Comparison of Planar Flow Cast Magnesium and its Non-Transition Metal Alloys

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Abstract. A comparison between rapidly quenched magnesium and two eutectic binary magnesium alloys is presented. The data show clear shift toward smaller grains using the metal additive. Furthermore the $Mg_{89}Sn_{11}$ alloy shows considerably higher thermal stability and for shorter periods can withstand also temperatures over 350 °C. In all cases a gradient of crystal grain size has been observed as a result of poor thermal conductivity of the liquid metal. The current results could help to develop a magnesium based metal alloy for hydrogen storage.