



**SUBMIT AN ABSTRACT BY JULY 1**

**FEBRUARY 27-MARCH 3, 2022**  
**ANAHEIM CONVENTION CENTER & ANAHEIM MARRIOTT**  
**ANAHEIM, CALIFORNIA, USA**  
**#TMSAnnualMeeting**

**SUBMIT AN ABSTRACT FOR THE FOLLOWING TMS2022 SYMPOSIUM:**

## **MATERIALS DESIGN**

### **Materials Design and Processing Optimization for Advanced Manufacturing: from Fundamentals to Application**

Materials design is critical for manufacturing innovation. Different processing introduces a variation of process-structure relationships for the same alloy. Therefore, it becomes essential to integrate the efforts of materials design, processing optimization, and manufacturing innovation together. The state-of-the-art design activities are not necessarily an effective integration between material and manufacturing itself. Therefore, this symposium brings domain experts together to share experiences from materials design to manufacturing innovation.

The symposium will include, but is not limited to, the following topics:

- Alloy design theory and fundamentals of materials processing. This can be either theoretical work related to materials genome or experimental efforts such as high-throughput experiments.
- Materials informatics including database development for alloy manufacturing such as thermodynamic modeling, phase transformation modeling, and machine learning enhanced modeling of process-structure-property relationships.
- Alloy development with the investigation on composition-process-structure-property relationships. This will include, but is not limited to, lightweight alloys, steels, superalloys, multi-principal element alloys.
- Examples of harnessing advanced processing techniques to produce novel microstructures or materials with unique properties.
- Processing optimization for both traditional and innovative manufacturing techniques focusing on process-structure-property relationships.
- Interdisciplinary work in materials, mechanical, and manufacturing engineering for advanced materials and manufacturing innovations.

Invited talks will cover the above topics. At least one session of invited talks by young investigators will be arranged.

#### **ORGANIZERS**

**Wei Xiong**, University of Pittsburgh  
**Dana Frankel**, QuesTek Innovations LLC  
**Gregory B. Olson**, Massachusetts Institute of Technology

#### **SYMPOSIUM SPONSORS**

TMS Alloy Phases Committee

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**QUESTIONS?**  
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