

Special Issue

Advanced Intermetallic TiAl Alloys

Message from the Guest Editor

Intermetallic alloys based on the γ -TiAl phase are very interesting candidates for several high temperature applications, e.g., in aero engines. Their low specific weight (ca. 4 g/cm^3) compared to Ni-base materials ($8\text{--}9\text{ g/cm}^3$) and the high specific strength at elevated temperatures have led to the use of low-pressure turbine blades in jet engines made of TiAl. The use of such lightweight components helps to minimize the environmental impact of the engines; hence, it is beneficial for reducing human impact. The alloy development is still ongoing especially in view of room temperature ductility and high temperature oxidation resistance, two major obstacles for a wider use of these alloys. The third-generation alloy Ti-48Al-2Nb-2Cr has been used in General Electric engines for more than 10 years. The use in automotive engines includes turbo charger rotors or valves. New developments deal with the additive manufacturing of TiAl components. In this Special Issue all topics dealing with advanced TiAl alloys should be addressed, i.e., alloy development, microstructure, mechanical properties, oxidation, applications, etc.

Guest Editor

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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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