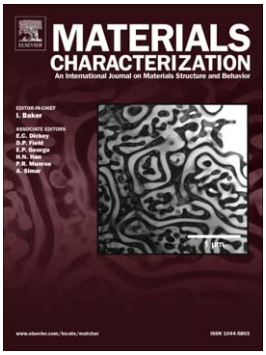

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Microstructural characteristics of adiabatic shear localization in a metastable beta titanium alloy deformed at high strain rate and elevated temperatures

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Abstract

The microstructural evolution and grain refinement within adiabatic shear bands in the Ti6554 alloy deformed at high strain rates and elevated temperatures have been characterized using transmission electron microscopy. No stress drops were observed in the corresponding stress-strain curve, indicating that the initiation of adiabatic shear bands does not lead to the loss of load capacity for the Ti6554 alloy. The outer region of the shear bands mainly consist of cell structures bounded by dislocation clusters. Equiaxed subgrains in the core area of the shear band can be evolved from the subdivision of cell structures or reconstruction and