

论文摘要

中国有色金属学报

ZHONGGUO YOUSEJINSHUXUEBAO XUEBAO

第10卷 第6期 (总第39期) 2000年12月

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文章编号: 1004-0609(2000)06-0837-05

脉冲电流对2091铝锂合金再结晶动力学的影响

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摘要: 研究了脉冲电流对2091 铝锂合金再结晶动力学的影响。金相观察结果表明, 脉冲电流加速再结晶, 并减小完全再结晶晶粒尺寸。透射电镜观察表明, 通电试样在保温15 min的组织为几乎无晶内位错的再结晶组织, 而未通电试样却是混乱位错的亚结构。研究表明, 脉冲电流提高再结晶形核率和降低再结晶长大速率而减小完全再结晶晶粒尺寸。

关键字: 脉冲电流; 位错结构; 再结晶; 铝锂合金

Effect of current pulse on dynamics of recrystallization in 2091 Al-Li alloy

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Abstract: The effect of current pulse on the dynamics of recrystallization in 2091 Al-Li alloy has been investigated. Metallographic observation results showed that current pulse accelerates recrystallization, and decreases the size in diameter of grains fully recrystallized. TEM results showed that the microstructure in the specimen held for 15 min with concurrent pulse is recrystallized grains without interior dislocations, but that without current pulse is substructure with chaotic dislocations. It was indicated that current pulse decreases the size of grains fully recrystallized because of increasing the nucleation rate of recrystallization and decreasing the growth rate of recrystallized grains.

Key words: current pulse; dislocation structure; recrystallization; Al-Li alloy

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