



NANOSTRUCTURED Fe₂O₃ THICK FILM AS AN ETHANOL SENSOR

N. K. Pawar¹, D. D. Kajale², G. E. Patil², V. G. Wagh³, V. B. Gaikwad⁴, M. K. Deore⁵
and G. H. Jain^{4*}

¹ Department of Physics, K.A.A.N.M. Sonanwane Arts, Commerce and Science College,
Satana, 423 301 India

² Materials Research Lab., Arts, Commerce and Science College, Nandgaon 423 106, India

³ Department of Physics, K.V.N. Naik Arts, Commerce & Science College, Nashik 422 002,
India

⁴ Materials Research Lab., KTHM College, Nashik 422 002, India

⁵ Department of Physics, Arts, Commerce and Science College, Ozar Mig, 422 206 India

*Corresponding Author: gotanjain@rediffmail.com

Submitted: Mar. 24, 2012

Accepted: May 9, 2012

Published: June 1, 2012

Abstract- Thick films of AR Grade nano Fe₂O₃ material with n-type semiconducting properties were prepared and tested for their gas sensing performances. Thick films of the materials were prepared by screen printing technique. The gas sensing performance was studied using static gas sensing system. The material was tested for various gases such as CO, CO₂, NH₃, Cl₂, H₂, LPG, ethanol and H₂S. The nano Fe₂O₃ film showed maximum sensitivity to ethanol gas at 350 °C temperature at 250 ppm concentration with short response time and large recovery time. Physical and structural properties of the film material were studied by SEM, TEM, XRD and UV spectroscopy.

Index terms: Nano Fe₂O₃, Ethanol, Gas sensor, Sensitivity.
