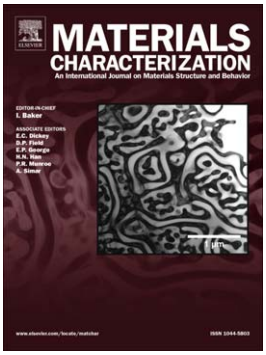

Twinning behaviors of a rolled AZ31 magnesium alloy under multidirectional loading

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Twinning behaviors of a rolled AZ31 magnesium alloy under multidirectional loading

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Abstract The microstructure and texture evolution of an AZ31 magnesium rolled sheet during quasi-static compression at strain rates of 10^{-3} s^{-1} has been investigated by in situ electron backscattered diffraction. The influence of initial and pre-deformed texture on the predominant deformation mechanisms during compression has been examined. It has been found that extensive grain reorientation due to {10-12} tensile twinning appeared when compression along transverse direction. Tensile twin variants were observed under this loading condition, and different variant will cause an effect to following deformation. Several twinning modes were occurred when continuative loading along rolling direction.

Keywords: AZ31 Magnesium alloy; Tensile twin; Crystallography; EBSD.

1. Introduction

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