

## RECENT DEVELOPMENTS IN ALLOY DESIGN OF MAGNESIUM WROUGHT ALLOYS

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### **Abstract**

The solidification, deformation and recrystallization behavior of semi-finished products of magnesium alloys was investigated by experiments and modeling. The aim was to obtain further insight into the deformation and recrystallization mechanisms of magnesium wrought alloys. The role of ceramic particles as well as alloy elements on magnesium wrought alloys during solidification and processing has been studied by microstructural investigations, texture measurements and mechanical tests. A reduction of the grain size can be ascribed to stimulated heterogeneous nucleation by ceramic particles during solidification. A further distinct reduction of the grain size and a texture randomization are achieved by recrystallization during thermomechanical processing resulting in a decrease of yield anisotropy. The solidification as well as the plastic deformation were modeled using appropriate models (hemispherical cap, VPSC). Influences of the alloying contents on texture evolution and mechanical properties are discussed in terms of deformation and recrystallization mechanisms.

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