

# EUROMAT 2021

EUROPEAN CONGRESS AND EXHIBITION  
ON ADVANCED MATERIALS AND PROCESSES

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THE AUSTRIAN SOCIETY FOR  
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**FEMS** 30  
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## Area B: Structural Materials

### Symposium B4:

#### **Title: Advanced Structural Ceramics**

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#### **Abstract**

Advanced structural ceramics are key materials in a wide range of fields, covering areas including energy production, environment, space, transportation, medicine, optical systems and microelectronics. This Symposium will provide a forum for researchers, students, and entrepreneurs to present and discuss the ongoing trends in the new generation of advanced ceramics for structural applications, covering both oxide and non-oxide compositions, to be employed as monoliths, hard coatings, thermal barrier coatings, composites and/or layered architectures as well as in hybrid structures either in ambient conditions or extreme environments.

Abstracts dealing with correlations between processing, microstructures and component performance/reliability under service conditions/environment will be solicited. Processing, characterization and modelling of materials' mechanical behavior will be topics of interest. Advances in novel manufacturing technologies for structural ceramics (such as 3D-printing) will be focused on microstructural development and its implication in the end properties of the parts. A particular emphasis will be placed on fundamental issues related to advancing our understanding and utilization of processes inspired by nature and/or to develop "damage tolerant" structural ceramics and "strong and tough" ceramics. A session on fractography and failure analysis of brittle materials, including glasses and ceramics, will be dedicated to understand material's limitations with the goal of improving mechanical properties, reliability, and lifetime of structural and functional components. Case studies on real components will be highly appreciated.

Tentative Sessions will include, but are not limited to, the following topics:

- Advanced processing and its relationship with microstructural development
- Damage-tolerant structural ceramics
- Structural bio-ceramics
- Hard Coatings, Max Phases, UHTC, High Entropy Ceramics
- Processing-microstructure-mechanical properties correlation
- Thermo-mechanical response in different environments
- Fractography and failure analyses