FEMS EUROMAT 23

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FEMS EUROMAT is the most important international congress in materials science and technology in Europe. It continues a successful congress series promoting the transfer of knowledge and the exchange of experience between academia and industry. **Extended submission deadline: 15 March 2023**

Area B: Structural Materials

B07: Materials Characterization, Testing and Modeling

The scope of this symposium is to bring together scientists and engineers from different communities to discuss the latest developments in material characterization, testing, and modeling. A strong focus is placed on the relationship between the mechanical properties of materials and their microstructure under various complex loadings.

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 behavior in response to in-service variables such as mechanical, thermal, and environmental loadings as well as materials related variable (phases, precipitates, grain size, etc). In addition, the development of engineering components relies on adequate modeling and simulation of material deformation, damage, and failure under application-relevant loading conditions. Microstructure and mechanical characterization methods must therefore be targeted and intelligent such that situation-appropriate material models can be developed and the behavior of safety-critical components can be approximated with confidence.

Targeted topics include, but are not limited to:

- Fundamental physical deformation mechanisms in structural materials.
- Effect of in-service variables on microstructure and mechanical properties of materials.
- Characterization of structural materials using, for example, DIC, DIC 3D, SEM, EBSD, FIB-SEM, TEM, XRD, NDT.
- Mechanical test methods that characterize, for example, creep, fatigue, thermo-mechanical fatigue, bi-axial behavior and performance in different environments (e.g., vacuum, hydrogen).
- Failure of materials, including crack initiation and propagation under creep, fatigue, stress, corrosion, oxidation.
- Surface modifications/treatments and their effect on damage and mechanical properties,
- Modeling and numerical simulation approaches for material deformation and processing, and
- Fracture mechanics.

This symposium covers materials for propulsion, energy and power generation, metallic materials, structural materials, functional materials, composite materials, novel alloys, coatings, etc.

Symposium Organizer


Dr. Pearl Agyakwa
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Dr. James Rouse
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DGM