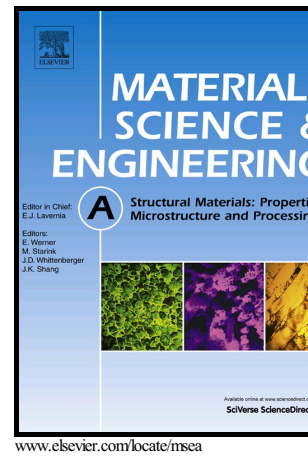


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## Effect of annealing on the microstructures and properties of cold drawn Mg alloy wires

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**Abstract**

To prepare the biodegradable Mg alloy fine wires for the development of new biomedical Mg alloy implant devices, we investigated the static recrystallization behaviours of three kinds of Mg-rare earth (Gd, Y and Nd)-Zn alloys after intense cold drawing plastic deformation. The results demonstrate that all experimental alloys had good cold drawing formability, and showed similar static recrystallization kinetics with a recrystallization beginning temperature of ~300-350 °C, a complete recrystallization temperature of ~400-425°C and a normal grain growth temperature ~450 °C. Additionally, the grain morphology and texture play important role in affecting the subsequent cold drawing performance: more uniform and regular recrystallized grains are helpful to improve the subsequent cold drawing performance, but intense cold-drawn deformation texture which was hardly modified by heat treatment is harmful to subsequent drawing processing.

**Keywords:** rare earth Mg alloys, cold drawn, annealing treatment, static recrystallization

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