Special Issue

Non-thermal Atmospheric Pressure Plasma Treatment of Metal Surfaces

Message from the Guest Editor

Non-thermal atmospheric pressure plasma (NTAPP) is a versatile and promising technology quite useful in many industries including biomedical, biotechnology, textiles, and food processing. In recent years, researchers have been able to transfer the knowledge developed for film deposition, nitriding, carburizing, oxidation or cleaning of metallic surfaces to new technologies that use NTAPP as an energy source. This tendency is fully justified by the fact that NTAPP avoids the use of expensive pumping systems, the construction of complex chambers for transferring air to vacuum and vice versa, with a high pressure gap. However, there are many challenges along the way that need to be discussed in a forum like the one proposed here. Thus, this special edition aims to present the most recent experimental developments as well as methods for modeling and simulating processes by NTAPP on metallic surfaces. Application contexts of interest include original research work on thermochemical treatments, coating and deposition, and cleaning of metal surfaces.

Guest Editor

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Deadline for manuscript submissions

closed (31 March 2024)

Metals

an Open Access Journal by MDPI

Impact Factor 2.5
CiteScore 5.3

mdpi.com/si/173254

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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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