Preparation and Charaterization of Flame Synthesized Titania Thin Films with One-dimentional Morphology

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In this work, aerosol flame reactor has been utilized to prepare TiO2 thin films with one-dimentional morphology. Both columnar and granular thin films were deposited on conductive glasses. The effects of the various process parameters, such as precursor feed rate, deposition height, total gas flow rate and deposition time on resultant morphology and thickness of TiO2 thin films were investigated, respectively. The structure properties were characterized by Scanning electron microscopy and X-ray diffraction. The photoelectrochemical properties were also tested and the performance differences for different columnar and granular thin films were discussed.