

Abstract Submitted
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Growth and Characterization of a Combinatorial Array of Magnesium-Aluminum Alloys DAAD HADDAD, School of Materials Engineering, Purdue University, West Lafayette, IN 47907, CHARLES OLK, Materials and Processes Laboratory, General Motors Research and Development Center, Warren, MI 48090 — We have used combinatorial gradient controlled sputter deposition to produce a library of thin films with a wide range of compositions within the Mg-Al alloy system. We have successfully isolated the β ($\text{Mg}_{17}\text{Al}_{12}$) phase. The importance of understanding the physical properties of the β phase becomes apparent when one realizes the contrary effects associated with its presence in these alloys. The presence of the β phase is desirable for increasing corrosion resistance while undesirable as it generally produces reduced mechanical strength of the alloy. We present details of the growth procedure, as well as structural and compositional characterization.

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