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Polyaniline-SnO_2 Nanocomposites for Better Sensitivity of NO_X gases at Lower Temperatures NAVENDU GOSWAMI, Department of Physics and Material Science and Engineering, Jaypee Institute of Information Technology, A-10, Sec. 62, Noida -201307, India, ANJALI SHARMA, MONIKA TOMAR, VINAY GUPTA, Department of Physics and Astrophysics, University of Delhi, New Delhi-110007, India — We demonstrate that the sensor based on Polyaniline (PAni) nanofibers, simply prepared by the interfacial polymerization, has advantages of sensitivity, spatial resolution and rapid time response for NO_2 gas at room temperature. Although PAni is one of the most studied conducting polymers due of its good electrical conductivity, environmental stability and relative easier synthesis, yet due to poor solubility of PAni, it is difficult to form the film adopting conventional methods. Nonetheless, nanomaterials of conjugated polymers are found to exhibit superior performance as compared to conventional materials due to their larger exposed surface area. The objective of this work is to study the PAni doped SnO_2 nanocomposite as novel sensing system and to probe the NOx sensing characteristics of this sensor at room temperature. Here we focus on the effect of doping ratio of sensor material, gas flow time and response time. PAni with different amounts has been stirred with SnO_2 solution to obtain SnO_2/PAni mixture. In present work, sensors with different PAni doping ratio were prepared and characterized so as to ascertain the favorable conditions for higher sensitivity, selectivity and better gas sensing characteristics. The as-grown films characterized employing various techniques and revealed that PAni/SnO_2 nanocomposite show good gas sensitivity at 30-100 °C.

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