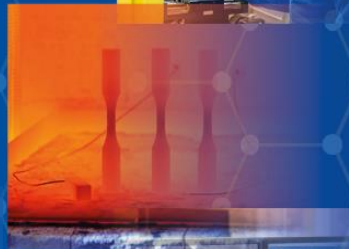


# Conference schedule

IC-MPPE for Sustainable and Circular Economy for metallic materials

IC-MPPE for energy transport, storage and conversion

Advanced materials and systems for smart electronics



# IC-MPPE 2024



The conference will be organised in sessions on the following core topics of the IC-MPPE programme:

- **IC-MPPE for Sustainable and Circular Economy for metallic materials**
  - Accelerated materials design
  - Digital and green production
  - Digitalization and reliability of railway vehicles and tracks
  - Condition monitoring and condition-based maintenance
  - High-end material characterization methods;
- **IC-MPPE for energy transport, storage and conversion**
  - Hydrogen transport and storage;
  - Electrical energy storage and conversion;
- **Advanced materials and systems for smart electronics**
  - Reliability of electronic-based systems
  - Sensor development

## Conference schedule Thursday, 6.6.2024

start	Congress Hall	
07:30	On-site registration (office in front of the rooms)	
08:30	Opening ceremony & introduction to the IC-MPPE programme	
	<b>Erzherzog Johann Hall</b>	<b>Peter Tunner Hall</b>
09:00	Accelerated materials design I (Chair: Daniel Scheiber)	Hydrogen transport and storage I (Chair: Vsevolod Razumovskiy)
10:20	Coffee break	Coffee break
10:50	Digital and green production I (Chair: Peter Raninger)	Hydrogen transport and storage II (Chair: Vsevolod Razumovskiy)
12:10	Lunch at the conference venue	Lunch at the conference venue
13:30	Accelerated materials design II (Chair: Daniel Scheiber)	Condition monitoring and condition-based maintenance I (Chair: Hans-Peter Gänser)
14:50	Coffee break	Coffee break
15:20	Digital and green production II (Chair: Peter Raninger)	Sensor development (Chair: Anton Köck)
17:00	break	break
	Congress Hall	
18:00	Get-together & Poster Session	
19:00	Conference Dinner	

## Thursday, 6.6.2024 - Erzherzog Johann Hall

start	end	Accelerated materials design I		
09:00	09:20	Accelerating the design of sustainable and high performing metallic materials and solutions	Anssi Laukkanen	VTT Technical Research Centre of Finland
09:20	09:40	Radically new possibilities for materials discovery on the materials acceleration platform ALPmat	Jürgen Spitaler	Materials Center Leoben Forschung GmbH
09:40	10:00	Accelerated design of bainitic steels – optimized experimental workflow	Dominik Brandl	Materials Center Leoben Forschung GmbH
10:00	10:20	How Machine Learning Interatomic Potentials can advance computer aided materials design	Max Ludwig Hodapp	Materials Center Leoben Forschung GmbH
10:20	10:50	Coffee break		
start	end	Digital and green production I		
10:50	11:10	Trends and needs in the European steel industry for digitalization and decarbonization	Klaus Peters	European Steel Technology Platform (ESTEP)
11:10	11:30	Green steel production and its implications for digitalization	Markus Sonnleitner	voestalpine Stahl GmbH
11:30	11:50	From BOF to EAF: Considering new elements and concentrations for phase transformation kinetics	Bernhard Bloder	Materials Center Leoben Forschung GmbH
11:50	12:10	Development and application of modern prediction models for heavy plate production	Thomas Kaltenbrunner	voestalpine Grobblech GmbH

## Thursday, 6.6.2024 - Peter Tunner Hall

start	end	Hydrogen transport and storage I		
09:00	09:20	Characterizing the fracture micromechanisms of pipeline steels in the presence of hydrogen	Tom Depover	Ghent University - Department of Materials, Textiles and Chemical Engineering
09:20	09:40	Digital material design for hydrogen transport and storage applications	Vsevolod Razumovskiy	Materials Center Leoben Forschung GmbH
09:40	10:00	Industrial challenges related to HISC in Ni-base alloys and austenitic steels	Jan Platl	voestalpine Böhler Edelstahl GmbH & Co KG
10:00	10:20	Hydrogen in (used) pipelines - H <sub>2</sub> quality, flow dynamics and consequences for the refurbishment	Thomas Stöhr	Hydrogen Research Center Austria (HyCentA)
10:20	10:50	Coffee break		
start	end	Hydrogen transport and storage II		
10:50	11:10	Fundamental insights into the mechanism of hydrogen embrittlement	Tilman Hickel	Bundesanstalt für Materialforschung und -prüfung (BAM)
11:10	11:30	FEM modeling of H redistribution within the actual microstructure during tensile loading	Jürgen Maierhofer	Materials Center Leoben Forschung GmbH
11:30	11:50	Hydrogen embrittlement of two carbon steels in a 1000 bar hydrogen environment	Gregor Mori	Montanuniversität Leoben - Chair of General and Analytical Chemistry
11:50	12:10	to be announced	Jader Furtado	Air Liquide - Materials Science Group

# Thursday, 6.6.2024 - Erzherzog Johann Hall

start	end	Accelerated materials design II		
13:30	13:50	From Virtual Materials Design to Materials Acceleration Platforms	Wolfgang Wenzel	Karlsruhe Institute of Technology - Institute of Nanotechnology
13:50	14:10	Design of Laves phase-reinforced compositionally complex alloy	Gerald Ressel	Materials Center Leoben Forschung GmbH
14:10	14:30	Software and data infrastructure for material data management	Heimo Gursch	Know-Center / TUW-IMST
14:30	14:50	Process and material design of high-performance ODS components for energy transition applications	Michael Mayer	Materials Center Leoben Forschung GmbH
14:50	15:20	Coffee break		
start	end	Digital and green production II		
15:20	15:40	Digital design of free forming processes for aerospace components	Aleksandar Stanojevic	voestalpine BÖHLER Aerospace GmbH & Co KG
15:40	16:00	Digitalization of a research "production" lab: Opportunities for upscaling and knowledge transfer	Martin Stockinger	Montanuniversität Leoben - Chair of Metal Forming
16:00	16:20	Current challenges for the automotive sector – Suppliers in a sandwich position between OEM and material producer	Thomas Otten	Robert Bosch GmbH - Engineering Heat Treatment, Metal Technology
16:20	16:40	Optimization of magnetic properties of electrical steel strip along the process chain	Masoud Sistaninia	Materials Center Leoben Forschung GmbH
16:40	17:00	Concepts for offline and inline measurement of material properties based on magnetic excitation	Mohammad Zhian Asadzadeh	Materials Center Leoben Forschung GmbH



## Thursday, 6.6.2024 - Peter Tunner Hall

start	end	Condition monitoring and condition-based maintenance I		
13:30	13:50	Demand-oriented street lighting	Gerold Meininger	MEDS
13:50	14:10	Energy-aware condition monitoring of turbine blades on wireless sensor nodes	Manfred Mücke, Lukas Hanna	Materials Center Leoben Forschung GmbH
14:10	14:30	Model order reduction in continuous galvanizing baths	Werner Eßl	Materials Center Leoben Forschung GmbH
14:30	14:50	Hybrid modeling - exploring the field between white-box and black-box modeling	Hans-Peter Gänser	Materials Center Leoben Forschung GmbH
14:50	15:20	Coffee break		
start	end	Sensor development		
15:20	15:40	Spark ablation and impaction printing as a building block for nanostructured-based multifunctional devices: from energy storage and conversion devices up to sensing applications	Leandro Sacco	VSParticle B.V.
15:40	16:00	Chemical Sensors – where to go? Emerging Applications for Environment and Health	Anton Köck	Materials Center Leoben Forschung GmbH
16:00	16:20	Lab-on-Foil Microfluidic Chips for point of care Diagnostics of Corona antibodies fabricated by roll-to-roll UV NIL	Anja Haase	Joanneum Research - Materials - Hybrid Electronics and Patterning
16:20	16:40	Inkjet Printing for Printed Electronics	Peter Bauer	PROFACTOR GmbH
16:40	17:00	Textile-integrated sensor technology and simulation of environmental conditions for testing electronics	Rudolf Heer	Silicon Austria Labs - Sensor Systems

## Conference schedule Friday, 7.6.2024

start	Erzherzog Johann Hall	Peter Tunner Hall
08:15	Digitalization and reliability of railway vehicles and tracks I (Chair: Jürgen Maierhofer)	Electrical energy storage and conversion I (Chair: Roland Brunner)
09:35	Coffee break	Coffee break
10:05	Digitalization and reliability of railway vehicles and tracks II (Chair: Jürgen Maierhofer)	Electrical energy storage and conversion II (Chair: Roland Brunner)
11:25	Coffee break	Coffee break
11:55	High-end material characterization methods (Chair: Gerald Ressel)	Reliability of electronic-based systems (Chair: Elke Kraker)
13:15	Lunch	Lunch
14:30	Condition monitoring and condition-based maintenance II (Chair: Hans-Peter Gänser)	Reliability of electronic-based systems (Chair: Elke Kraker)
15:30	Closing & final Coffee	Closing & final Coffee



## Friday, 7.6.2024 - Erzherzog Johann Hall

start	end	Digitalization and reliability of railway vehicles and tracks I		
08:15	08:35	Rail vehicles in the future: challenges and answers	Thomas Moshhammer, Bernhard Girstmair	SIEMENS-Mobility GmbH
08:35	08:55	Tailored inspection intervals for wheelset axles	Jürgen Maierhofer	Materials Center Leoben Forschung GmbH
08:55	09:15	Overview of condition-based wheelset maintenance of rail vehicles at ÖBB	Philipp Linzbichler	ÖBB-Personenverkehr AG
09:15	09:35	Predictive maintenance in reality. An example of optimised wheelset maintenance at SBB	Wilfried Bürzle	SBB AG
09:35	10:05	Coffee break		
start	end	Digitalization and reliability of railway vehicles and tracks II		
10:05	10:25	Initiatives of digitalization for wheel-rail contact studies in Brazil	Professor Roberto Martins de Souza	Universita Sao Paulo, Brazil
10:25	10:45	Novel sensor concepts for railway track condition monitoring	Sven Eck, Christoph Tuschl	Materials Center Leoben Forschung GmbH
10:45	11:05	Steel development for railway turnouts	Michael Mayer	Materials Center Leoben Forschung GmbH
11:05	11:25	Investigation of the wheel impact load and transition point on fixed crossings, combining MBS & FEA with in-track measurements	Thomas Titze	voestalpine Railway Systems

## Friday, 7.6.2024 - Peter Tunner Hall

start	end	Electrical energy storage and conversion I		
08:15	08:35	Functional coatings for the production of renewable hydrogen	Stephan Abermann	AIT Austrian Institute of Technology GmbH
08:35	08:55	Eco- friendly low-cost methods for manufacturing multi-layer thin film capacitors	Ivana Panzic, Alexander Kobald, Herbert Kobald, Martina Angermann, Theresa Gindel	Materials Center Leoben Forschung GmbH
08:55	09:15	Towards green solvent processing of organic solar cells and modules	Thomas Rath	TU Graz - Institute for Chemistry and Technology of Materials (ICTM)
09:15	09:35	Nanostructured charge transfer layers for perovskite solar cells: an opportunity or a distraction?	Vilko Mandic	University of Zagreb - Department of Inorganic Chemical Technology and Non-Metals
09:35		Coffee break		
start	end	Electrical energy storage and conversion II		
10:05	10:25	Analytical and high-resolution electron microscopy of materials for batteries and solar cells	Daniel Knez	TU Graz - Institute of Electron Microscopy and Nanoanalysis (FELMI)
10:25	10:45	Using effective Hamiltonians to optimize BaTiO3-based ferroelectric materials for capacitor applications	Maxim N. Popov, Florian Mayer	Materials Center Leoben Forschung GmbH
10:45	11:05	New Materials for energy storage and energy conversion – an industrial view	Christoph Auer	TDK Electronics
11:05	11:25	How Artificial Intelligence fosters the Understanding of the Structure Property Relationship in Materials for Energy storage and Conversion Applications?	Roland Brunner	Materials Center Leoben Forschung GmbH

## Friday, 7.6.2024 - Erzherzog Johann Hall

start	end	High-end material characterization methods		
11:55	12:15	Highlights & Challenges of residual stress measurements with electron microscopy	Bernhard Sartory	Materials Center Leoben Forschung GmbH
12:15	12:35	Unprecedented insights into synthesis - structure - property relations of TiSiN coatings by combining advanced characterization techniques	Nina Schalk	Montanuniversität Leoben - Department of Materials Science
12:35	12:55	Towards understanding high-temperature fatigue of WC-Co hard metals via eddy current heated uniaxial loading tests in vacuum	Thomas Klünsner	Materials Center Leoben Forschung GmbH
12:55	13:15	Miniaturized in situ fracture experiments to probe local interface reliability	Daniel Kiener	Montanuniversität Leoben - Department of Materials Science
13:15	14:30	Lunch		
start	end	Condition monitoring and condition-based maintenance II		
14:30	14:50	The Rayleigh-Ritz Autoencoder – A new method for constructing hybrid models guaranteeing physics	Dimitar Ninevski	Montanuniversität Leoben - Chair of Automation
14:50	15:10	Strategies for condition monitoring in drilling production	Tamara Feil	CERATIZIT Austria
15:10	15:30	Condition monitoring for milling tools with reduced instrumentation requirements	Elias Jan Hagendorfer	Materials Center Leoben Forschung GmbH

## Friday, 7.6.2024 - Peter Tunner Hall

start	end	Reliability of electronic-based systems I		
11:55	12:15	Application of machine learning algorithms for defect analysis in semiconductors using high resolved scanning acoustic micorscopy	Peter Czurratis, Tatjana Djuric-Rissner, Arya Sukumaran Nair	PVA TePla AG
12:15	12:35	Thermal analysis of innovative vertical GaN based power devices	Sandra Fischer	Materials Center Leoben Forschung GmbH
12:35	12:55	Advanced Characterization and Modeling Needs for Metallizations in Microelectronics Applications	Peter Imrich	KAI
12:55	13:15	Fatigue mechanisms in sustainable solder balls: An ML-assisted, correlative study	Charlotte Cui	Materials Center Leoben Forschung GmbH
13:15	14:45	Lunch		
start	end	Reliability of electronic-based systems II		
14:45	15:05	Challenges in digital light printing of electronic based systems – process development and reliability simulation	Peter Fuchs	Polymer Competence Center Leoben GmbH (PCCL)
15:05	15:25	Thermomechanical coupling of phase transformations and constitutive laws to describe microstructural evolution and fatigue in sustainable solders	Wolfgang Flachberger	Materials Center Leoben Forschung GmbH
15:25	15:45	Process and defect modelling of sapphire crystal growth - track to virtual methodology	Georg Reiss	Materials Center Leoben Forschung GmbH

Organising committee:

**Dr. S. Eck**

**Dr. W. Ecker**

**Dr. G. Hackl**

**Dr. E. Kraker**

**Dr. G. Ressel**

**Dr. T. Klünsner**

**Contact:**

**MCL (talks, session planning):**

**[sven.eck@mcl.at](mailto:sven.eck@mcl.at)**

**ASMET (fees, accomodation, on-site assistance):**

**[ic-mppe2024@asmet.at](mailto:ic-mppe2024@asmet.at)**