

Microstructural Characterization and Mechanical Behavior of an Mg-9%Li-
1%Zn Alloy

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Abstract

A Mg-9%Li-1%Zn alloy was investigated by transmission electron microscopy and microdiffractometry. The alloy had a dual phase structure with dispersed particles of ZnO and MgO oxides. The Wurtzite structure of ZnO exhibited a good orientation with respect to the Mg matrix, but the MgO did not. The peak aging at a temperature of 100°C occurred at 10 h. At 50°C, the hardness reached the maximum value after an aging period of around 100 h. The appearance of the extra bump adjacent to the main peak of $\alpha(002)$ after aging at 50°C/100 h and 100°C/10 h, was thought to correspond to a precipitate phase or spinodal decomposition.

Keyword : magnesium-lithium alloy, field emission TEM(transmission electron microscopy), precipitation hardening, wurtzite structure, modulation structure