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**TMS 2020**

**149<sup>th</sup> Annual Meeting & Exhibition**

February 23-27, 2020 • San Diego, California, USA



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## **Advanced Materials**

### **Use of Large Scale Facilities to Understand the Physical Metallurgy of Fe-based Alloys**

Large scale facilities, such as synchrotron and neutron beamlines, play a growing role in the investigation of phase transformation mechanisms, microstructural evolution, and the mechanical properties of steels, thanks to their resolution compared to laboratory devices, and their versatility for time-resolved investigations. This symposium aims to facilitate exchanges about present-day practices in the usage of these instruments and future opportunities in this field to understand the physical metallurgy of Fe-based alloys.

The scope of this symposium comprises studies on steels (carbon steels, stainless steels, maraging steels and special products) using large scale facilities dedicated to the study of:

- In-situ characterization of solid-state phase transformation and microstructure evolution during processing and simulated manufacturing (recovery, recrystallization, nucleation and growth, precipitation, partitioning, aging, etc.)
- The link between microstructure and properties at phase scale (local strain/stress determination, residual stresses, deformation-induced transformations, damage, etc.)
- In-operando characterization of parts (residual stresses, fracture, damage, toughness, fatigue, etc.)

Contributions using the following techniques are expected: HEXRD, HEDM, MicroLaue Diffraction, SAXS/SANS, Anomalous scattering/diffraction, Holo-tomography, Laminography, Tomography, Neutron Diffraction, etc.

#### **ORGANIZERS**

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**Abstract Deadline is July 1, 2019. Submit online at**  
**[www.programmaster.org/TMS2020](http://www.programmaster.org/TMS2020).**

**Questions?**  
**Contact [programming@tms.org](mailto:programming@tms.org)**