

Abstract Submitted
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Characterization of GeSbTe Thin Films for Phase-Change Applications¹ C.D. GRIJALVA, C.E. INGLEFIELD, Physics Department, Weber State University, T. HERRING, HENG LI, Physics Department, University of Utah, P.C. TAYLOR, Physics Department, Colorado School of Mines — Thin films of the alloy GeSbTe are of interest because of current and potential applications in rewritable optical media and reconfigurable electronics. These applications stem from the fact that reflectivity and electrical conductivity are very different in the amorphous and crystalline phases of GeSbTe, and rapid switching between these phases is possible. We have grown amorphous GeSbTe using RF sputtering on quartz substrates, and used laser-induced heating to switch regions of the film from amorphous to crystalline phases. Previously, atomic force microscopy (AFM) showed that, during this transition, a substantial amount of ablation (several hundred nanometers) of the film occurred. The laser treatment has been revised to reduce the film ablation to the point that it is nearly undetectable by AFM. In addition, the AFM scans of films did not show any ordered structure on the scale we were able to resolve. Future work with these films includes looking at direct measurements of electrical conductivity on a similar scale.

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Colin Inglefield
Weber State University

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