Special Issue

Design and Fabrication of Corrosion- and Wear-Resistant Alloys

Message from the Guest Editor

Ternary boride-based cermets (Mo2NiB2, Mo2FeB2 etc.) not only have excellent mechanical properties, corrosion resistance, and wear resistance but can also be prepared by vacuum pressureless sintering with Mo, Ni (or Fe etc.), and B elemental powders. In addition, the coefficient of thermal expansion of ternary boride-based cermets is similar to that of steel. Therefore, ternary boride-based cermets have broad application prospects. However, the research on ternary boride-based cermets is limited to improving performance by doping with Cr, V elements, etc. There are few studies on the fabrication of ternary boride-based cermets, and the two-step sintering process currently in use is cumbersome and consumes excessive resources. Thus, it is important to improve the fabrication process by systematically studying the sintering preparation of ternary boride-based cermets. The effect of milling time, pressing pressure, sintering temperature, and soaking time on the microstructure and mechanical/friction and wear/corrosion properties need to be investigated.

Guest Editor

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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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