

Thin Films of Copper Oxide Nanostructured via Rapid Thermal Processing

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ABSTRACT

The temperature dependent gas sensing properties of nanostructured copper oxide nanolayers obtained by the method of chemical synthesis from solutions (SCS) and exposed to post-growth rapid thermal processing (RTP) in air at different temperatures were investigated. Morphological properties of the layers were investigated using the scanning electron microscopy (SEM) technique. The fabricated sensor structures based on the metal oxide nanostructured films were tested to hydrogen gas with a low concentration of 100 ppm at an operating temperature range from 250 °C to 350 °C.

The change in the response of the thermally treated films in different regimes, i.e. at different temperatures, under exposure to the tested gas was observed, which was determined by the change in surface morphology. The hydrogen gas detection mechanism of prepared nanostructured layers has been proposed as well.