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Optical switching and structural properties of Ge2Sb2Te5 and Ge2Sb2Te7 films[1] T. W. HERRING, University of Utah, P. C. TAYLOR, Colorado School of Mines, C. E. INGLEFIELD, M. J. NELSON, Weber State University, D. A. BAKER, M. A. PAESLER, North Carolina State University — Ge2Sb2Te5and Ge2Sb2Te7 are materials important in phase change memory applications, but the structures of both the amorphous and crystalline phases are not well known. Large areas of optically switched material are needed in order to probe the structure. Films of amorphous Ge2Sb2Te5varying in thickness between 20 nm and 100 nm were crystallized by exposure to a focused beam of 532 nm laser light with a power density of approximately 50 kW/cm^2. Rastering of the crystallized spots produces areas of several square millimeters suitable for experiments to probe the structure of the films. The switching causes little change in surface topography as measured by atomic force microscopy. Ablation of the films occurs if the power density is too high. The structure of optically crystallized films studied by EXAFS will be discussed. Films of Ge2Sb2Te7 will also be discussed.

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