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TMS 2018
147th Annual Meeting & Exhibition

MARCH 11 – 15, 2018
PHOENIX, ARIZONA

SUBMIT AN ABSTRACT TO:

PHYSICAL METALLURGY

PHASE TRANSFORMATION ACROSS MULTISCALE MATERIAL INTERFACES

Interfaces play an important role in determining several properties in multiphase systems. In a materials system, interfaces can be present across different length scales, some examples being:

- Nanoscale interphase interfaces in a precipitation hardened system
- Microscale interface across ceramic-on-metal or metal-on-metal builds (for example, bond coat deposition on turbine blade, multilayer thin films)
- Macroscale interfaces of joined similar or dissimilar materials (for example, in brazing and soldering, transient liquid phase bonding)

Diffusive phase transitions across these metastable interfaces can be triggered via thermo-mechanical processing so as to achieve close to equilibrium structural/compositional/stress states. Renditions of time-dependent development of off-equilibrium interface structures have been accomplished through multiscale experimental and computational techniques that allow for identification of the positions of atomic columns and structural defects at the interface.

The motivation of this symposium is to bring together such novel studies directed towards identifying phase transformation pathways across multiscale material interfaces.

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