Fabrication of SnO2 flexible sensor by inkjet printing technology

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Abstract

In this work, a flexible tin oxide (SnO2) gas sensor was successfully fabricated by inkjet printing technology. This thin film deposition technique requires the formulation of stable suspensions with specific fluidic properties. Sol-gel method was applied to synthesize a stable sol based on tin oxide, then transformed into ink with the appropriate rheological properties to be printed using a drop-on-demand piezoelectric inkjet printer. Thermal analysis by TGA/DSC and microstructural analysis by XRD of synthetized sol show that a crystallized structure of SnO2 could be obtained at 350°C, which is lower than crystallization temperatures of SnO2 previously reported in the literature, and entirely consistent with our plastic substrate. The printed thin-film was then sintered at 350°C on a flexible plastic (Upilex-50S).

Keywords: Flexible sensor, SnO2, Inkjet Printing

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