forces near nanoantennas, enhanced nonlinear optics, as well as antenna-enhanced sensing are subjects of current interest.

The school aims at graduate students as well as postdocs at all levels. The speakers are world leaders in their field and will present introductory and overview lectures. The participants are encouraged to submit posters in order to stimulate lively discussions.

Invited speakers:

Rainer Hillenbrand (San Sebastian)
Annemarie Pucci (Heidelberg)
Niek van Hulst (Barcelona)
Bert Hecht (Würzburg)
Mikael Käll (Göteborg)
Rudi Bratschitsch (Chemnitz)
Javier Garcia de Abajo (Madrid)
Javier Aizpurua (San Sebastian)
Oliver Benson (Berlin)

Jörg Wrachtrup (Stuttgart)
Romain Quidant (Barcelona)
Rick Ziolkowski (Arizona)
Andrea Alu (Austin)
Christoph Caloz (Montreal)
Nader Engheta (Pennsylvania)
Olivier Martin (Lausanne)
Lukas Novotny (Rochester)
Vahid Sandoghdar (Zürich)

Topics:

Mid-infrared nanophotonics based on antennas and transmission lines

Surface Enhanced Infrared Absorption Spectroscopy using plasmonic nanoantennas

Controlled coupling of single photon emitters and nanoantennas

Properties of single crystalline optical antennas

Nanoantennas and applications for sensing

Nonlinear optics of plasmonic nanoantennas

Deterministic single-photon/plasmon generation

in waveguides

Close encounters in nanoantennas

Single defect centers as nanoprobe in plasmonics and photonics

Controlling the interaction between single quantum systems and plasmons

Nanoantenna sensing and nanoantenna-assisted trapping

Microwave, THz and optical metamaterial-engineered electrically small antennas

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