

Special Issue

Corrosion and Protection of Stainless Steels

Message from the Guest Editors

Stainless steels (SSs) are well-known and widely used for many applications thanks to their high corrosion resistance in several natural and industrial environments, high mechanical performances, and low maintenance requirements. The high corrosion resistance of SSs is due to the formation of a thin and protective surface oxide layer. Such a characteristic is strongly related to the Pitting Resistance Equivalent Number (PREN). On the other hand, PREN is not always sufficient to assess the real corrosion behavior of SSs under common exposure conditions. Microstructural and chemical-physics surface characteristics cannot be neglected in the research. In addition, uniform corrosion of SSs must be included, considering both strong acidic and/or chlorides rich solutions. All these corrosion forms can determine severe and costly damages in different applications. This Special Issue aims to give an updated outlook on all possible SSs corrosion phenomena and the corresponding methods to protect these alloys, belonging to different families and grades, in wet exposure environments, characterized by various chemical-physics parameters.

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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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