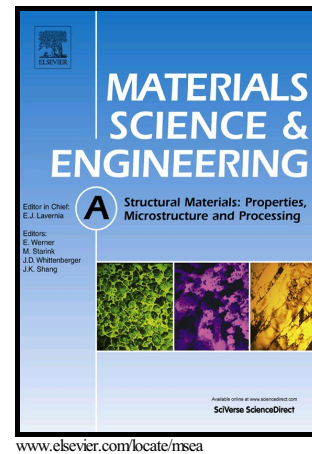


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of P/M Ti-22Al-25Nb alloy during hot extrusion

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Microstructure evolution and mechanical properties of P/M

Ti-22Al-25Nb alloy during hot extrusion

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Abstract

In this paper, Ti-22Al-25Nb alloy bars were successfully prepared by elemental powder metallurgy and subsequent hot extrusion (1200 °C, extrusion ratio of 10.56:1). The microstructure characterization, texture and mechanical property have been systematically investigated. Results showed that DRX occurred prior near grain boundary and further refined the B2 grains during the hot extrusion process. Besides, the as-extruded microstructure consists of both DRX grains and elongated grains, in addition, the as-extruded Ti-22Al-25Nb alloy exhibited strong (110)_{B2}//ED. Meanwhile, {001}<111> and {111}<13-1> fiber textures were also introduced due to dynamic recrystallization. The good combination of tensile strength (1122.7 MPa) and elongation (7.9 %) have been obtained in the as-extruded Ti-22Al-25Nb alloys at room temperature. Besides, the as-extruded alloy also exhibited super-high tensile strength at elevated temperatures (close to 916.5 MPa at 650 °C and 613.1 MPa at 800 °C). The enhanced properties can be attributed to the comprehensive effects

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