



Symposium R : Solidification of metals and alloys

Scope of the Symposium

Solidification is one of the oldest processes for producing complex shapes for applications ranging from art to industry. It is a multidisciplinary field of high importance for comprehension of industrial processing involving molten alloys such as welding, continuous casting, powder metallurgy and foundry. Process limits are still present and are to be overcome. Many groups in Brazil and abroad have carried out valuable research regarding to particular subjects such as nucleation, macrostructure, structural transitions, as-cast microstructure, porosity, macrosegregation, metal/mold interface, interdendritic fluid flow, additive manufacturing and mechanical and corrosion properties of as-cast metals. All these topics have been studied for decades following either experimental or modeling approaches, with remarkable complementary aspects between them. Nowadays, complementary research has been developed concerning the evaluation of experimental data from stationary and transient directionally solidified alloys. The knowledge of the physical phenomena occurring at microscopic and macroscopic scales, between liquid and solid phases, is fundamental for the control of the microstructure in all the solidification processes, from Casting to Welding. The comprehension of solidification remains essential for the development of various recently proposed processes. For example, additive manufacturing processes are still to be interpreted concerning how much the solidification thermal parameters can be used to design the solidification microstructure as well as to solve quality problems.

Abstracts will be solicited in (but not limited to) the following areas

- *Correlations between dendritic/cellular arrangement and mechanical properties*
- *Rapid Solidification*
- *Continuous casting*
- *Pb-free Solder Alloys*
- *Laser surface remelting (LSR)*
- *Selective Laser Melting (SLM)*
- *Modeling of heat and mass transfer during solidification*
- *Corrosion resistance of as-cast structures*
- *In situ characterization by synchrotron X-ray radiography*
- *Welding metallurgy*

Tentative list of invited speakers (To be confirmed)

Hani Henein (*University of Alberta*) **Carlos Alexandre dos Santos** (*PPG-ETM/PUC-RS*) **Rubens Caram** (*DEMM/UNICAMP*) **Claudio Alves Siqueira Filho** (*DEMAT/UFPA*) **Daniel Monteiro Rosa** (*DEM/UNB*) **Ivaldo Ferreira** (*ITEC/UFPA*) **Otvio Fernandes Rocha** (*IFPA*) **Manuel Cant** (*FATEC-Zona Leste*) **Maria Adrina Paixo de Souza da Silva** (*ITEC/UFPA*) **Henri NGUYEN THI** (*IM2NP / Aix-Marseille Universit (France)*) **Guillaume REINHART** (*IM2NP / Aix-Marseille Universit (France)*) **Felipe Bertelli** (*IMar/Unifesp*) .

Symposium Organizers

Crystopher Cardoso de Brito (*UNESP-SJBV*) **Amauri Garcia** (*DEMM/UNICAMP*) **Jos Eduardo Spinelli** (*DEMA/UFSCAR*) **Nathalie MANGELINCK-NOEL** (*IM2NP / Aix-Marseille Universit (France)*) **No Cheung** (*DEMM/UNICAMP*) .

XIX Brazil MRS Meeting