

EUROMAT 2021

EUROPEAN CONGRESS AND EXHIBITION
ON ADVANCED MATERIALS AND PROCESSES

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12. - 16. SEPTEMBER 2021

GRAZ, AUSTRIA

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THE AUSTRIAN SOCIETY FOR
METALLURGY AND MATERIALS

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Area H

Symposium H.8

Title: Materials for space applications and extreme environments

<i>Organizer</i>	<i>Institution</i>	<i>Contact email</i>
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Abstract

Symposium will offer an opportunity for scientists to present and discuss the results of their research through oral and/or poster presentations exchanging knowledge, ideas and opinions between participants. It also will be a good opportunity for early carrier researchers and students to learn about the current state of research from experts in the field. **Highly demanding applications** include design, development and testing of **new materials** having **long-term stability** in the **harsh environment of space** and in other extreme conditions as those of high temperature corrosion.

Concerning Materials for Space Applications, the **International Space Station (ISS)** allows **testing of material properties** and control of experimental conditions to an extent impossible on Earth. Since 2018, The **Materials International Space Station Experiments Flight Facility (MISSE-FF)** enables the integrated testing of materials behaviour under extreme conditions such as those in **low Earth orbit**, including ultraviolet, electromagnetic and ionizing radiations, thermal cycles, ultrahigh vacuum, charged particles, impacts, etc. Moreover, the forthcoming space missions aiming to create **new habits on the Moon** and into the deep space, as well as the **Mars exploration program**, are opening new challenges for materials scientists in enabling in-situ efficient power generation, manufacturing and repairing, water recycling, food and energy storage facilities.

The symposium will include **experimental and theoretical contributions** related to scientific and technological subjects interesting for **Space and extreme environments applications**:

- Ultra Light-weight materials for space exploration (Mg-based, Polymers, etc.)
- Advanced structural materials for space environments and human protection.
- Metal-matrix and Ceramic-matrix composites (MMCs, CMCs)
- Advanced metal systems (Superalloys, HEAs, BMGs, etc.)
- Self-healing and self-repairing materials
- Advanced coating systems as thermal and corrosive barriers.
- Liquid-assisted processes (infiltration, brazing, soldering, casting, etc.), Additive Manufacturing, Catalysis, Powder Metallurgy, etc.
- Thermophysical properties measurements under microgravity/ground conditions

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For further details, please feel free to contact the Symposium organizers or visit the Journal of Materials Science webpage

<https://www.springer.com/journal/10853>