

## Iron Oxide Grown by Atomic Layer Deposition at Low Temperature

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Conformal thin films of iron oxide have been coated on single crystalline silica through atomic layer deposition. A novel iron based precursor Fe(btmsa)<sub>2</sub> and Hydrogen peroxide co-reactant were alternatively dosed for film formation. The deposition temperature have great influence on growth rate, and optimum deposition temperature has been found as 150–175°C. Film conformality and uniformity were verified by transmission electron microscopy. X-ray diffractometry and X-ray photoelectron spectroscopy were utilized as a measure to determine film composition. The grown films were amorphous, on annealing the films become crystalline at 550°C. The formed iron oxide films were used as photo anodes for water oxidation reaction.

Keywords : Atomic layer deposition , iron oxide, photo anode, thin film