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Title: Thermomechanical Processing, Severe Plastic Deformation and Nano-structuring

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Summary

Severe plastic deformation (SPD) is a very attractive research field for metallic materials because it provides new possibilities for manufacturing nanostructured materials in large quantities and allows microstructural design on different hierarchical levels. Besides also through Thermo-Mechanical Processing (TMP) or combinations of TMP and SPD, ultra-fine-grained structure in bulk materials can be achieved by the refinement of phases by using hot, warm, cold and even cryogenic deformations, or combination of them. In addition to grain size refinement, several metallurgical processes, highly desirable for alloy design take place during SPD. Among them are mechanically driven phase transformations, formation of metastable phases, grain boundary engineering and the formation of desirable textures. This Symposium provides a unique opportunity to bring together experts working in the field of SPD in order to discuss the actual scientific problems in the field, such as:

- novel SPD processes as well as recent advancements of established processing methods.
- microstructure evolution and grain refinement in single- and multi-phase alloys as well as composites
- strategies to enhance the microstructure stability at elevated temperatures
- mechanically driven phase transformations in UFG materials related to SPD-processing
- Surface nanocrystallization by SPD and multilayered materials
- SPD for specific applications (biomaterials, H-storage materials, ...)

This symposium is closely allied with **Symposium B4 where the mechanical properties and related deformation mechanisms** are in focus.

Invited speakers:

- Dr. Nikita Stepanov, Belgorod State University, Russia
- Dr. Kaveh Edalati, Kyushu University, Japan
- Prof. Maurizio Vedani, Politecnico di Milano, Italy

Selected papers presented at this symposium will be published in a special issue of the Journal "**Advanced Engineering Materials"** (Wiley-VCH). Authors will be contacted after the conference for submission of full papers. The papers will be refereed using the journal standard reviewing procedures.