

5. MATERIALS DAYS ROSTOCK 2009

www.materials-days.eu



July 9th - July 10th 2009

Functional Materials and Nanotechnology

Sessions Overview

Location: All Sessions will take place in the Barocksaal of Hanseatic City Rostock at the Universitätsplatz

Thursday July 9th

Introductory Session

Chairs: Prof. Eberhard Burkel, Institute of Physics, Rostock University, Funktionale Materialien Rostock e.V.
Prof. Dieter G. Weiss, Institute of Biological Sciences, Rostock University
Prof. Christoph Schick, Institute of Physics, Rostock University

8:30	Welcome Prof. Wolfgang Schareck, Rektor, Rostock University
8:45	Nanotechnology, Biology and Business Prof. Ivar Giaever, Applied BioPhysics, Inc Troy, New York, USA, Nobel Laureate in Physics
9:45	Physics of Neuronal Membranes Prof. Thomas Heimburg, Membrane Biophysics Group, Niels Bohr Institute, University of Copenhagen, Denmark
10:30	Coffee Break
11:00	Building a Materials Innovation Community in the Øresund Region Daniel Kronmann, Øresund University - Øresund Science Region, Sweden/Denmark
11:30	EU Call - Information / The Nanotechnology and Nanosciences Topics in the NMP Work Programme 2010 Dr. Martin Vogt, VDI Technologiezentrum, Düsseldorf
12:00	More Competitive Proposals for European Funding Dr. Marko Häckel, INP - Leibniz Institut für Plasmaforschung und Technologie e.V., Greifswald

12:20 Lunch break

Session: Nanostructured Materials and New Technologies I

Chair: Prof. Martin Köckerling, Department of Chemistry, Rostock University

13:30	Stimuli-Responsive Materials from Ionic Liquid Reactive Surfactants Prof. John Texter, Eastern Michigan University, USA, Visiting Professor Max Planck Institute of Colloids and Interfaces, Potsdam-Golm
14:15	Nanofiber Nanocomposites for Mechanical and Biomedical Applications Prof. Georg Michler, Institute of Physics, Martin-Luther-University, Halle
14:45	Nonlinear Effects in Nanoscaled Ferroelectrics and Possible Applications Dr. Martin Diestelhorst, Institute of Physics, Martin-Luther-University, Halle
15:15	Spray Forming and Heat Treatment of Aluminum Alloys Dr. Peter Krug, PEAK Werkstoff GmbH, Velbert

15:45 Coffee Break



The "Barocksaal" is inside the yellow building (built in 1750). The entrance is in the right neighbouring Palais (built in 1714).

General Information

This workshop represents parts of the growing Material Science activities promoted within the interdisciplinary research topic at Rostock University.

Materials' Days Rostock 2009 will take place in the Barocksaal (Universitätsplatz) near the Main Building of the University of Rostock. Closest tram stop is „Lange Straße“.

There is free admittance to all sessions. Public is welcome. Participants should register their accommodations on their own.

Students, PhD students and interested colleagues, as well as representatives from industry are welcome to join the Materials' Days Rostock 2009.

Session: Advanced Materials for Non-Pneumatic Tires / Wheels

Chair: Prof. Gerhard Scharr, Dept. of Engineering Design, Rostock University

16:15	Non-Pneumatic Wheels Prof. Ulf Sandberg, Chalmers University of Technology, Gothenburg Swedish National Road and Transport Research Institute (VTI), Sweden
17:00	Structural Analysis of the Non-Pneumatic Lunar Vehicle Rover Using Transient Explicit Dynamics Mahmoud C. Assaad PhD, Goodyear, Akron USA
17:30	Properties of Compound Material for Non-Pneumatic Wheels Kundan Kumar M.Sc., EU EST- Marie Curie Fellow, Light Weight Construction, Rostock University

Session: Public Lecture / Öffentlicher Vortrag (in German)

18:30 Mikro- und Nanotechnologie: Die kleine Welt ganz groß im Trend
Prof. Volker Saile, Karlsruhe Institute of Technology & Institute for Microstructure Technology, University of Karlsruhe



Friday July 10th

Session: Nanotechnology and Biology

Chair: Prof. Dieter G. Weiss, Institute of Biological Science, Rostock University

8:30	Nanoparticles: Environmental and Health Aspects Prof. Qamar Rahman, Industrial Toxicology Research Centre, Lucknow, and Dean for Research and Development, Integral University, India
9:00	Relaxation and Twisting of Ingested Magnetic Micro- and Nanoparticles - an Assay for Cell Function and Cytoskeleton Mechanics Dr. Winfried Möller, GSF National Research Center for Environment and Health, Institute of Inhalation Biology, Gauting
9:30	Nanoparticles: Biological Effects and Approaches to Risk Assessment Prof. Myrtil Simkó, Austrian Academy of Sciences, Vienna and Institute of Biological Sciences, Rostock University
10:00	Biomimetic Surface Treatment of Materials and its Influence on Cell Activity and Differentiation Prof. Thomas Groth, Department of Pharmaceutics, Martin Luther University Halle



Main Building of the University of Rostock, Universitätsplatz 1

New Materials

The development of New Materials and their engineering on nanoscopic length scales is maturing to an important key technology of this decade. The relevant technological properties of materials change if they contain structures of characteristic length scales of few nanometers. Besides the pure size reduction new interfacial effects gain influence.

Internationally recognized lecturers from academia, research centers and industry present overviews and latest results in selected topics in this interdisciplinary event. PhD students from Rostock University present their results.



10:30 Coffee break

Session: Nanostructured Materials and New Technologies II

Chair: Prof. Hermann Seitz, Microfluidics, Faculty of Mechanical and Marine Engineering, Rostock University

10:50	Deformation Mechanism in Nanostructured Metals: Atomistic Simulations and Experiments Prof. Helena Van Swyghoven-Moens, Materials Science & Simulation, EPFL, Paul Scherrer Institut, Villigen, Switzerland
11:30	Carbon Nanomaterials Dr. Walter Schütz, FutureCarbon GmbH, Bayreuth
12:00	Nano-mechanical and Tribological Characterization of Thin Films Vishal Khosla, CETR - Center for Tribology Inc., USA

12:30 Lunch break

Session: New Frontiers in Materials Science

Chair: Prof. Ralf Ludwig, Physical Chemistry, Institute of Chemistry, Rostock University

13:30	New Opportunities through THz Spectroscopy Prof. Rene Beigang, Department of Physics, University of Kaiserslautern
14:15	Recent Developments in Micro- and Nanooptics Prof. Volker Saile, Karlsruhe Institute of Technology & Institute for Microstructure Technology, University of Karlsruhe
14:45	Plasma Medicine - Selected Applications in Surface Modification and Medicine Prof. Klaus-Dieter Weltmann, INP - Leibniz Institut für Plasmaforschung und Technologie e.V., Greifswald

15:15 Closing Remarks

Afternoon: Site Visits Upon Appointment

- Live Cell Imaging Center, Inst. of Biological Sciences University of Rostock, (Prof. Dieter G. Weiss)
- Demonstration of Nanoindentation by CETR - (Vishal Khosla) at Physics of New Materials, Rostock University

About the Materials' Days Rostock

Materials' Days Rostock are organized in the framework of the European Union-funded research project (ADVATEC) „Advanced Training in Hybrid Technologies for Nanostructured Composites“ on materials science (www.uni-rostock.de/advatec), the interdisciplinary network „Tycho Net / The Cell-Material Dialogue“ (www.uni-rostock.de/tycho) and the DFG-Graduiertenkolleg (Welisa) „Analysis and Simulation of Electric Interactions between Implants and Biosystems“ (www.welisa.uni-rostock.de)

Organizing Committee: Prof. Eberhard Burkel, Prof. Christoph Schick, Prof. Gerhard Scharr, Prof. Dieter G. Weiss (all from Rostock University)

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