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Enhanced room-temperature ammonia vapor-sensing activity of nebulizer spray pyrolysis fabricated SnO_2 thin films: an effect of Er doping

Maheswari S.[a, b]; Karunakaran M.[b]; Hariprasad K.[c]; Kasirajan K.[b]; Chandrasekar, L. Bruno[d]; Alshahrani T.[e]; Shkir, Mohd.[f, g]; AlFaify S.[g]

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[a] Department of Physics, Caussanel College of Arts and Science, Muthupettai, India
[b] PG and Research Department of Physics, Alagappa Govt Arts College, Karaikudi, 630003, India
[c] Department of Physics, Institute of Aeronautical Engineering, Dundigal, Hyderabad, 500043, India
[d] Department of Physics, Periyar Maniammai Institute of Science & Technology, Vallam, India

View additional affiliations

Abstract

Abstract: In this work, we have coated 0, 1, 3, and 5 wt% of Erbium (Er)-doped tin oxide (SnO_2) films on glass using a simple nebulizer spray pyrolysis method to make an ammonia vapor sensor with remarkable sensitivity. X-ray diffraction, Atomic force microscopy, Ultraviolet–visible spectroscopy and photoluminescence methods were employed to inspect the thin-film samples. Room-temperature ammonia vapor sensing was performed by a computer connected to the homemade gas-sensing system. The results obtained show that Er doping in SnO_2 films gradually decreased the crystallite size with an increase of the