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Mechanical Behaviors and Interfacial Segregation Phenomena in Metallic Materials: Simulation, Theory, and Characterization

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Message from the Guest Editors

Given the polycrystalline nature of most technically relevant metallic materials, the segregation of impurity or solute elements at both intragranular and intergranular interfaces can significantly change their mechanical behaviors, thereby alternating the overall mechanical performance of these materials. Understanding the relationship between interfacial segregation and mechanical behavior at various length scales is not only important for enriching our fundamental knowledge of interface science, but also sheds lights on the design of novel metallic materials with improved properties via interfacial segregation engineering. <false,>In this Special Issue, we welcome articles dealing with the use of simulation, theoretical, and experimental tools to investigate the relationships between mechanical behaviors and interfacial segregation phenomena in metallic materials. Studies on the effects of interfacial segregation on mechanical behaviors in such materials using data-driven and physics-informed modeling are highly encouraged.

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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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