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Growth and Properties of Ge Thermal Oxides T. NATHAN NUNLEY, NALIN FERNANDO, JAIME MOYA, CAYLA M. NELSON, STEFAN ZOLLNER, New Mexico State Univ — The optical constants of thermal germanium dioxide have been determined in the spectral range of 0.037-6.6 eV using a combination of variable angle VUV and FTIR ellipsometric techniques and X-ray reflectance. Oxides with thicknesses from 2 to 100 nm were prepared by ozone cleaning for 2 hours, performing an ultrasonic clean with DI water and isopropanol for twenty minutes respectively, drying with N_2 and growing in dry O_2 at 550 C. XRR was performed to obtain an independent thickness measurement and electron density. The optical spectra of all samples were analyzed simultaneously for an independent determination of the optical constants for both substrate and oxide. A single model, consisting of a sum of oscillators for interband electronic transitions and a factorized dispersion model for the phonons, was used.

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