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Laser Treatment of Metallic Materials

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Message from the Guest Editors

This Special Issue will cover the most innovative topics and strategies currently being followed in the laser treatment of metallic materials surfaces. With laser treatments, the surface properties of metallic materials can be modified, which are necessary for industrial applications. These laser treatments can vary from heat treatments modifying the properties of steels, until modifying the surface chemical composition by laser alloying, or laser surface melting. Finally, the development of coatings by laser cladding can not only increase the surface properties against corrosion and wear, but also allow the recovery of the surfaces and improve their properties.

Therefore, it is not only necessary to understand the modification of the mechanical properties on the metallic materials surface, but also how the beam interacts with matter, changing the microstructure of metallic alloys with its solidification and cooling kinetics and its relationship with the final surface properties obtained. Not only from the point of view of corrosion, oxidation, tribocorrosion, and wear but also in its surface properties regarding interaction with biological tissues for biomedical applications.

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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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