

MSE 2024

24 - 26 Sep 2024 (Darmstadt)

dgm.de

Topic F: Functional Materials, Surfaces and Devices

F11: Dealloying as processing tool for the synthesis and recycling of advanced materials

The symposium brings together researchers and engineers from around the world to explore the exciting developments in the field of dealloying, a versatile and innovative approach for the synthesis and recycling of advanced functional and structural materials. This symposium aims to provide a comprehensive overview of the latest advancements, challenges, and opportunities in dealloying-based material synthesis, emphasizing its role in designing materials with tailored properties for a wide range of applications.

Dealloying is a transformative process that involves the selective removal of one or more elements from a multicomponent material accompanied by rearrangement of the remaining components, resulting in a nanoporous structure with unique properties and functionalities. Over the years, this technique has gained significant attention due to its potential in the synthesis of materials with enhanced catalytic activity, superior mechanical properties, improved electrical conductivity, etc. The symposium will feature discussions on various aspects of dealloying, including its fundamental principles, novel alloy systems, and state-of-the-art characterization techniques.

Key Topics:

- **Fundamental Principles:** Understanding the thermodynamics and kinetics of dealloying processes, with a focus on phase transformations and structure evolution during dealloying.
- **Novel Alloy Systems:** Exploring the latest developments in designing alloy compositions for tailored properties, including high-entropy alloys, intermetallic compounds, etc.
- **Characterization Techniques:** Presentations on advanced characterization methods to analyze the structure and properties of dealloyed materials.
- **Applications:** Highlighting real-world applications of dealloyed materials in fields such as catalysis, energy storage, sensors, and biomedical devices.
- **Challenges and Future Directions:** Identifying current challenges and discussing potential solutions for scaling up dealloying processes, improving material stability, and expanding its applicability.
- **Environmental and Sustainability Aspects:** Exploring the environmental impact of dealloying and discussing strategies for sustainable material synthesis and recycling.

The Symposium provides a platform for interdisciplinary collaboration and knowledge exchange among researchers and industry experts. We invite scientists, engineers, and students interested in the latest advancements in material science and engineering to join us in this exciting symposium, fostering innovation and pushing the boundaries of functional materials synthesis through dealloying techniques. Together, we will explore the transformative potential of dealloying in shaping the future of materials science.

Symposium Organizer



Prof. Dr. Soo-Hyun Joo
Dankook University



Prof. Dr.-Ing. Ilya Okulov
Leibniz Institute for Materials Engineering - ...



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