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

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Overview of Invited Talks (Hauptvorträge) and Sessions

(lecture rooms TC 006, H 0106, H 0107, H 1029; Poster B)

Invited Talks (Hauptvorträge)

MM 1.1	Mon	9:30–10:00	H 0107	**Production of Multifunctional Materials Using High-Pressure Torsion** — •Zenji Horita
MM 10.1	Mon	15:00–15:30	H 0107	**Microstructural and mechanical anisotropy of ultra fine grained metals and alloys after ECAP** — •Martin Wagner, Matthias Hockauf
MM 18.1	Tue	9:30–10:00	H 0107	**Twinning-mediated plasticity in Au Nanowires** — Andreas Sedlmayr, Reiner Mönig, Gunther Richter, •Oliver Kraft
MM 27.1	Wed	9:30–10:00	TC 006	**First-principles Predictions of Solute Strengthening in Al and Mg alloys** — •William Curtin, Gerard Leyson
MM 42.1	Wed	18:00–18:30	H 0107	**In-situ Transmission Electron Microscopy of Phase Transformations in Materials** — •Erdmann Spiecker
MM 43.1	Wed	18:30–19:00	H 0107	**Advancing ab initio methods to finite temperatures for applications in materials design** — •Tilmann Hickel, Alexey Dick, Fritz Körmann, Blazej Grabowski, Jörg Neugebauer
MM 44.1	Thu	9:30–10:00	H 0107	**Positrons Probing Matter: Bulk and Thin Film Studies Using the Low-Energy Positron Beam at NEPOMUC** — •Chrisotph Hugenschmidt
MM 52.1	Thu	15:00–15:30	H 0107	**A renaissance in atom-probe tomography for the study of all materials** — •David Seidman

Sessions

MM 1.1–1.1	Mon	9:30–10:00	H 0107	**HV Horita**
MM 2.1–2.6	Mon	10:15–11:45	TC 006	**Computational Materials Modelling I - Multiscale: Fundamentals**
MM 3.1–3.5	Mon	10:15–11:45	H 0107	**Topical Session Bulk Nanostrucured Materials I - Processing**
MM 4.1–4.5	Mon	10:15–11:30	H 0106	**Mechanical Properties I**
MM 5.1–5.5	Mon	10:15–11:30	H 1029	**Transport and Diffusion I**
MM 6.1–6.5	Mon	11:30–12:45	H 0106	**Mechanical Properties II**
MM 7.1–7.5	Mon	11:30–12:45	H 1029	**Transport and Diffusion II**
MM 8.1–8.5	Mon	11:45–13:00	TC 006	**Computational Materials Modelling II - Methods**
MM 9.1–9.4	Mon	11:45–13:00	H 0107	**Topical Session Bulk Nanostrucured Materials II - Processing**
MM 10.1–10.1	Mon	15:00–15:30	H 0107	**HV Wagner**
MM 11.1–11.5	Mon	15:00–17:45	EB 202	**Joint Session FePt Nanoparticles (jointly with DS, MM)**
MM 12.1–12.5	Mon	15:00–17:30	H 0105	**Joint Symposium 100 years of X-ray diffraction: from the Laue experiment to new frontiers (jointly with KR, BP, CPP, DF, MA, MM, GP)**
MM 13.1–13.5	Mon	15:45–17:00	TC 006	**Computational Materials Modelling III - Alloys**
MM 14.1–14.6	Mon	15:45–17:15	H 0107	**Topical Session Bulk Nanostrucured Materials III - Microstructure and Characterization I**
MM 15.1–15.5	Mon	15:45–17:00	H 0106	**Mechanical Properties III**
MM 16.1–16.5	Mon	15:45–17:00	H 1029	**Microstructure and Phase Transformations I**

MM 17.1–17.89	Mon	17:00–19:00	Poster B	**Poster Session**
MM 18.1–18.1	Tue	9:30–10:00	H 0107	**HV Kraft**
MM 19.1–19.7	Tue	10:15–12:00	TC 006	**Computational Materials Modelling IV - Finite Temperature**
MM 20.1–20.4	Tue	10:15–11:30	H 0107	**Topical Session Bulk Nanostrucured Materials IV - Microstructure and Characterization II**
MM 21.1–21.6	Tue	10:15–11:45	H 0106	**Microstructure and Phase Transformations II**
MM 22.1–22.5	Tue	10:15–11:30	H 1029	**Functional Materials I**
MM 23.1–23.6	Tue	11:30–13:00	H 0107	**Topical Session Bulk Nanostrucured Materials V - Microstructure and Characterization III**
MM 24.1–24.4	Tue	11:30–12:30	H 1029	**Functional Materials II**
MM 25.1–25.5	Tue	11:45–13:00	H 0106	**Microstructure and Phase Transformations III**
MM 26.1–26.4	Tue	12:00–13:00	TC 006	**Computational Materials Modelling V - Fracture and Other Failure Mechanisms**
MM 27.1–27.1	Wed	9:30–10:00	TC 006	**HV Curtin**
MM 28.1–28.4	Wed	10:15–11:30	TC 006	**Topical Session Theory meets Experiment I - Intermetallics and Steels**
MM 29.1–29.5	Wed	10:15–11:45	H 0107	**Topical Session Bulk Nanostrucured Materials VI - Mechanical Properties I**
MM 30.1–30.5	Wed	10:15–11:30	H 0106	**Functional Materials III**
MM 31.1–31.8	Wed	10:15–12:15	H 1029	**Nanocharacterization**
MM 32.1–32.4	Wed	11:30–12:30	H 0106	**Functional Materials IV**
MM 33.1–33.5	Wed	11:30–13:00	TC 006	**Topical Session Theory meets Experiment II - Nanocomposites and Microstructure**
MM 34.1–34.5	Wed	11:45–13:00	H 0107	**Topical Session Bulk Nanostrucured Materials VII - Mechanical Properties II**
MM 35.1–35.4	Wed	15:00–16:15	TC 006	**Topical Session Theory meets Experiment III - Bond-order Potentials and Finite Temperature**
MM 36.1–36.5	Wed	15:00–16:30	H 0106	**Topical Session Bulk Nanostrucured Materials VIII - Functional Properties I**
MM 37.1–37.5	Wed	15:00–16:45	H 0107	**Topical Session Modern Atom Probe Tomography I - Fundamentals**
MM 38.1–38.8	Wed	15:00–17:00	H 1029	**Liquid and Amorphous Metals**
MM 39.1–39.5	Wed	16:15–17:45	TC 006	**Topical Session Theory meets Experiment IV - Batteries, Thermoelectrics and Thermal Barrier Coatings**
MM 40.1–40.5	Wed	16:30–17:45	H 0106	**Topical Session Bulk Nanostrucured Materials IX - Functional Properties II**
MM 41.1–41.4	Wed	16:45–17:45	H 0107	**Topical Session Modern Atom Probe Tomography II - Functional Materials**
MM 42.1–42.1	Wed	18:00–18:30	H 0107	**HV Spiecker**
MM 43.1–43.1	Wed	18:30–19:00	H 0107	**HV Hickel**
MM 44.1–44.1	Thu	9:30–10:00	H 0107	**HV Hugenschmidt**
MM 45.1–45.6	Thu	10:15–11:45	TC 006	**Computational Materials Modelling VI - Thermal Conductivity and Transport**
MM 46.1–46.6	Thu	10:15–11:45	H 1029	**Nanomaterials I**
MM 47.1–47.5	Thu	10:15–11:45	H 0107	**Topical Session Modern Atom Probe Tomography III - Functional and Nanostructured Materials**
MM 48.1–48.7	Thu	10:15–12:00	H 0106	**Joint Session Magnetic Shape Memory Alloys I (jointly with DS, MA)**
MM 49.1–49.5	Thu	11:45–13:00	H 1029	**Nanomaterials II**
MM 50.1–50.5	Thu	11:45–13:00	H 0107	**Topical Session Modern Atom Probe Tomography IV - Thin Films and Structural Materials**
MM 51.1–51.5	Thu	11:45–13:00	TC 006	**Computational Materials Modelling VII - Oxides**
MM 52.1–52.1	Thu	15:00–15:30	H 0107	**HV Seidman**
MM 53.1–53.14	Thu	15:00–18:45	H 0112	**Joint Session Magnetic Shape Memory Alloys II (jointly with DS, MA)**
MM 54.1–54.6	Thu	15:45–17:15	TC 006	**Computational Materials Modelling VIII - Mechanical Properties and Strain**
MM 55.1–55.5	Thu	15:45–17:00	H 0107	**Topical Session Modern Atom Probe Tomography V - Steels, Alloys and Structural Materials**
MM 56.1–56.4	Thu	15:45–16:45	H 0106	**Biomaterials**
MM 57.1–57.5	Thu	15:45–17:00	H 1029	**Complex Materials I**

MM 58.1–58.4	Thu	17:00–18:00	H 0107	**Topical Session Modern Atom Probe Tomography VI - Ordering, Clustering and Segregation**
MM 59.1–59.5	Thu	17:00–18:15	H 1029	**Complex Materials II**
MM 60.1–60.7	Thu	17:15–19:00	TC 006	**Computational Materials Modelling IX - Interfaces and Boundaries**

Topical session "Modern Atom Probe Tomography"

Organizers: Prof. Dr. Guido Schmitz (Universität Münster), Prof. Dr. Cynthia Volkert (Universität Göttingen), Prof. Dr. Dierk Raabe (MPIE Düsseldorf)
Atom probe tomography has experienced tremendous progress by introduction of laser pulsing and efficient wide-angle detector systems. Nowadays, the method represents a versatile tool of nano-analysis that can be applied not only to complex metallic alloys but also ceramics, semi-conductors and even polymeric and biomaterials. An increasing number of instruments are presently installed in many laboratories in Germany and Europe. To reflect this exciting development, the symposium invites all kinds of contributions addressing recent methodic aspects as well as examples of applications. Reports on latest instrumentation, physics of high field laser-matter interaction, tomographic data reconstruction are highly welcome as well as current studies by atom probe tomography on chemical structure and solid state reactions in nanostructured materials, in alloys and various functional materials. Also, presentations involving both, atom probe tomography and directly related kinetic-thermodynamic simulations are welcome.

Topical session "Bulk Nanostructured Materials"

Organizers: Prof. Dr. Roland Würschum (Technische Universität Graz), Prof. Dr. Gerhard Wilde (Universität Münster), Prof. Dr. Mathias Göken (Universität Erlangen-Nürnberg)
Research and development in the field of bulk nanostructured materials has become a prominent topic in modern materials science over the last years. Severe plastic deformation (SPD), in particular by high-pressure torsion (HPT), equal channel angular processing (ECAP), or accumulative roll bonding (ARB), is currently seen as the most prospective processing route for the synthesis of bulk nanophase metals. In addition to the inherent large-scale size, attractive mechanical properties such as high strength in combination with good ductility are associated with the pore-free ultra-fine grained structure of SPD-processed metals. Most recently, also functional properties of bulk nanostructured materials have increasingly moved into the focus, reaching from SPD-processed nanocrystalline magnetic alloys or bulk shape memory nanoalloys to nanometals and alloys for hydrogen storage as well as to thermoelectric materials.
The topical session intends to provide a forum for scientific exchange in this interdisciplinary field of bulk nanostructured materials. Oral and poster presentations on synthesis, structure, and properties of these fascinating new materials, including theory and modelling, are highly welcome.

Topical session "Materials Design on the Atomistic Scale: Theory meets Experiment"

Organizers: Prof. Dr. Jörg Neugebauer (MPIE Düsseldorf), Prof. Dr. Reiner Kirchheim (Universität Göttingen)
Thanks to impressive new developments and techniques both in theory and experiment enormous progress has been made in characterizing and understanding materials on the atomistic scale. Theoretical simulations made huge progress, both with respect to predictive power and complexity of structures and questions that can be addressed. Advances in electron microscopy, 3D atom probe, synchrotron radiation, neutron scattering, or scanning tunneling microscopy to name only a few allow nowadays a spatial and temporal resolution unimaginable a few years ago. These advances in theory and experiment open a new and exciting interdisciplinary field with great opportunities for understanding and designing materials for next generation technological challenges. The aim of the symposium is to give a brief overview about recent achievements, new approaches and successful applications in the various fields and to provide a joint platform for the various scientific communities.

Invited talks of the Joint Symposium SYTM (MA, MM, DS) "Tailoring magnetism in $L1_0$-ordered nanostructures: Perspectives for magnetic recording beyond 1 Terabit/in^2"

See SYTM for the full program of the symposium.

SYTM 1.1	Mon	9:30–10:00	H 0105	**Thermally Assisted Magnetic Recording at 620 Gb/in^2 using Granular $L1_0$ FeCuPtAg-X Media** — •D. Weller, O. Mosendz, S. Pisana, T. Santos, G. Parker, J. Reiner, B. C. Stipe
SYTM 1.2	Mon	10:00–10:30	H 0105	**Large-area hard magnetic $L1_0$-FePt and composite $L1_0$-FePt based nanopatterns** — •Dagmar Goll, Thomas Bublat
SYTM 1.3	Mon	10:30–11:00	H 0105	**Electric field control of magnetic exchange coupling in FePt / Fe-O thin fims** — •Karin Leistner

SYTM 1.4	Mon	11:00–11:30	H 0105	**FePt-based exchange coupled composite media** — •Manfred Albrecht
SYTM 1.5	Mon	11:30–12:00	H 0105	**Optimization of FePt films for recording applications by micromagnetic modeling** — •Josef Fidler, Jehyun Lee, Barbara Dymerska, Dieter Suess

Invited talks of the Joint Symposium SYXD (KR, BP, CPP, DF, GP, MA, MI, MM) "100 years since the Laue experiment: Topical aspects of diffraction and scattering"

See SYXD for the full program of the symposium.

SYXD 1.1	Mon	15:00–15:30	H 0105	**Disputed discovery: The beginnings of X-ray diffraction in crystals** — •Michael Eckert
SYXD 1.2	Mon	15:30–16:00	H 0105	**Why are quasicrystals quasiperiodic?** — •Walter Steurer
SYXD 1.3	Mon	16:00–16:30	H 0105	**Coherent Diffraction Imaging with Free-Eletron Lasers** — •Massimo Altarelli
SYXD 1.4	Mon	16:30–17:00	H 0105	**X-ray free-electron lasers - emerging opportunities for structural biology** — •Ilme Schlichting
SYXD 1.5	Mon	17:00–17:30	H 0105	**Structure analysis by x-ray diffraction and x-ray imaging: beyond crystals, beyond averages, and beyond modeling** — •Tim Salditt

Annual General Meeting of the Metal and Material Physics Division

Wednesday 19:30–20:30 Raum H 0107

This year's general meeting of the Metal and Materials Physics Division (FV MM) is taking place on Wednesday at 19:30 in room H 0107 after the invited talks (Hauptvorträge) by E. Spiecker and T. Hickel and the following social gathering. The meeting will be opened with a short welcome address and the report of the chairman of the Metal and Materials Physics Division (AGMM). Afterwards, all attendees are invited to suggest symposia and speakers which could be invited for the next spring meeting 2013 in Regensburg. Everybody is highly welcome to join the social gathering and participate at the annual meeting directly afterwards.