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Thermodynamic Assessment of Alloy Systems

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Message from the Guest Editors

Dear Colleagues,

Knowledge surrounding phase diagrams and phase equilibria plays a crucial role in the development, manufacture, and processing of materials. The measurement of phase diagrams is generally time consuming and expensive, with the establishment of complex phase diagrams of real multicomponent and multiphase materials for practical applications proving difficult. The CALPHAD (calculation of phase diagram) approach provides a strategy for the development of highly reliable thermodynamic databases for the assessment of binary and ternary subsystems, which in turn allows for the prediction of phase diagrams and thermodynamic properties for multicomponent systems corresponding to real materials. With the development of novel materials and processes, there is a constantly increasing demand for accurate thermodynamic databases in the academic and engineering communities.

This Special Issue aims to present the results of scientific and experimental investigations concerning, for example, phase equilibria and diagrams, theoretical calculations of thermodynamic properties, thermodynamic assessments of metals and alloys, as well as applications of thermodynamic calculations.

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Message from the Editor-in-Chief

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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