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Intermetallic Alloys and Intermetallic Matrix Composite Coatings

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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 aluminum-depleted 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 well-stablished WC-Co in high demanding wear resistant applications where tools need to withstand high temperatures.

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Message from the Editorial Board

Now more than ever, research is asked to deliver knowledge and technologies to solve the major challenges faced by our society. The development of new materials and devices for (without the ambition to be exhaustive) energy, health and food technology, together with the need for establishing processes that reduce the impact on critical resources and the environment, is indeed in the spotlight of most contemporary research. Surface science and engineering play a key role in this regard, with an incredible potential in delivering new and deep scientific understanding and technical solutions essential to solve most of the major societal challenges.

Coatings is a well-established, peerreviewed, online journal dedicated to the vibrant field of surface science and engineering. Coatings publishes original research articles that report cutting-edge results and review papers that make the point on the hottest research topics.

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