Abstract Submitted
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X-ray Photoelectron Spectroscopic Investigation of Oxidation of Hafnium[1] JOHN HICKMAN, STEVEN MCDONOUGH, R.L. MILLER, M.A. SEABOLT, G.A. NIXON, A.R. CHOURASIA, Department of Physics, Texas A&M University-Commerce — X-ray photoelectron spectroscopy has been employed to investigate the oxidation of hafnium. Thin films (20 Å) of elemental hafnium were deposited on silicon substrates using e-beam technique. Two types of samples were investigated. In one type, the substrate was annealed at the desired temperature after the deposition. In the other type, the substrate was kept at the desired temperature during the deposition. The substrate temperatures were kept at 100, 200, 300, 400, 500, and 600°C. Hafnium is observed to get deposited mostly as hafnium dioxide with some suboxide. The amount of the suboxide is found to vary with the processing conditions. The concentration of the dioxide and the suboxide were determined by curve fitting the spectra. The fitting was performed using the parameters determined from fitting pure elemental hafnium spectrum and pure hafnium dioxide spectrum.

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