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Atomic Layer Deposition of Sb_2S_3 Thin Films on Mesoporous TiO_2

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The antimony sulfide (Sb_2S_3) thin films were deposited using the gas phase method which known as atomic layer deposition (ALD) on mesoporous micro-films. Tris (dimethylamido) antimony ($\text{III}[(\text{Me}_2\text{N})_3\text{Sb}]$) and hydrogensulfide (H_2S) were used as precursors to deposit Sb_2S_3 . Self-terminating nature of $(\text{Me}_2\text{N})_3\text{Sb}$ and H_2S reaction were demonstrated by growth rate saturation versus precursors dosing time. Absorption spectra and extinction coefficient were investigated by UV-VIS spectroscopy. Scanning electron microscopic analysis and X-ray photoelectron spectroscopy (XPS) depth profile were employed to determine the conformal deposition.

Keywords: ALD, Mesoporous, Antimony sulfide, Sb_2S_3