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EXAFS investigation of the amorphous $Ge_2Sb_2Te_5$ optical memory material JOSEPH WASHINGTON, DAVID BAKER, GERALD LUCOVSKY, MICHAEL PAESLER, North Carolina State University, CRAIG TAYLOR, Colorado School of Mines — Studies of amorphous (a-) semiconductors have been driven by technological advances as well as fundamental theories. Observation of electrical switching, for example, fueled early interest in a-chalcogenides. More recently a-chalcogenide switching has been applied successfully to programmable memory devices, as well as DVD technology where the quest for the discovery of better-suited materials continues. Thus, switching grants researchers today with an active arena of technological as well as fundamental study. Bond constraint theory and rigidity theory provide a powerful framework for understanding the structure and properties of a-materials. Application of these theories to switching in a-chalcogenides, combined with Extended X-ray Absorption Fine Structure (EXAFS) spectroscopy yields the most detailed model to date of the a-$Ge_2Sb_2Te_5$ system.

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