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Influence of Aging on Twin boundary Strengthening in Magnesium Alloys

Jianwei Teng¹, Xiaojuan Gong², Yunping Li^{2*}, Yan Nie³

¹School of Materials Science and Engineering, Central South University, Changsha, China

²State Key Lab for Powder Metallurgy, Central South University, Changsha, China

³Yuanmeng Precision Technology (Shenzhen) Institute, Shenzhen, China

Correspondence author: Y. Li, lyping@csu.edu.cn

Abstract

In order to investigate the effect of aging on twin boundary (TB) strengthening in magnesium alloys, the cyclic compressions along two orthogonal directions of samples with and without intermediate aging are carried out. The results show that the grains in all Mg alloys AZ31, AZ61 and AZ91 are significantly refined by twin boundaries (TBs). The TB strengthening is strongly dependent on both alloying element content and aging. Although grain refinement by TB formation occurs in AZ31, it exhibits slight strengthening effect even after aging. In contrast, significant TB strengthening after aging is observed in Mg alloys AZ61 and AZ91 with high contents of alloying elements.

Keywords: Magnesium alloy; Grain refinement; Twinning; Aging

1. Introduction

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