عنوان مقاله:

Mechanical Properties and Texture Development in a Novel Dilute Extruded Mg-Zn-Gd-Y-Nd Alloy

نویسندگان:

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خلاصه مقاله:

Magnesium and magnesium based alloys are suitable candidates for the purpose of functioning as an industrial material in engineering applications via alloying by rare earth elements (REs). The effect of alloying elements (Zn and REs: Gd, Y and Nd) on microstructure, texture and hardness of Mg has been here investigated by means of optical microscopy (OM), hardness test and X-ray measurements. Microstructural observation exhibits that dynamic recrystallization (DRX) resulted in a bimodal microstructure due to the occurrence of fine DRX grains along the grain boundaries while static recrystallization (SRX) provide a context for a fully recrystallized microstructure which was also accompanied by the decrease of the hardness during annealing of extruded samples. More importantly, according to texture examinations, the basal texture was strengthened after extrusion while the annealing procedure after extrusion decreased the texture intensity. It is concluded that addition of alloying elements strengthens magnesium by grain refinement and solid solution strengthening effect of alloying elements. Moreover, it is observed that annealing after extrusion gives rise to a more refined grain structure and moderate hardness value together with a weaker texture

کلمات کلیدی:

Magnesium based alloy, Rare earth elements, Extrusion, Mechanical properties, Texture.

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