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SUBMIT AN ABSTRACT TO:

ADDITIVE TECHNOLOGIES

ADDITIVE MANUFACTURING: SOLID-STATE PHASE TRANSFORMATIONS AND MICROSTRUCTURAL EVOLUTION

The growing field of Additive Manufacturing (AM) provides new exciting challenges and opportunities in physical metallurgy. Inherently different to traditional manufacturing processes, in AM, metallic systems undergo various localised phase transformations in fractions of a second during a build. For instance, the layer-by-layer approach gives rise to the so-called intrinsic heat treatment, where earlier layers continuously experience a temperature gradient induced by the melting of subsequent layers. This often results in an inhomogeneous microstructure throughout the build, and in some cases, precipitation can be triggered from early stages. Therefore, there is a need for AM-tailored post-processing conditions. For a wider adoption of the technology in industry, the knowledge on the microstructure needs to be extended to its stability in service, including high load and temperature conditions. Such understanding will provide a solid background in the design of microstructures tailored for the AM process, and bring us a step closer in establishing the materials paradigm for AM.

Topics of interest include, but are not limited to:

- Microstructural characterisation of AM-processed materials throughout post-processing.
- Physical modelling / simulation of phase transformations and microstructural evolution.
- Phase transformations and microstructural stability of AM components under extreme conditions.
- Effects of powder manufacturing process and recycling on phase stability.
- Processing effects on as-built microstructure gradients and texture.

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Abstract Deadline is July 1, 2020. Submit online at
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Questions?
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