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Soft Magnetic Alloys and Composites

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Deadline for manuscript submissions:
closed (30 April 2022)

Message from the Guest Editor

Interest in soft magnetic alloys and composites is due to their many applications, as well as the possibility of obtaining materials with the desired magnetic properties by controlling the processing conditions and the microstructure. Soft magnetic alloys and composites will play an important role to improve the energy efficiency of energy conversion devices. Among the magnetic properties to be optimized, it is worth highlighting the magnetization of saturation, coercivity, remanence, magneto-impedance, saturation polarization, magneto-crystalline anisotropy, and losses, in addition to other properties, such as resistance to corrosion and resistivity. There are multiple aspects that need to be analyzed, such as the nanomagnetism, the influence of heat/stress/field treatments, and the addition of minor elements. Regarding composites, there are soft–hard composites for the optimization of permanent magnets, or those obtained by means of innovative additive manufacturing techniques. Their applications are also diverse, ranging from materials for a sustainable and electrified world, to sensors and actuators, catalysis, and magnetocaloric effects.

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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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Journal Rank: JCR - Q2 (*Metallurgy and Metallurgical Engineering*) / CiteScore - Q1 (Metals and Alloys)

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