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E-PRINTS**Effects of high magnetic fields on solidified structures of Mn-90.4 wt% Sb hypoeutectic alloy**Qiang Wang *et al* 2009 *Sci. Technol. Adv. Mater.* **10** 014606 (5pp) doi: [10.1088/1468-6996/10/1/014606](https://doi.org/10.1088/1468-6996/10/1/014606) [Help](#)

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Abstract. Mn-90.4 wt% Sb alloy specimens were solidified under both uniform magnetic field and magnetic field gradient conditions. The solidification behavior was examined to elucidate the effects of high magnetic fields on the solidified structure evolution of this hypoeutectic alloy. The macrostructures on the longitudinal section of the alloys were investigated by optical microscopy and x-ray diffraction (XRD). The volume fraction of primary MnSb phases and the interrod spacing of the eutectic were measured by metallographic analysis. It was found that the segregation of the primary MnSb particles at the certain regions of the specimens occurred under the influence of high magnetic field gradients. The MnSb phases obtained under magnetic fields were oriented with their ($h0l$) planes along the direction of the magnetic field. Both the volume fraction of primary MnSb phases and the interrod spacing of the eutectic were decreased upon the application of the high magnetic fields.

Keywords: high magnetic fields, Mn–Sb alloy, orientation, segregation, solidification, interrod spacing

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