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Sensing Properties of Ultra-Thin TiO₂ Nanostructured Films Based Sensors

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In this work, ultra-thin TiO₂ nanostructured films, synthesized by atomic layer deposition method (ALD), were integrated in sensor structures. The effect of post-growth annealing and thickness of TiO₂ samples on UV and hydrogen gas sensing properties is investigated. An increase in current value of more than one order of magnitude ($I_{UVON}/I_{UVOFF} \sim 38$) has been detected under exposure to UV light (365 nm) of sample with 45 nm thickness and annealed in furnace at 650 °C for 2 hours. Samples with 15 nm thickness and rapid thermal annealed at 450 °C for 3 min, have shown hydrogen gas response (~ 3.75).