

FEMS EUROMAT 23

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FEMS EUROMAT is the most important international congress in materials science and technology in Europe. It continues a successful congress series promoting the transfer of knowledge and the exchange of experience between academia and industry. **Submission deadline: 31 January 2023**

Area H: Materials for Circularity and Sustainability

H10: Fundamental Science of Sustainable Metallurgy

Metallic materials are of enduring importance in our society, and they have enabled civilization over millennia through structural and functional applications, even under the harshest environmental conditions. However, their production often requires a huge energy input (~8% of the global energy) and generates ~30% of industrial CO₂-equivalent emissions, becoming an unfavorable cause of global warming. To tackle the urgent decarbonization challenges in the metal industry, innovative and sustainable paradigm shifts must be quickly developed in metallurgical processes.

This symposium focuses on fundamental research in the field of sustainable metallurgy to support the disruptive technology shifts in the metal industry (incl. steel, aluminum, nickel, manganese, titanium, etc.). Topics of particular interest include, but are not limited to:

- Sustainable metallurgy approaches of ferrous and nonferrous metals using renewable energy resources, e.g., renewable hydrogen and electricity, biomass, etc.
- Strategies for efficient utilization of low-grade input materials
- Sustainable metallurgical approaches using recycled scraps, impurity element detections, and impurity-tolerant material/process design
- Use of metallurgical by-products such as slag, dust, and sludges as secondary raw materials
- Fundamental understanding of physical, chemical, and mechanical phenomena in sustainable metallurgical processes
- Development and application of advanced instrumentations for in-situ and in-operando experimentation during sustainable metallurgical processes
- Multiscale experimental and computational approaches
- Data-driven prediction and optimization of metallurgical processes

Symposium Organizer



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