

Metal and Material Physics Division Fachverband Metall- und Materialphysik (MM)

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German Society of Materials Science and Engineering Bundesvereinigung Materialwissenschaft und Werkstofftechnik

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Overview of Invited Talks and Sessions

(lecture rooms H4, H5, H6 and H16; Poster C)

Invited Talks

MM 9.1	Mon	14:00–14:30	H16	Dynamic arrest in multicomponent glass forming alloys — ●FRANZ FAUPEL, ALEXANDER BARTSCH, KLAUS RÄTZKE, ANDREAS MEYER
MM 17.1	Tue	9:30–10:00	H16	Interfaces in nanostructured matter — ●GUIDO SCHMITZ
MM 25.1	Tue	14:00–14:30	H16	Models for ductile fracture and their application to forming processes — ●HERMANN RIEDEL
MM 27.1	Wed	9:30–10:00	H16	Multiferroic Composites — ●DWIGHT VIEHLAND
MM 36.1	Wed	14:00–14:30	H16	Atomistic simulations of plastic deformation - insights from a quantitative approach — ●ERIK BITZEK
MM 45.1	Thu	9:30–10:00	H16	”Novel” Materials for Lithium Ion Batteries and ”Beyond-Lithium Ion Batteries” — ●MARTIN WINTER, STEFANO PASSERINI

Invited talks of the joint symposium SYGN

See SYGN for the full program of the Symposium.

SYGN 1.1	Mon	14:00–14:35	H1	Models for spin-orbit coupling in graphene — ●FRANCISCO GUINEA
SYGN 1.2	Mon	14:35–15:10	H1	Spin-orbit coupling and spin relaxation in carbon nanotube quantum dots — ●FERDINAND KUEMMETH
SYGN 1.3	Mon	15:10–15:45	H1	Spin-orbit interaction in carbon nanotubes probed in pulsed magnetic fields — ●SUNGHO JHANG, MAGDALENA MARGANSKA, YURII SKOURSKI, DOMINIK PREUSCHE, BENOIT WITKAMP, MILENA GRIFONI, HERRE VAN DER ZANT, JOACHIM WOSNITZA, CHRISTOPH STRUNK
SYGN 1.4	Mon	16:00–16:35	H1	Wigner molecules and spin-orbit coupling in carbon-nanotube quantum dots — ●MASSIMO RONTANI
SYGN 1.5	Mon	16:35–17:10	H1	Spin relaxation and decoherence in graphene quantum dots — ●GUIDO BURKARD
SYGN 1.6	Mon	17:10–17:45	H1	Spin transport in graphene field effect transistors — ●BART VAN WEES

Invited talks of the joint symposium SYAT

See SYAT for the full program of the Symposium.

SYAT 1.1	Wed	14:30–15:00	H1	Aging, ergodicity breaking and universal fluctuations in continuous time random walks: Theory and (possible) experimental manifestations — •IGOR SOKOLOV
SYAT 1.2	Wed	15:00–15:30	H1	Distinguishing anomalous from simple diffusion in crowded solutions and in cells with fluorescence correlation spectroscopy — •CECILE FRADIN, DANIEL BANKS, SHYEMAA SHEHATA, FELIX WONG, ROBERT PETERS
SYAT 1.3	Wed	15:30–16:00	H1	Exploring Diffusion in Nanostructured Systems with Single Molecule Probes: From Nanoporous Materials to Living Cells — •CHRISTOPH BRÄUCHLE
SYAT 2.1	Wed	16:30–17:00	H1	The Lorentz model: a paradigm of anomalous transport — •FELIX HÖFLING
SYAT 2.2	Wed	17:00–17:30	H1	Viscoelastic subdiffusion: from anomalous to normal — •IGOR GOYCHUK
SYAT 2.3	Wed	17:30–18:00	H1	Phase transitions, liquid micro-compartments, and embryonic patterning — •CLIFFORD BRANGWYNNE, JÖBIN GHARAKHANI, ANTHONY HYMAN, FRANK JÜLICHER

Invited talks of the joint symposium SYNT

See SYNT for the full program of the Symposium.

SYNT 1.1	Fri	10:15–10:45	H1	Atomic friction under ultrahigh vacuum conditions — •ERNST MEYER, ENRICO GNECCO, PASCAL STEINER, GREGOR FESSLER, SASCHA KOCH, THILO GLATZEL, ALEXIS BARATOFF, MIRCIN KISIEL, URS GYSIN, AKSHATA RAO, SHIGEKI KAWAI, SABINE MAIER
SYNT 1.2	Fri	10:45–11:15	H1	Layering and Squeeze-out Damping in Confined Liquid Films — •FRIEDER MUGELE
SYNT 1.3	Fri	11:15–11:45	H1	Wear on the nanoscale: mechanisms and materials — •BERND GOTS-MANN, MARK A. LANTZ, HARISH BHASKARAN, ABU SEBASTIAN, UTE DRECHSLER, MICHEL DESPONT, YUN CHEN, KUMAR SRIDHARAN, PAPOT JAROENAPIBAL, ROBERT CARPICK
SYNT 1.4	Fri	11:45–12:15	H1	Friction at the Nanoscale: Insights from Atomistic Simulations — •IZABELA SZLUFARSKA, YIFEI MO, YUN LIU, MANEESH MISHRA
SYNT 1.5	Fri	12:15–12:45	H1	The friction of wrinkles — •MARTIN H. MÜSER, HAMID MOHAMMADI
SYNT 1.6	Fri	12:45–13:15	H1	Influence of humidity on nano- and micromechanical contact adhesion — •HANS-JÜRGEN BUTT

Topical Sessions (MM)

Glass Dynamics (GD)

Glasses and liquids are inhomogeneous on atomic length scales and are characterized by disordered atomic configurations which vary in space on the nanometer scale. Dynamic properties such as structural relaxation and diffusion are important topics in glass research, applying to oxide, polymeric and metallic glasses. The mechanical properties of glasses result generally from inhomogeneous deformation via shear bands and often involve different length scales, ranging from the atomic to the micrometer scale. Thus, the structure, dynamics and the resulting properties of glasses involve in many cases great ranges in length and time scales, and bridging them is an important problem in glass research which is seeking solutions.

This symposium aims to bring together scientists from different research communities, i.e. the fields of metallic, oxide, and polymeric glasses, and colloidal systems. The similarities among and differences between these glassy systems will be an emphasis, with the aim of finding common, fundamental mechanisms in glasses and understanding in more detail the nature of the glass transition.

Organizers:

Prof. Dr. Jörg Löffler

Eidgenössische Technische Hochschule Zürich, Metal Physics and Technology, Wolfgang-Pauli-Str. 10, CH 8093 Zürich

Prof. Dr. Andreas Meyer

Deutsches Zentrum für Luft- und Raumfahrt (DLR), Institut für Materialphysik im Weltraum, Linder Höhe, D-51147 Köln

Multifunctional Materials (MfM)

Modern, technological, smart applications require new functionalities of surfaces or interfaces - multifunctional materials serve more than simply a structural purpose, they perform at least one additional function. Examples include but are not limited to: transparent or flexible conductors, multiferroic materials, damage tolerant materials, sensing and actuating systems, self healing systems, and nanocomposites or nanostructured materials with antibacterial, anti-reflecting or anti-fogging properties. To design these multifunctional materials, a detailed understanding of the basic physics and materials science of underlying surface, interface, and micro- or nanostructures is necessary.

The symposium is intended as a forum for researchers to present their contributions to multifunctional materials ranging from the basic research, for example of functional layers or nanostructures, to the effects in applications. Oral and poster contributions to the symposium related to experiment or theory are highly welcome. The field of multifunctional materials is interdisciplinary and encompasses all stages of research from fundamental understanding to application and is of an interdisciplinary nature, offering promising opportunities for research collaborations.

Organizer:

Prof. Dr. Rainer Adelung

Christian-Albrechts-University Kiel, Institute for Materials Science, Kaiserstr. 2, D-24143 Kiel

Physical Properties and Mechanisms in Battery Materials (BM)

Designing materials with specific combinations of properties is a challenging step in the development of high energy and high power density batteries. The efficiency as well as reproducibility and reliability of energy conversion and storage are determined by the properties of the battery components, in particular of the electrodes, the separator and the respective interfaces.

This symposium will focus on critical materials issues in developing better battery electrodes and membranes.

Organizers:

Prof. Dr. Guido Schmitz

Universität Münster, Institut für Materialphysik, Wilhelm-Klemm-Str. 10, D-48149 Münster

Prof. Dr. Cynthia A. Volkert

Universität Göttingen, Institut für Materialphysik, Friedrich-Hund-Platz 1, D-37077 Göttingen

Joined Topical Session (MM, KR and BV MatWerk)**Photovoltaic Materials (PM)**

In Central Europe, photovoltaic energy conversion from solar cells has by far the greatest proven technological potential for the production of electricity from renewable energy sources. Therefore the symposium is devoted to materials science problems in photovoltaics, especially related to structure-property relations of photovoltaic materials.

Organizer:

Prof. Dr. Susan Schorr

Freie Universität Berlin, FB Geowissenschaften, Malteserstr. 74-100, 12249 Berlin

Topical Sessions (BV MatWerk)**Growth Kinetics of Bulk Crystals, Thin Films, and Nanostructures (GK)**

Kinetic processes play an important role in the growth of single crystals, the solidification of multi-crystalline material, and the deposition of thin films and nanostructures. Often they have a direct impact on the properties of the final product and thus an understanding of these processes is required for improving existing materials as well as for developing new ones. The goal of this symposium is to bring together scientists from different disciplines in order to present and to discuss current topics of growth kinetics.

Deutsche Gesellschaft für Kristallwachstum und Kristallzüchtung, DGKK

Organizers:

Dr. Wolfram Miller

Leibniz Institut für Kristallwachstum, Max-Born-Straße 2, D-12489 Berlin

Prof. Dr. Joachim Krug

Universität zu Köln, Institut für Theoretische Physik, Zülpicher Str. 77, D-50937 Köln

Prof. Dr. Thomas Michely
 Universität zu Köln, II. Physikalisches Institut, Zülpicher Str. 77, D-50937 Köln

Designing innovative structural materials and steels based on computational and experimental simulations (DISM)

The realization and success of Green Technologies is closely related to the availability of innovative structural materials as, e.g., high-strength and/or high-temperature resistant steels. Such materials are for instance highly desired in car manufacturing, where they simultaneously allow weight-reduction and an improvement of passenger safety, as well as in power stations, where an increase in operating temperatures in turbines yields a boost in efficiency. In contrast to common steels, advanced structural materials exhibit a surprisingly complex phase composition, chemistry and microstructure. With increasing complexity, however, traditional empirically driven materials design becomes less and less effective. In order to address this challenge, presently a new generation of simulation approaches is under development. These approaches are inherently hierarchical and interdisciplinary by nature and combine engineering with physics, chemistry and applied mathematics. The objective of this symposium is to provide an overview about recent developments and emerging new activities in this field, to provide a platform that brings together experts of the various related fields, and to allow young scientists to learn more about this fascinating and rapidly growing research area.

Technical association for Iron Metallurgy - Stahlinstitut VDEh

Organizer:

Prof. Dr. Jörg Neugebauer

Max-Planck-Institut für Eisenforschung, Computational Materials Design, Max-Planck-Strasse 1, D-40237 Düsseldorf

Nachwuchskarriereworkshop (BV MatWerk und MM)

Doktorprüfung bestanden, Doktorfeier überstanden, Formalitäten abgeschlossen. Nun stehen Sie als frischgebackener Doktor da und was nun? Vielleicht sollen Sie morgen eine Stelle in einem Forschungsinstitut oder in der Industrie antreten. Was erwartet Sie dort? Welche Fähigkeiten und Erfahrungen werden Ihnen bei der Einarbeitung hilfreich sein? Was erwarten Ihre Vorgesetzten, Ihre Kollegen von Ihnen? Welche Karriere sollen Sie einschlagen, Hochschule oder Industrie? Der Wechsel vom überschaubaren Alltag als Doktorand an der Universität zum Berufsleben stellt eine Zäsur im Leben jedes Wissenschaftlers dar und verlangt eine überlegte Entscheidung.

Die Bundesvereinigung Materialwissenschaft und Werkstofftechnik (BV MatWerk) und der Fachverband Metall- und Materialphysik wollen Ihnen mit einem Karriereworkshop bei diesen Entscheidungsprozessen helfen: Darin werden Kolleginnen und Kollegen aus Ihren Erfahrungen in der privaten Wirtschaft, in außeruniversitären Forschungseinrichtungen und in der Professorenlaufbahn berichten und Ihre Fragen beantworten.

Dienstag, 23. März 2010, 14:00 - 18:00 Uhr, Hörsaal H4

Sessions

MM 1.1–1.3	Mon	10:15–11:30	H16	Topical Session Glass Dynamics I
MM 2.1–2.3	Mon	12:00–13:00	H16	Topical Session Glass Dynamics II
MM 3.1–3.2	Mon	10:15–11:15	H4	Topical Session Designing Innovative Structural Materials and Steels I
MM 4.1–4.5	Mon	11:30–12:45	H4	Topical Session Designing Innovative Structural Materials and Steels II
MM 5.1–5.4	Mon	10:15–11:15	H6	Diffusion and Point Defects I
MM 6.1–6.4	Mon	11:30–12:30	H6	Diffusion and Point Defects II
MM 7.1–7.4	Mon	10:15–11:15	H5	Intermetallic Phases I
MM 8.1–8.4	Mon	11:30–12:30	H5	Intermetallic Phases II
MM 9.1–9.1	Mon	14:00–14:30	H16	HV Faupel
MM 10.1–10.2	Mon	14:45–15:30	H16	Topical Session Glass Dynamics III
MM 11.1–11.4	Mon	16:00–17:30	H16	Topical Session Glass Dynamics IV
MM 12.1–12.4	Mon	14:45–15:45	H4	Topical Session Designing Innovative Structural Materials and Steels III

MM 13.1–13.7	Mon	16:00–17:45	H4	Topical Session Designing Innovative Structural Materials and Steels IV
MM 14.1–14.4	Mon	14:45–15:45	H6	Diffusion and Point Defects III
MM 15.1–15.5	Mon	14:45–16:00	H5	Interfaces I
MM 16.1–16.3	Mon	16:15–17:00	H5	Interfaces II
MM 17.1–17.1	Tue	9:30–10:00	H16	HV Schmitz
MM 18.1–18.3	Tue	10:15–11:15	H16	Topical Session Glass Dynamics V
MM 19.1–19.2	Tue	10:15–11:15	H4	Topical Session Designing Innovative Structural Materials and Steels V
MM 20.1–20.6	Tue	11:30–13:00	H4	Topical Session Designing Innovative Structural Materials and Steels VI
MM 21.1–21.5	Tue	10:15–11:30	H6	Mechanical Properties I
MM 22.1–22.5	Tue	10:15–11:30	H5	Hydrogen in Metals
MM 23.1–23.3	Tue	11:45–12:30	H5	Quasicrystals
MM 24.1–24.1	Tue	13:30–13:45	H16	BV Matwerk
MM 25.1–25.1	Tue	14:00–14:30	H16	HV Riedel
MM 26.1–26.82	Tue	14:45–16:30	Poster C	Poster Session
MM 27.1–27.1	Wed	9:30–10:00	H16	HV Viehland
MM 28.1–28.6	Wed	10:15–11:45	H16	Nanostructured Materials I
MM 29.1–29.4	Wed	12:00–13:00	H16	Nanostructured Materials II
MM 30.1–30.4	Wed	10:15–11:30	H4	Topical Session Photovoltaic Materials I
MM 31.1–31.6	Wed	11:45–13:15	H4	Topical Session Photovoltaic Materials II
MM 32.1–32.4	Wed	10:15–11:45	H6	Topical Session Multifunctional Materials I
MM 33.1–33.3	Wed	12:00–13:00	H6	Topical Session Multifunctional Materials II
MM 34.1–34.4	Wed	10:15–11:15	H5	Liquid and Amorphous Metals I
MM 35.1–35.4	Wed	11:30–12:30	H5	Liquid and Amorphous Metals II
MM 36.1–36.1	Wed	14:00–14:30	H16	HV Bitzek
MM 37.1–37.6	Wed	14:45–16:15	H16	Mechanical Properties II
MM 38.1–38.6	Wed	16:30–18:00	H16	Mechanical Properties III
MM 39.1–39.4	Wed	14:45–15:45	H4	Topical Session Photovoltaic Materials III
MM 40.1–40.3	Wed	16:00–17:00	H4	Topical Session Growth Kinetics I
MM 41.1–41.4	Wed	17:15–18:15	H4	Topical Session Growth Kinetics II
MM 42.1–42.4	Wed	14:45–16:15	H6	Topical Session Multifunctional Materials III
MM 43.1–43.5	Wed	14:45–16:00	H5	Materials Design I
MM 44.1–44.4	Wed	16:15–17:15	H5	Materials Design II
MM 45.1–45.1	Thu	9:30–10:00	H16	HV Winter
MM 46.1–46.6	Thu	10:15–11:45	H16	Nanostructured Materials III
MM 47.1–47.4	Thu	10:15–11:30	H4	Topical Session Growth Kinetics III
MM 48.1–48.4	Thu	11:45–13:00	H4	Topical Session Growth Kinetics IV
MM 49.1–49.4	Thu	10:15–11:45	H6	Topical Session Battery Materials I
MM 50.1–50.2	Thu	12:15–13:00	H6	Topical Session Battery Materials II
MM 51.1–51.4	Thu	10:15–11:15	H5	Electronic Properties I
MM 52.1–52.6	Thu	11:30–13:00	H5	Electronic Properties II
MM 53.1–53.4	Thu	14:00–15:00	H16	Nanostructured Materials IV
MM 54.1–54.7	Thu	15:15–17:00	H16	Nanostructured Materials V
MM 55.1–55.5	Thu	14:00–15:15	H4	Topical Session Growth Kinetics V
MM 56.1–56.6	Thu	15:30–17:00	H4	Topical Session Growth Kinetics VI
MM 57.1–57.5	Thu	14:00–15:30	H6	Topical Session Battery Materials III
MM 58.1–58.5	Thu	15:45–17:30	H6	Topical Session Battery Materials IV
MM 59.1–59.5	Thu	14:00–15:15	H5	Phase Transitions I
MM 60.1–60.6	Thu	15:30–17:00	H5	Phase Transitions II

Annual General Meeting of the Metal and Material Physics Division

Wednesday 18:30–19:30 H6

- Report of the chairman of the Metal and Material Physics Division.
- Election of the new chairman of the Metal and Material Physics Division.
- Invited talks and symposia for the next spring meeting 2011.
- Other topics.