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Primary phase alignment in the Mg-Sb system with a 35T DC magnetic field SETH IMHOFF, Los Alamos National Laboratory, THOMAS OTT, None, TIM TUCKER, JASON COOLEY, Los Alamos National Laboratory — Primary phase alignment behavior in the Mg-Sb system is explored by solidification of samples in a 35 tesla DC magnetic field. Compositions with multiple solidification reaction pathways are found to have different phase alignment characteristics. In the current study, the orientation of Mg and Sb primary grains do not appear to be strongly influenced, but the α-Mg3Sb2 shows a very strong tendency to align with its long axis perpendicular to the field direction. In comparing two compositions that both first nucleate α-Mg3Sb2 from the melt, it is found that the volume fraction involved in the primary reaction is a controlling factor for the total degree of alignment throughout the structure. This volume fraction dependence is interpreted as hindering free rotation in the liquid.

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