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TMS 2020

149th Annual Meeting & Exhibition

February 23-27, 2020 • San Diego, California, USA



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Materials Processing

Defects and Properties of Cast Metals

This is the 3rd International Symposium on Defects and Properties in Cast Metals sponsored by the Solidification Committee of the TMS Materials Processing & Manufacturing Division. Defects generated during the solidification of liquid metals, whether during primary metal processing, shape casting, or additive manufacturing, dramatically affect the subsequent mechanical and physical properties of the final product. These defects arise from a range of fundamental mechanisms such as surface oxidation, entrainment of exogenous materials, dissolved gasses, solidification shrinkage, unwanted micro-structural phases with detrimental morphologies, and the development of stresses in the solidifying metal resulting in hot tearing and cracking. In many instances, defects arise from a combination of many physical processes.

This symposium seeks contributions from all alloys systems, including ferrous, non-ferrous, superalloys, and other materials; and from all metals processes, including: ingot casting, DC casting, foundry/shape casting, die casting, investment casting, sand-casting, continuous casting of steel, and advanced solidification processes, such as additive manufacturing.

Topics include measurements and modeling of any phenomena related to casting defects and properties: liquid metal refining, inclusions and metal cleanliness; re-oxidation; slag/dross entrainment and fluid flow effects; surface defects, shrinkage, gas, and porosity problems; segregation (a-, v-, freckles, inverse, centreline, etc.); hot tearing and other cracks; residual stresses, distortion, and shape problems; microstructural, precipitate- and grain defects; in-service properties, such as strength, ductility, toughness, fatigue, and wear; advanced characterization methods for defect detection, both online and ex situ sampling methods and modeling.

The objective of this symposium is to bring together researchers working in diverse fields that may share common fundamentals and goals, but may not usually collaborate, in order to stimulate interdisciplinary discussion.

ORGANIZERS

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Abstract Deadline is July 1, 2019. Submit online at
www.programmaster.org/TMS2020.

Questions?
Contact programming@tms.org