

Abstract Submitted  
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**Structure and Optical Properties of Ge-Sb-Te films**<sup>1</sup> HENG LI, TONG JU, DON WILLIAMSON, P. CRAIG TAYLOR, University of Utah — Amorphous and Crystalline films in the system Ge-Sb-Te are of interest because of their use in reversible phase change optical storage media or electrical switches. These applications utilize differences in optical or electrical properties between the crystalline and amorphous phases of the same material. The most commonly employed composition is  $\text{Ge}_2\text{Sb}_2\text{Te}_5$ . We present data on amorphous films of  $\text{Ge}_2\text{Sb}_2\text{Te}_4$ ,  $\text{Ge}_2\text{Sb}_2\text{Te}_5$  and  $\text{Ge}_2\text{Sb}_2\text{Te}_7$  grown by RF sputtering and examine the effects of growth rate, different growth systems and growth pressure on the structure and optical properties. Small Angle X-ray Scattering results show there are elliptical “voids” in the films with the long axis along the growth direction. The dependent of this void structure on growth parameters will be discussed. Lower Ar Pressure during growth produce less oxygen contamination in the films. The effects of oxygen impurities on the optical properties will be discussed.

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