

EUROMAT 2021

EUROPEAN CONGRESS AND EXHIBITION
ON ADVANCED MATERIALS AND PROCESSES

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12. - 16. SEPTEMBER 2021

GRAZ, AUSTRIA

ASMET
THE AUSTRIAN SOCIETY FOR
METALLURGY AND MATERIALS

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Area E: Energy and Environment

Symposium: E6

| Title: Materials for Hydrogen Technologies | | |
|--|--|---|
| Organizer | Institution | Contact email |
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| Abstract | | |
| <p>Hydrogen undoubtedly is considered as the energy carrier of the future, with majority of scientists envisioning the transition to clean and sustainable hydrogen-based economy and societies in the nearby future. Hydrogen technologies, including systems for generating, distributing, handling, and consuming of the gas, enable low carbon or net zero emission systems for generating energy and for clean transportation. Hydrogen economy can benefit from integration with carbon capture and utilization (CCU) and carbon reuse and recycling (CRR) in power-to-X systems which offer the possibility of generating synthetic fuels. Hydrogen available in large quantities for transportation, energy sector and chemistry paves a way to climate neutrality. One of the key limitations in large scale deployment of highly efficient, durable and low-cost hydrogen systems are the materials. Despite the major progress which was made over the last decade, material research remains at the forefront of the efforts of research teams worldwide.</p> <p>The scope of the Symposium intends to cover all aspects related to the development, modelling, optimization, and usage of novel, functional materials applicable in technologies which are present in the entire value change of hydrogen economy. It concerns production, storage, transportation and distribution, as well as the use of H₂ with the focus on green and blue hydrogen. Apart from the general scope, the following list of specific topics shall</p> | | |

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provide guidelines for the contributions. The topics of the Symposium include, but are not limited to:

1. **Functional materials for hydrogen generation**
2. **Novel materials for hydrogen storage, transportation, distribution, handling and processing**
3. **Fuel cells and electrolyzers: fundamentals, new concepts, development and characterization of novel materials**
4. **Methods of modeling advanced materials**
5. **Degradation of materials in components of the hydrogen value chain**
6. **New experimental methods of testing and characterization of materials**
7. **New fabrication techniques**
8. **Recycling of materials for hydrogen systems**
9. **Computational materials for the hydrogen production application**
10. **Novel catalysts and studies of reaction kinetics**
11. **Materials and reactor design for the reforming processes**

Additional aspects can be covered by the session, provided that satisfactory number of relevant submissions is received. Specific session flyers detailing the content will be prepared and distributed.

Contributors will be offered the possibility of submitting their work to a dedicated special issue of Journal of Materials Engineering and Performance (Springer), as well other (to be selected) internationally recognized scientific journals.

The symposium organizers demonstrate experience in organizing international conferences, symposia and topical sessions, and all can rely on a broad network of contacts in the areas covered by the symposium. This shall ensure a significant number of contributions. In order to encourage further contributors, the organizers plan to directly address EU funded projects from the symposium's thematic areas and advise EUROMAT as the ideal platform for the discussion, cross-project exchange, and dissemination of their results.