

Welcome!

As the organizers we take great pleasure in welcoming you to the “3rd *International Workshop on Advanced Atomic Force Microscopy Techniques 2012*”. The workshop will again be a forum for stimulating discussions and the exchange of new ideas which will help to explore the nanoworld in more detail. We especially thank our invited speakers and all of you, who contribute to the talks, the posters and the discussions. On the following pages please find the detailed conference program.

The workshop will again take place in the lecture hall of the Institute of Nanotechnology (INT) on Campus North of the Karlsruhe Institute of Technology (KIT). A map of the Campus and travel instructions how to reach the Campus are also included in this booklet.

We acknowledge financial support for this workshop from the KIT, the Institute of Microtechnology (IMT), the Institute of Nanotechnology (INT), and the Karlsruhe NanoMicro Facility (KNMF) as well as by the companies SPECS Surface Nano Analysis GmbH, Omicron Nanotechnology GmbH, Atomic Force F&E GmbH, Bruker Nano, Zürich Instruments, Schaefer Technologie GmbH, NT-MDT Europe BV and JPK Instruments AG. Special thanks go to Omicron Nanotechnology for the refreshments and snacks offered during the poster session and to SPECS Surface Analysis GmbH sponsoring the Best Poster Award.

We hope that you will enjoy the workshop and have a wonderful time in Karlsruhe, and we are looking forward to welcome you at the KIT.

Hendrik Hölscher

Thomas Schimmel

Monday, March 5, 2012

- 10:00 SHUTTLE BUS from the Renaissance Hotel Karlsruhe to the Institute of Nanotechnology (INT) located at the Campus North of the KIT
- 10:30 OPENING COFFEE & REGISTRATION
Chair: Hendrik Hölscher & Thomas Schimmel
- 10:50 WELCOME
Hendrik Hölscher & Thomas Schimmel, Karlsruhe Institute of Technology
- 11:00 Between SEM and AFM – the Unexpected Diversity of Biological Surfaces
Wilhelm Barthlott, University of Bonn
- 11:40 Cold-Atom Scanning Probe Microscopy
József Fortágh, University of Tübingen
- 12:20 LUNCH
Chair: Pascal Ruffieux
- 13:30 AFM in Studies of Animal Adhesion
Stanislav N. Gorb, Carl-Albrechts University Kiel
- 14:10 Non-contact Friction on NbSe₂ Surface Across Charge Density Wave (CDW) Transition Studied with AFM in Pendulum Geometry
Marcin Kisiel, University of Basel
- 14:30 Advances in Multifrequency AFM Imaging of Molecules in Liquid
Ricardo Garcia, IMM Madrid
- 15:10 The Role of Nonlinear Dynamics in Quantitative Atomic Force Microscopy
David B. Haviland, Royal Institute of Technology (KTH), Stockholm
- 15:30 POSTER SESSION with COFFEE, SNACKS & REFRESHMENTS
Chair: Ricardo Garcia
- 17:20 Atomic Force Microscopy for Biomedical Applications
Alexandre Berquand, Bruker Nano
- 17:35 Imaging the Transmission of Nanostructures in an Ultra High-mobility GaAs heterostructure using Scanning Gate Microscopy
Aleksey A. Kozikov, ETH Zürich

- 17:50 Graphene and Hexagonal Boron Nitride 2D Super Structures Analysed by Scanning Probe Spectroscopy
Sascha Koch, University of Basel
- 18:10 Multi-Scale Simulation of Kelvin Force Microscopy on Insulators
Alexis Baratoff, University of Basel
- 18:30 SHUTTLE BUS from the KIT Campus North to Campus South
- 19:00 CONFERENCE DINNER at the Gastdozentenhaus "Heinrich Hertz" located at the Campus South of KIT
- 22:00 Short guided tour by Thomas Schimmel through the city of Karlsruhe (ends at the Renaissance Hotel Karlsruhe)

Tuesday, March 6, 2012

- 8:45 SHUTTLE BUS from the Renaissance Hotel Karlsruhe to the KIT Campus North
Chair: Yossi Rosenwaks
- 9:30 Direct Write 3-Dimensional Nanopatterning Using Probes
Armin Knoll, IBM Zürich
- 10:10 Effect of Relative Humidity when Manipulating Gold Nanoparticles on Flat Substrates using Dynamic Atomic Force Microscopy
Karine Mougín, Institut de Sciences des Matériaux de Mulhouse
- 10:30 The Structure of 2D Vitreous Silica
Markus Heyde
- 10:50 COFFEE BREAK
Chair: Markus Ternes
- 11:20 Bottom-up Fabrication and Characterization of Graphene nanoribbons
Pascal Ruffieux, EMPA
- 12:00 Measuring Gap Density of States in Organic Thin Films Using Kelvin Probe Force Microscopy
Yossi Rosenwaks, Tel-Aviv University
- 12:30 LUNCH

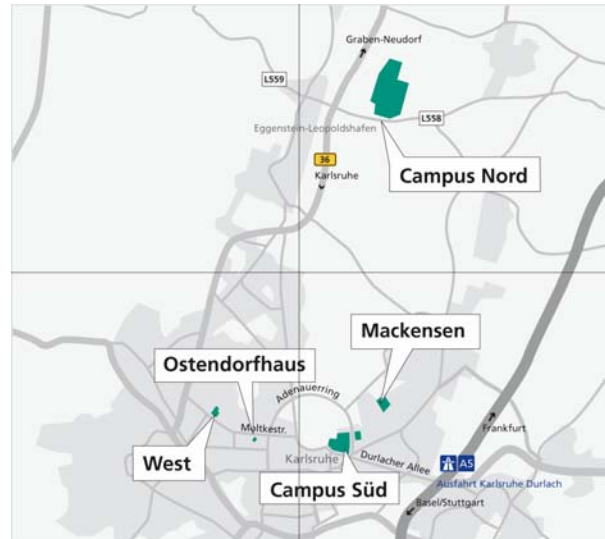
Chair: Armin Knoll

- 13:20 Partial Wetting as New Concept to Operate Microresonators in Viscid Fluids
with high Q value
Egbert Oesterschulze, TU Kaiserslautern
- 14:00 In-situ Cantilever Shape Profiling – Implications for Quantitative Functional and
Nanomechanical Measurements
Roger Proksch, Asylum Research, Santa Barbara
- 14:20 A New Approach for Atomic Scale Spin Detection using a Diamond-based
Scanning Probe Sensor
Markus Ternes, MPI Stuttgart
- 15:00 Superlubric Sliding of Metallic Nanoparticles: The Influence of Contact Area and
Crystallinity
Dirk Dietzel, University of Münster
- 15:20 Clockwise and Anticlockwise Rotation of Porphyrins Molecules using Localized
Mechanical Deformations
Rémy Pawlak, University of Basel
- 15:40 BEST POSTER AWARD & CLOSING REMARKS
- 16:00 SHUTTLE BUS to Karlsruhe Hauptbahnhof (main station)

How to Reach the Karlsruhe Institute of Technology

The Karlsruhe Institute of Technology is distributed over several locations. While the Campus North is situated in the administrative district of Karlsruhe near Eggenstein-Leopoldshafen, the Campus South is about 10 km away in the heart of the city of Karlsruhe.

The AAFMT Workshop 2012 takes place at the Campus North (Campus Nord) in seminar room of the Institute of Nanotechnology. You will be asked for your identity card at the front gate of the research centre.



How to Reach the Campus North by Car

The Campus North is located in Eggenstein-Leopoldshafen (about 12 km north of Karlsruhe). The address for your GPS is: Hermann-von-Helmholtz-Platz 1, 76344 Eggenstein-Leopoldshafen

Coming from North: Frankfurt and Heidelberg (A5)

- Leave the motorway at the exit of Bruchsal and go in the direction of Karlsdorf-Neuthard / Gernersheim / B35.
- Stay on this road for some 4 km, and then turn off on the B36.
- Leave the B36 after some 12 kilometers, at the exit of Eggenstein-Leopoldshafen / Forschungszentrum
- After about 1 km, you reach the entrance road to the Campus North on your left.

Coming from Northwest: Landau (A65)

- Leave the motorway at the Knielingen exit and go straight ahead on the road (Rheinbrückenstraße) for another 3 km as far as to the Neureuter Straße junction (after having passed the premises of Siemens AG).
- Then turn left in the direction of Mannheim (B 36). Go straight ahead at all following junctions.
- After some 10 km, turn right at the exit of Bruchsal / Stutensee / KIT Campus Nord.
- Go ahead for another 1 km until you reach the entrance road to the Campus North on your left.

Coming from East: Munich and Stuttgart (A8)

- At the Karlsruhe motorway triangle, turn off in the direction of Karlsruhe / Frankfurt (A5).
- Leave the motorway at the Karlsruhe-Mitte exit and go in the direction of Landau/Pfalz (B10).
- Stay on this road another 9 km and turn off in the direction of Mannheim (B36).
- Drive straight ahead on the B36 at all junctions.

- Leave the B36 after some 11 km at the exit of Bruchsal / Stutensee / Forschungszentrum.
- After about 1 km, you reach the entrance road to the Campus North on your left.

Coming from South: Basel and Freiburg (A5)

- Leave the motorway at the exit No 48 Karlsruhe Süd and go in the direction of Karlsruhe / Landau-Pfalz (B10).
- Stay on this road another 4 km and turn off in the direction of Mannheim (B36).
- Drive straight ahead on the B 36 at all junctions.
- Leave the B 36 after some 11 km at the exit of Bruchsal / Stutensee / KIT Campus Nord.
- After about 1 km, you reach the entrance road to the Campus North on your left.

How to Reach the Campus North by Public Transport

The Campus North is located in Eggenstein-Leopoldshafen. There are various ways to get there by bus or tram from Karlsruhe city or Central Train Station. The exact times of departure are available on the website of the Karlsruher Verkehrsverbund (www.kvv.de). Information about travel data of the German Railway is provided by the Deutsche Bundesbahn (www.bahn.de).

Tram lines S 1 / S 11 from Karlsruhe Hauptbahnhof (Central Station) to the destinations of Leopoldshafen/Hochstetten

- Trams operate in 20-minute intervals; traveling time is approx. 40 minutes.
- Go by tram to stop "Leopoldstraße" at Leopoldshafen, change to bus No. 195 as far as "Forschungszentrum-Südtor" (southern entrance gate to the Campus North).

Regional train R 2 from Karlsruhe Hauptbahnhof (Central Station) to the destinations of Blankenloch Station/Mannheim.

- Trains operate in 60-minute intervals; travelling time is 25 minutes.
- At Blankenloch Station, change to bus No. 195 as far as "KIT Campus Nord"

Tram line S 2 from the Karlsruhe Central Business District (Kaiserstrasse) via Durlacher Tor in the direction of Blankenloch Nord.

- Trams operate in 20-minute intervals; traveling time is 36 minutes.
- At the "Blankenloch Nord" stop, change to bus No. 195 as far as "KIT Campus Nord"



