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Structural Quality and Its Effects on the Performance of Light Alloy Castings

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Message from the Guest Editors

Cast materials are used in most of our products, ranging from simple household appliances to advanced products such as cars and aircraft. In all these applications, cast materials offer a unique combination of function and performance.

Increasing requirements for lighter, stiffer and stronger materials with increasing requirements for thermal transport properties and corrosion resistance are moving boundaries for material performance further. Aspects critical to delivering improved performance are the alloy content and the microstructure, especially in light weight alloys.

Accordingly, this Special Issue is intended to review and present the cutting edge state-of-the-art developments in the production of high quality light alloy castings that can meet the ever-increasing performance requirements in today's applications. The latest developments in the assessment of structural quality will be highlighted. Finally, the effect of processing and structure on the performance of light alloy castings as well as the applicability of traditional and modern approaches for fatigue design will be addressed.

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Message from the Editorial Board

Metallic materials play a vital role in the economic life of modern societies; contributions are sought on fresh developments that enhance our understanding of the fundamental aspects related to the relationships between processing, properties and microstructure – disciplines in the metallurgical field ranging from processing, mechanical behavior, phase transitions and microstructural evolution, nanostructures, as well as unique metallic properties – inspire general and scholarly interest among the scientific community.

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