

Submission Deadline—August 1, 2018



CALL FOR PAPERS

Nanocrystalline High Entropy Materials: Processing Challenges and Properties

High entropy material (HEM) as a materials science research field has matured in recent years. HEMs include multicomponent and multiprinciple metallic alloys and entropy stabilized multicomponent oxides and borides. The inherent nature of the process of preparing nanostructured HEMs via the liquid state route is extremely difficult. Solid state processing methods, mechanical alloying followed by sintering and severe plastic deformation, are more attractive for obtaining nanostructured HEMs in the bulk form. However, the processing of these materials possesses many challenges. The properties of the bulk materials strongly depend on the microstructural length scale; thus, retaining nano-sized grains is required by inhibiting grain growth during processing. Powder metallurgical processing using advanced sintering techniques is considered an apt approach to obtain nanostructured HEMs and composites, but it opens up many challenges of incorporation of a variety of second phase particles such as soft dispersoids, oxides, harder particles, etc. Likewise, the processing methodology involving severe plastic deformation using high pressure torsion requires an understanding of the deformation behavior of HEMs at very high strain and strain rates. In order to take stock of the advancement on processing and properties of nanostructured HEMs, this Focus Issue will provide the researchers in this rapidly advancing field the present status and future directions.

Contributing papers are solicited in the following areas:

- ◆ Processing challenges using P/M methods
- ◆ Bulk nanostructured HEAs by high pressure torsion
- ◆ Nanostructured high entropy composite produced by high-pressure torsion
- ◆ Severe plastic deformation induced multiphase high entropy alloys
- ◆ Microstructure and mechanical properties of nanocrystalline HEAs
- ◆ Low density nanocrystalline high entropy alloys
- ◆ Nanostructured entropy stabilized oxides and borides and their properties
- ◆ Nanostructured high entropy alloy coatings

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MANUSCRIPT SUBMISSION

To be considered for this issue, new and previously unpublished results significant to the development of this field should be presented. The manuscripts must be submitted via the *JMR* electronic submission system by **August 1, 2018**. Manuscripts submitted after this deadline will not be considered for the issue due to time constraints on the review process. Please select "Focus issue: *Nanocrystalline High Entropy Materials: Processing Challenges and Properties*" as the Focus Issue designation. **Note our manuscript submission minimum length of 3250 words, excluding figures, captions, and references, with at least 6 and no more than 10 figures and tables combined. Review articles may be longer but must be pre-approved by proposal to the Guest Editors via jmr@mrs.org. The proposal form and author instructions may be found at www.mrs.org/jmr-instructions.** All manuscripts will be reviewed in a normal but expedited fashion. Papers submitted by the deadline and subsequently accepted will be published in the Focus Issue. Other manuscripts that are acceptable but cannot be included in the issue will be scheduled for publication in a subsequent issue of *JMR*.

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Please contact jmr@mrs.org with questions.