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COMPUTATIONAL METALLURGY

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ABSTRACT

The Session on "Computational Metallurgy" at PANACM 2015 aims at bringing together researchers devoted to the study and modeling of metallurgical phenomena to present and discuss state of the art, mathematical methods, numerical methods, computational techniques and industrial applications on this subject.

Topics encompassed by the metallurgical science, main thematic area of the session, will include, but will not be limited to:
-Relationship between pico-, nano- or microstructure and material properties.
-Diffusional and diffusionless phase transformations and structure predictions.
-Mechanical, thermal and thermo-chemical treatments.
-Manufacturing processes involving metals and alloys such as casting, mechanical forming, powder metallurgy, etc.
-Welding and metal deposition.
-Hardening processes by means of different mechanisms (precipitation, dislocations, etc.).

From the modeling and computational treatment standpoint, possible topics of interest can be:
-Coupled thermal, mechanical and metallurgical models.
-Constitutive modeling.
-Multiscale formulations.
-Advanced numerical methods and related solution strategies.
-Experimental validation.