



Corrosion and Passivation of Compositionally Complex and High Entropy Alloys

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Deadline for manuscript
submissions:

31 October 2021

Message from the Guest Editors

High entropy alloys represent an emerging class of materials consisting of five or more alloying elements in nearly equimolar concentrations, resulting in a high entropy of mixing and a single-phase structure. These alloys have demonstrated an exceptional combination of mechanical properties, including extraordinary hardness and high strength, and, in many cases, they have shown potential for use as corrosion-resistant materials, especially in extreme environments. A similar positive prognostic applies to the broader range of compositionally complex and multi-principal element alloys, which may contain less than five elements and have two or more phases. The absence of a single primary element in this family of alloys makes their development difficult, especially as concerns the optimization of corrosion resistance, which depends on the chemical and electrochemical interactions of the individual alloy elements.

