

3rd International Conference on

THEORETICAL AND CONDENSED MATTER PHYSICS

October 19-21, 2017 New York, USA

Structural, optical and gas sensing properties of swift heavy ions irradiated metal oxide thin films

Azher M Siddiqui¹, Riti Sethi¹, G B V S Lakshmi², Anver Aziz¹, D K Avasthi³¹Jamia Millia Islamia, India²Inter University Accelerator Center, India³Amity University, India

In this work, we report the effects of 100 MeV Ag⁹⁺ and O⁷⁺ ions irradiation on the structural, optical and gas sensing properties of thermally oxidized thin films of tin and indium. XRD, SEM and RBS techniques have been employed to study the structural modifications induced in the films because of irradiation. It was observed that, irradiation with 100 MeV Ag⁹⁺ and O⁷⁺ ions resulted in a decrease in the crystallinity of the films along with a decrease in the grain size due to increase in the lattice strain. The structural modifications induced have been correlated with the simulations based on the thermal spike model. The optical properties of the pristine and SHI irradiated films was examined using UV-Vis spectroscopy. It was noticed that the optical band gap of the films increased upon irradiation with 100 MeV Ag⁹⁺ and O⁷⁺ ions. The changes in the response characteristics of indium oxide and tin oxide films towards methane and hydrogen respectively due to SHI irradiation are extensively discussed.

Biography

Azher M Siddiqui is an Associate Professor in the Department of Physics, Faculty of Natural Sciences, Jamia Millia Islamia (Central University), India. He has completed his PhD at School of Physics, University of Hyderabad, India, under the supervision of Professor Anand P Pathak. He has worked as a Research Associate with Dr. D K Avasthi in the Materials Science Group at the Inter University Accelerator Centre (IUAC) (formerly known as: Nuclear Science Centre, NSC.), New Delhi, India. He has over 50 papers to his account in International Journals of repute. He has Supervised two students so far for their PhD and 5 students are currently registered with him to carry out their PhD. He has presented his papers in about 20 conferences and has also taken up 3 major research projects from various sponsoring agencies like UGC and IUAC.

amsiddiqui@jmi.ac.in

Notes: