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Application of Correlative Microscopy in Metallurgical Research

Guest Editor:

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Deadline for manuscript submissions:
closed (31 May 2021)

Message from the Guest Editor

Dear Colleagues,

In the last few decades, numerous studies have been performed to elucidate how the structure–property relationships of metals and alloys are affected by composition, compositional inhomogeneities, impurities, and grain boundaries. These relationships involve a complex interplay of different phases and a detailed atomic-resolution characterization of them is still challenging due to either the limitation of spatial resolution or the inability to quantify light interstitial elements, such as hydrogen and oxygen, during the determination of the atomic structure. To overcome the restrictions arising from individual characterization methods, more progressive efforts require the development of correlative analysis. This Special Issue will publish work concerning recent progress and trends in the area of correlative analytical methods for characterizing crystal and microstructures along with quantitative compositional measurements from atomic resolution up to the laboratory bulk sample dimension of metals and alloys utilizing a combination of multiple characterizing tools (electron microscopy, atom probe tomography, etc.).

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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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