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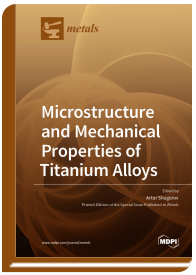
Special Issue Reprint

Microstructure and Mechanical Properties of Titanium Alloys



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Titanium and its alloys are widely used engineering materials within the aerospace, automotive, energy and chemical industries. Their unique combination of high strength-to-weight ratio, strong resistance to creep, excellent corrosion resistance, and low heat conductivity makes them suitable for a wide range of applications. A large variety of microstructures, including lamellar, martensite, equiaxed globular and bimodal (duplex) microstructures can be obtained in titanium alloys depending on the thermomechanical processing routes. Despite a large amount of work in the field of investigation of microstructure evolution and mechanical properties of titanium alloys, detailed studies of the effect of their microstructure on the mechanical behavior are still necessary because of ever-increasing demands for structural materials to optimize their properties for different applications by varying processing parameters and resulting microstructures.

This Special Issue is focused on various aspects of microstructure evolution in titanium alloy samples obtained using traditional and additive technologies and subjected to different processing techniques as well as on the relation between their microstructure and mechanical behavior. The presented original articles cover the areas of preparation and experimental characterization of titanium alloys as well as computer simulation of their mechanical behavior under different loading conditions.

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