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Metal Matrix Composites and Syntactic Foams: Manufacturing, Properties and Applications

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Message from the Guest Editor

Metal matrix composites have experienced rapid developments in the last few decades. Metal matrices cover almost all types of alloys, from aluminum alloys to steel, titanium, magnesium and more advanced high-performance alloys, such as high-entropy alloys. The reinforcements vary not only in form from particulates to fibers but also in materials from ceramics to some exotic fillers. In fact, the word “reinforcement” is not an accurate description of the second phase, as many second phases are added not necessarily to make the composite stronger and stiffer but to provide a special function. For example, metal matrix syntactic foam is a special composite containing hollow ceramic particles to offer compressibility and thus energy-absorption capabilities. While the more conventional manufacturing methods, such as casting, powder metallurgy and spray forming, are still the mainstream, recent advances in new technologies, e.g., additive manufacturing, have provided a new impetus to the field. This Special Issue covers a wide range of topics with emphasis on recent developments in materials, fabrication, characterization, properties and applications.

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Message from the Editor-in-Chief

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