Special Issue

Twinning in Hexagonal Materials

Message from the Guest Editors

In hexagonal-close-packed (HCP) metals, slips occur mainly in direction in the basal planes (B), in the prismatic planes (P) or in the first-order pyramidal planes (π1). The hierarchy of these deformation modes changes, among other things, in function of the axial ratio *c/a*: so the HCPs, having a *c/a* < 1.633 (Ti, Zr), P is the principal glide system (PGS) contrary to the HCPs with a *c/a* > 1.633, such as Zn or Cd, where the PGS is B. This Special Issue invites researchers to submit original research and review articles on all disciplines in which the theoretical or practical problems of twinning in HCP metals are taken into account. Topics of interest include, but are not limited to:

- Atomistic calculations ab-initio type, first principles, dislocation dynamics
- Inclusion of twinning in VPSC medium or full field models
- Twin transmission by grain boundaries
- Crystal plasticity, behavioral laws that explain plastic deformation based on dislocation and twinning
- Self-consistent, fast Fourier transform (FFT), and finite element (FE) methods (like CPFEM)
- Characterization methods: EBSD, TEM; in 3D: FIB, neutrons

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Metallic materials play a vital role in the economic life of modern societies; contributions are sought on fresh developments that enhance our understanding of the fundamental aspects related to the relationships between processing, properties and microstructure – disciplines in the metallurgical field ranging from processing, mechanical behavior, phase transitions and microstructural evolution, nanostructures, as well as unique metallic properties – inspire general and scholarly interest among the scientific community.

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