

PROGRAM

**Department of Materials Science
Montanuniversität Leoben**

**4th Materials Science Colloquium
69. Metallkunde-Kolloquium
Lech am Arlberg
07. – 10. April 2025**

*Highlight Topic:
Sustainable Materials*

**Welcome Reception with Pfefferkorn Family:
Monday, April 07th, 2025, 18.30 h**

Organization:

Department of Materials Science
Montanuniversität Leoben
A-8700 Leoben, Roseggerstraße 12

Steering Committee:

Prof. Dr. Christian Mitterer
Prof. Dr. Ronald Schnitzer
Prof. Dr. Jürgen Eckert
Prof. Dr. Raul Bermejo
Prof. Dr. Lorenz Romaner
Prof. Dr. Daniel Kiener

Organization Committee:

Dr. Anna Jelinek
Ass. Prof. Dr. Barbara Putz
Dr. Oleksandr Glushko

Program

All presentations will be held in the seminar room of Hotel Krone in Lech am Arlberg.

All presentation times include discussion time, invited presentations (IP) 25 + 5 min and
regular presentations (P) 15 + 5 min

Due to the full program please keep in time

Tuesday, 08. April 2025

13.55 Welcome

Chair: Ass.Prof. Barbara Putz

14.00	Vogl, L. M. (IP)	Unraveling the Structure-Property Relationship of innovative Materials using Advanced Electron Microscopy
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Max Planck Institute for Sustainable Materials, Germany

14.30	Dumitraschkewitz, P. (P)	In-situ STEM investigation of primary phase formation of high Fe-content Al alloys
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Chair of Non-ferrous Metallurgy, Montanuniversität Leoben, Austria

14.50	Glushko, O. (P)	Making steels greener: challenges for structure and properties
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Department of Materials Science, Montanuniversität Leoben, Austria

15.10	Jovičević-Klug, P. (P)	The Future of Sustainable Materials in Energy Production
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Max Planck Institute for Sustainable Materials, Germany

15.30	Weißensteiner, I. (IP)	Deformation-Precipitation Interactions in Sustainable Aluminum Alloys
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Christian Doppler Laboratory for Deformation-Precipitation Interactions in Aluminum Alloy, Chair of Non-ferrous Metallurgy, Montanuniversität Leoben, Austria

16:00 Group Photo & Break

Chair: Dr. Oleksandr Glushko

16.30	Michelic, S. (IP)	Current developments and process strategies for sustainable steelmaking
	Christian Doppler Laboratory for Inclusion Metallurgy in Advanced Steelmaking, Chair of Ferrous Metallurgy, Montanuniversität Leoben, Austria	
17.00	Pferschy, M. (P)	Towards safer batteries – Characterization of Li-ion batteries for simulation purposes
	Department Polymer Engineering and Science, Montanuniversität Leoben, Austria	
17.20	Bucher, E. (P)	Sustainable solid oxide cell air electrodes: complexity versus simplicity
	Chair of Physical Chemistry, Montanuniversität Leoben, Austria	
17.40	Putz, B. (P)	Stabilizing Cu nanoparticle films via atomic layer deposition for CO ₂ reduction: Enabling Sputtering-Based Synthesis of Novel Catalyst Materials
	Department of Materials Science, Montanuniversität Leoben, Austria	
18.00	Bachmaier, A. (P)	Rare-earth free magnetic material by combining severe plastic deformation and thermomagnetic processing
	Erich Schmid Institute of Materials Science, Austrian Academy of Sciences, Leoben, Austria	
18.20	Wu, Y. (IP)	Transparent Ceramic Materials for Advanced and Multifunctional Optical and Photonic Applications
	Kazuo Inamori School of Engineering, New York State College of Ceramics, Alfred University, USA	
18.50	End of Presentations	

Wednesday, 09. April 2025

Chair: Prof. Ronald Schnitzer

14.00	Ma Y. (IP)	Sustainable metal production via hydrogen- and ammonia-based direct reduction of metal oxides
		Delft University of Technology, Netherlands & Max Planck Institute for Sustainable Materials, Germany

14.30	Eichlseder, M. (P)	Homogenization heat treatments of porous, intermetallic Ni ₃ Al fabricated by laser powder bed fusion and in-situ alloying
		Institute of Materials Science, Joining and Forming, Graz University of Technology, Austria

14.50	Jelinek, A. (P)	Insights from mechanical testing under electrochemical hydrogen charging to evaluate structural materials for future hydrogen applications
		Department of Materials Science, Montanuniversität Leoben, Austria

15.10	Kiener, D. (P)	Turning The Tables – From microstructure-enhanced metal hydrides to metal hydrides for microstructure enhancement
		Department of Materials Science, Montanuniversität Leoben, Austria

15.30	Graf, M. (P)	Divorced eutectoid transformation (DET) in a low-alloy hypereutectoid steel and the influence of increased tramp and trace element contents on this transformation
		Christian Doppler Laboratory for Knowledge-based Design of Advanced Steels, Department of Materials Science, Montanuniversität Leoben, Austria

15.50	Haslberger, P. (IP)	Influence of atmosphere changes in reheating furnaces on scale formation and decarburization of low-alloyed steels
		voestalpine Forschungsservicegesellschaft Donawitz GmbH, Austria

16.20	Break	
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Chair: Dr. Anna Jelinek

16.50	Depover, T. (IP)	Microstructural-based mitigation strategies to improve the mechanical performance in the presence of hydrogen
	Ghent University, Research group Sustainable Materials Science, Belgium	

17.20	Pinter, G. (P)	The use of recyclates in plastics pipes: Possibilities and Limits
	Department Polymer Engineering and Science, Montanuniversität Leoben, Austria	

17.40	Mayrhofer, P. (P)	Sustainable iron aluminide-based laser claddings
	Institute of Materials Science and Technology, TU Wien, Austria	

18.00	Kirnbauer, A. (P)	Development of Coating-Substrate Combinations for Sustainable Ceramic Data Storage Media
	Institute of Materials Science and Technology, TU Wien, Austria	

18.20	Razumovskiy, V. (IP)	Computational design of hydrogen embrittlement resistant alloys
	Christian Doppler Laboratory for digital material design guidelines for mitigation of alloy embrittlement, Materials Center Leoben Forschung GmbH, Austria	

18.50	End of presentations	
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Thursday, 10. April 2025

Chair: Dr. Irmgard Weißensteiner

14.00	Jovičević-Klug, M. (IP)	Green steel from red mud: Turning industrial waste into sustainable metal with hydrogen plasma-based smelting reduction Max Planck Institute for Sustainable Materials, Germany
14.30	Supancic, P. (P)	Contact damage of silicon nitride bearing balls - how to characterise the material? Department of Materials Science, Montanuniversität Leoben, Austria
14.50	Holub, G. (P)	Characterization of dislocations in SiC single crystals Christian Doppler Laboratory for Advanced Computational Design of Crystal Growth, Department of Materials Science, Montanuniversität Leoben, Austria
15.10	Taucher, L. (P)	Machine learning of multi-physics simulations of SiC single crystal growth Christian Doppler Laboratory for Advanced Computational Design of Crystal Growth, Department of Materials Science, Montanuniversität Leoben, Austria
15.30	Thiele, K. (P)	Tracing Techniques to Determine the Origin of Non-Metallic Inclusions in Steel: An Overview Christian Doppler Laboratory for Inclusion Metallurgy in Advanced Steelmaking, Chair of Ferrous Metallurgy, Montanuniversität Leoben, Austria
15.50	Break	

Chair: Prof. Daniel Kiener

16.20	Saksena, A. (IP)	Designing materials for the hydrogen age: the need for nanoscale insights Max-Planck-Institut für Eisenforschung GmbH, Germany
16.50	Kostwein, N. (P)	Impact of tramp elements on steel properties: Insights through microstructural and high-resolution characterization Christian Doppler Laboratory for Knowledge-based Design of Advanced Steels, Department of Materials Science, Montanuniversität Leoben, Austria

17.10	Holec, D. (P)	Segregation of P in polycrystalline Fe: Bringing atomistic predictions towards reality Department of Materials Science, Montanuniversität Leoben, Austria
17.30	Cejka, J. (P)	Influence of scrap introduced tramp elements on phase transformations and deformation behavior of non-metallic inclusions in steels Christian Doppler Laboratory for Inclusion Metallurgy in Advanced Steelmaking, Chair of Ferrous Metallurgy, Montanuniversität Leoben, Austria
17.50	Srikakulapu, K. (P)	Insights into weld metal hot cracking of austenitic stainless steels: Atomistic characterization of crack surfaces Christian Doppler Laboratory for Knowledge-based Design of Advanced Steels, Department of Materials Science, Montanuniversität Leoben, Austria
18.10	Final Remarks & Announcement of 5th Materials Science Colloquium 2026	

The abstracts and the list of the participants you can find here:

