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TMS2024
153rd Annual Meeting & Exhibition

MARCH 3–7, 2024
HYATT REGENCY ORLANDO
ORLANDO, FLORIDA, USA
#TMSAnnualMeeting



SUBMIT AN ABSTRACT FOR THE FOLLOWING TMS2024 SYMPOSIUM:

MATERIALS SYNTHESIS AND PROCESSING

Solidification in External Fields

This Symposium focuses on solidification influenced by external fields, which includes, but is not limited to, solidification in the presence of strong gravitational, acoustic or electromagnetic (EM) fields.

The use of external fields has become widespread in a drive for improved materials or better understanding of fundamental phenomena. Examples include the use of magnetic fields to introduce electromagnetic braking of fluid flow or to interact with inherent electric currents to drive flow in processes ranging from traditional casting to additive manufacturing. Or to use electromagnetic fields to levitate droplets of highly reactive metals to understand and measure key material properties, with comparison to experiments under microgravity conditions. Acoustic fields can also drive flow through acoustic streaming, but also cause cavitation of micro bubbles that can refine microstructures. Strong super-gravitational fields can make materials more denser providing improved material properties of soft and condensed matter.

The symposium seeks contributions from any process where the introduction of an external field has a significant impact on solidification. As external fields add a new parameter space to many processes a key aim is to develop interdisciplinary discussions. The symposium will bring together world experts to share recent findings, state-of-the-art techniques and to facilitate discussions and knowledge transfer. The aim is to develop research networks between partners that will generate new ideas and direction for long-term collaborations.

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