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Intermetallic Alloys and Intermetallic Matrix Composite Coatings

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Deadline for manuscript submissions: closed (20 February 2024)

Message from the Guest Editors

Transition metal aluminides based on Ti, Fe, Ni, Co and Nb are seen as promising for their potential use as coatings in agressive environments. They possess sufficiently high concentrations of aluminum to form a continuous, fully adherent alumina layer on the surface when exposed to corrosive, oxidizing, carburizing and sulfidizing conditions. The common coating technologies (thermal spray technologies and laser cladding) may imply some oxidation of the raw material along the deposition process, which may actually introduce reinforcement phases that can contribute to change of thermophysical properties, increase hardness and wear resistance but are detrimental to oxidation and corrosion since they leave aluminumdepleted areas. In order to actually improve the wear performance, ceramic hard phases can be introduced also as feedstock. The use of carbides or borides for example is being used as an strategy not only investigated for coatings but also for bulks with the aim to be competitive to wellstablished WC-Co in high demanding wear resistant applications where tools need to withstand high temperatures.









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Message from the Editorial Board

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