MSE Experience · Competence · Knowledge
Materials Science and Engineering

Key dates MSE 2018

Deadline for abstracts	February 28th, 2018
Evaluation of the abstracts	March, 2018
Confirmation to authors	May, 2018
Preliminary programme	June, 2018
Final programme	August, 2018

September 25th, 2018 DGM-Tag 2018, the DGM General Assembly

September 26th – 28th 2018 MSE-Congress

B01: Biomaterials for 3D printing

B02: Bioinstructive Hydrogels

B03: Degradation Mechanisms and Characterization of Biodegradable Materials

B04: From Old Creatures to New Concepts: Bioinspired Material Designs and Processing Strategies

B05: Biomaterials Applikation

B06: Biomaterials for Bone Substitution and Regeneration

B07: Bioactive, Antibacterial Surfaces and Coatings

B08: Biopolymers for Medical Applications

BIOMATERIALS

TOPIC COORDINATORS

ALDO R. BOCCACCINI

KLAUS D. JANDT

ENRICA VERNE

This topic addresses the growing interest of science and industry in the synthesis, characterization, testing, and application of biomaterials, as well as their closely related areas of medical devices, drug delivery, and tissue engineering. The motivation is not only the recent scientific progress in biomedical materials but also challenges on this exciting and strongly interdisciplinary field of science and engineering.

Materials scientists, physicists, chemists, and biologists in industrial R&D, as well as medical professionals are increasingly facing situations where materials are confronted with high performance requirements and a challenging biological environment at the same time.

MSE Experience · Competence · Knowledge
Materials Science and Engineering

C01: Correlative Electron Microscopy / Atom Probe Tomography

C02: Going 3D: From Image to Knowledge

C03: Tomographic and Radiographic Imaging with Synchrotron X-rays and Neutrons: Exploiting Contrast and Time

C04: In-situ Techniques and Advanced Microscopy for High Resolution and Multi Scale Characterization of Materials

C05: Small Scale and In-situ Mechanical Testing

C06: Surface and Thin Film Analysis

C07: Orientation Image Microscopy: The Evolution. EBSD, TKD, PED-TEM, ECCI + 3D world

C08: Microstructure Characterization Strategies for the Digital Twin

C09: Mechanical Processing and Deformation Induced Microstructural Evolution, Damage Mechanisms and Failure Characterization from Micro to Macro Imaging

CHARACTERIZATION

TOPIC COORDINATORS

NIK CHAWLA

FRANK MÜCKLICH

MARTINA ZIMMERMANN

The investigation of the origin and formation of material microstructures during processing and the effect that microstructure has on the properties of materials are questions of central importance in materials science and engineering. This topic covers symposia for presenting and discussing recent developments in this field, which focus on advancements of characterization techniques and its application in the macro, micro, nano as well as atomic scale of all kinds of materials.

Advances in characterization nowadays often mean the explicit consideration of the 3D nature of microstructures. In addition to this, in-situ characterization and in operando techniques are becoming increasingly important. And finally, high throughput characterization is growing more and more powerful.

MSE Experience · Competence · Knowledge
Materials Science and Engineering

F01: High-Temperature Functional Materials

F02: Surface Engineering and Functionalisation

F03: Advances in Thermoelectricity: From Materials to Devices

F04: Mixed Ionic-Electronic Conductors: Novel Oxide Materials and Engineered Microstructures

F05: Ferromagnetic Memory Alloys

F06: Materials Design for Electrochemical Energy Storage

F07: The Great Transition – The Importance of Critical Metals for Green Energy Technologies

F08: Advanced Materials for Lithium Ion Batteries

F09: Superconducting Materials for Energy Applications

F10: Interfaces in Microstructural Evolution: Structure, Properties, Anisotropy and Modelling

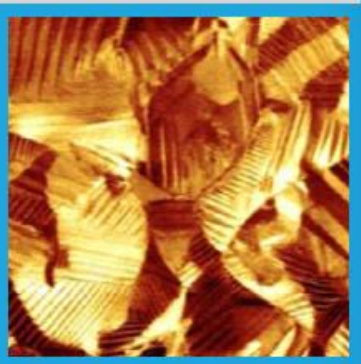
FUNCTIONAL MATERIALS, SURFACES AND DEVICES

TOPIC COORDINATORS

MICHAEL J. HOFFMANN

ANDRÉS FABIÁN LASAGNI

SONIA BRÜHL



Creating functionality of materials, surfaces and devices is the focus of the topic and its symposia covering recent developments on nano- and microstructured surfaces and materials for energy conversion, water treatment, transportation and storage, catalysts, shape memory alloys, as well as ferroelectric and multiferroic materials.

MSE Experience · Competence · Knowledge
Materials Science and Engineering

M01: Experimental and Computational Thermodynamics and Kinetics

M02: Atomistic Methods for Designing

M03: Microstructure Evolution in Applied Materials: Process to Property

M04: Predicting Interface Structure and Dynamics – From Atomic- to Meso-Scale

M05: Plasticity Across the Scales – From Microstructure Changes to Bulk Mechanical Behavior

M06: Cellular and Granular Porous Microstructures: Computational Design and Application

M07: Modeling and Process Simulation of Fiber-Reinforced Polymers

M08: Integrated Computational Materials Engineering

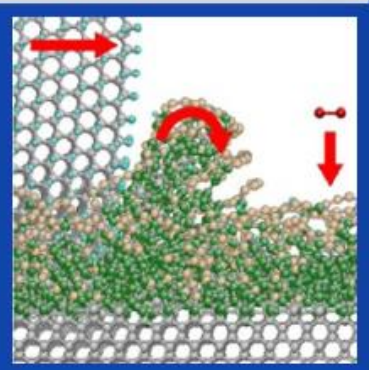
MODELLING AND SIMULATION

TOPIC COORDINATORS

ALEXANDER HARTMAIER

JÖRG NEUGEBAUER

BRITTA NESTLER



Modeling and simulation methods play an increasingly important role in academic research as well as in industrial applications. This topic provides a platform for presenting and discussing the current developments in linking processing, microstructure evolution and functional and mechanical properties of materials. Various methods for material modeling will be covered, with a special emphasis on scalebridging materials modeling. With metals, ceramics, glasses, polymers and composites, all classes of materials will be covered, with a wide spectrum of applications as functional, lightweight and high-strength materials.

MSE Experience · Competence · Knowledge
Materials Science and Engineering

P01: Manipulation of Matter by Electric and Magnetic Fields

P02: Additive Manufacturing Technologies and Materials

P03: Coatings and Thin Films for Structural and Functional Applications - Monika Willert-Porada Memorial Sympoisum

P04: Nanocomposites and Nanolaminated Functional Coatings

P05: Advances in Atomic Layer Deposition Technologies: Conformal Thin Films and Hybrid Materials for Energy, Electronics and Health

P06: Molecular Preparative Approaches to Functional Materials

P07: Joining

P08: Damage in Metal Forming

P09: Solution-Processed Absorber Materials for Photovoltaics and Solar Fuel Device Concepts

P10: Wet Processing of Nanostructured Materials

P11: Thin Film Formation and Nano Structuring Through the Control of Geometry and Deposition Parameters

PROCESSING AND SYNTHESIS

TOPIC COORDINATORS

MONICA FERRARIS

SANJAY MATHUR

RALF RIEDEL

The emphasis of this topic is the development of new techniques to synthesize materials with desired microstructure-property relation; to understand the physical phenomena that underpin materials synthesis such as diffusion, nucleation, and phase transitions; and to develop in situ monitoring and diagnostic capabilities. The synthesis of complex thin films, nanoscale materials, composites, coatings are just a part of this comprehensive emphasis.

MSE Experience · Competence · Knowledge
Materials Science and Engineering

S01: Environmentally Assisted Cracking of High-Strength Alloys

S02: Experiments and Simulations Towards Understanding Tribology Across Length-Scales

S03: Process-Microstructure-Property Relationships in High-Performance Alloys Produced by Additive Manufacturing

S04: Micro- and Nanoarchitected Materials

S05: Bulk Ultrafine- and Nano-Structured Materials

S06: Compositionally Complex Alloys – High Entropy Alloys

S07: Mechanical Behavior of Advanced Structural Materials -- Reinhard Pippan Honorary Symposium

S08: Advanced Steels

S09: Light Weight Metals

STRUCTURAL MATERIALS

TOPIC COORDINATORS

HORST BIERMANN

MARTIN HEILMAIER

CAROLIN KOERNER

This topic focuses on the relationships between the structure of materials and their properties and performance. Regardless of the material class being metallic, ceramic, polymeric or composite, an understanding of the structure-property relationships provides a scientific basis for developing engineering materials for advanced structural applications. Contributions are sought from both, fundamental and applied research in this field responding to the ever-increasing demand for improved and better-characterized materials.

MSE Experience · Competence · Knowledge
Materials Science and Engineering