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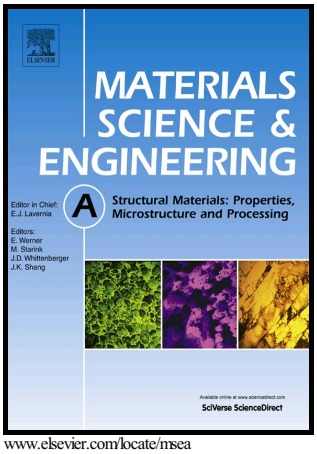

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Bimodal Grain Microstructure Development during Hot Compression of a Cast-Homogenized Mg-Zn-Zr Alloy

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Abstract

Hot deformation of a cast-homogenized ZK60 alloy was studied by compression at a temperature of 450°C and a strain rate of $0.001s^{-1}$ to investigate microstructural evolution. The deformed microstructure was characterized using electron backscatter diffraction (EBSD) and high resolution transmission electron microscopy (HRTEM). EBSD observations of the deformed microstructure showed that hot deformation of this alloy resulted in a bimodal grain microstructure consisting of large pancaked unrecrystallized dendrites surrounded by recrystallized equiaxed fine grains. HRTEM studies revealed the presence of nano-(Zn-Zr)-precipitates in the deformed microstructure. Due to the coherency of precipitates/matrix, the