

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 B: Structural Materials

Symposium B7:

Title: Material Testing, Characterisation and Modelling

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

About ~ 300 words

(Scope, description, Targeted Topics)

The scope of this symposium is to bring together scientists and engineers from different communities to discuss latest advances and developments related to material testing, characterisation, and modelling with a strong focus on the relationship between mechanical properties of structural materials and their microstructure under complex loadings at elevated temperature.

To ensure safety, reliability and durability of materials and components, it is vital to improve knowledge and understanding about their internal structure, physical properties and behaviour in response to in-service variables such as mechanical, thermal and environmental loadings. In addition, development of engineering components relies on adequate modelling and simulation of material deformation, damage and failure under application relevant loading conditions. Microstructure and mechanical characterisation methods must therefore be targeted, and intelligent, such as that appropriate material models can be developed and the behaviour of safety critical components approximated with confidence.

Targeted topics include, but are not limited to:

- Fundamental physical deformation mechanisms in structural materials,
- Mechanical test methods such as fatigue, thermo-mechanical fatigue, bi-axial testing, vacuum testing, etc.
- Effect of in-service variables on microstructure and mechanical properties of materials,
- Failure of materials including crack initiation and propagation (creep, fatigue, stress, corrosion, oxidation),
- Surface modifications and their effect on damage and mechanical properties,
- Modelling and numerical simulation approaches for material deformation and processing, and
- Fracture mechanics.

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This symposium covers following materials:

- Materials for propulsion, energy and power generation,
- Metallic materials,
- Structural materials,
- Functional materials,
- Composite materials,
- Novel alloys,
- Coatings, etc.