

Abstract Submitted
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Photoactivity of Chemically Deposited Rutile Thin Films on Si(111) JOHN F. ANDERSON, University of Louisiana at Monroe, ERIE MORALES, Tulane University, KENNETH HARRIS, University of Louisiana at Monroe, ULRIKE DIEBOLD, Tulane University, ULM PHYSICS COLLABORATION, TULANE SURFACE SCIENCE COLLABORATION — Chemical Bath Deposition from acidic ($\text{pH} < 2$) solutions at low temperature ($35^\circ\text{C} - 55^\circ\text{C}$) produced thin titanium dioxide films with rutile crystalline structure on clean Si(111) wafers. The films were characterized by X-ray Photoelectron Spectroscopy (XPS), Scanning Electron Microscopy (SEM), and X-ray Diffraction (XRD). Their thicknesses varied from 300 nm up to $\sim 1\mu\text{m}$, and annealing was required to ensure adherence to the Si(111) substrate. SEM images show a rough TiO_2 surface, and XRD indicates the rutile structure of TiO_2 . The rutile films exhibit photoactivity as evidenced by the decomposition of methyl orange when exposed to a 254 nm (4.88 eV) lamp.

John F. Anderson
University of Louisiana at Monroe

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