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TITLE

Fabrication of nanocomposite thin films for gas sensing

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Tanocomposite films are thin films formed by mixing two or more dissimilar materials having nano-dimensional phase(s) in order to control and develop new and improved structures and properties. The properties of nanocomposite films depend not only upon the individual components used but also on the morphology and the interfacial characteristics. Nanocomposite films that combining materials with synergetic or complementary behaviors posse unique physical, chemical, optical, mechanical, magnetic and electrical properties unavailable from that of the component materials and have attracted much attention for a wide range of device applications. Recently, various nanocomposite films consisting of either metal-metal oxide, mixed metal oxides, polymers mixed with metals or metal oxides, or carbon nanotubes mixed with polymers, metals or metal oxides have been fabricated by a variety of methods and investigated for their application as active materials for gas sensors. Gas sensors using nanocomposite films can find a wide variety of applications such as clinical assaying, emission control, explosive detection, agricultural storage and shipping, and workplace hazard monitoring. Clinical diagnostic applications, such as the detection of nitrogen monoxide (NO) concentration in the breath to screen persons suffering from asthma and acetone concentration for person with metabolic disease like diabetes mellitus, represent a significant market that is already driving significant efforts. This presentation will summarize the fabrication methods currently used for preparing nanocomposite films and give examples of unique gas sensing properties of nanocomposite films.

Biography

Dongfang Yang is a Senior Research Officer at the National Research Council of Canada. He received his Ph.D. in Physical Chemistry from University of Guelph in 1995. His current research interests include laser materials processing; physical vapor deposition of thin films; energy storage devices, and chemical and optical sensors. He authored 2 book chapters, 1 patent, and 45 scientific articles in peer reviewed journals. He is currently serving as Member of Editorial Board for five scientific journals including "The Research & Reviews in Electrochemistry" and "Sensors & Transducers". He is also an Adjunct Professor at Lakehead University since 2006.