

ABSTRACT

Zinc Oxide (ZnO) nanostructures has been successfully synthesized on he surface of Alumina substrate by hydrothermal method. Hydrothermal method consists of two steps, i.e., the seeding layers process and the growth of nanostructures ZnO. 0,4 M Zinc Acetate Dihydrate ((Zn(O₂CCH₃)₂(H₂O)₂) and 3 M Natrium Hydroxide (NaOH) was used as the precursors. Hydrothermal process were carried out at 90°C for 4 hours. The results of ZnO nanosturctures morphology characterized by using Scanning Electron Microscope (SEM) show the diameter ranging from 60-80nm and length 600-800nm with nanoflowers shapes. Crystal structures characterized using XRD show the ZnO nanostructures forms a wurzite hexagonal pattern with crystallite size 59nm. The results of I-V characterized shown the current value is directly proportional to the applied voltage obtained ohmic curve. Small size and wide spread of ZnO nanostructures performs good electrical conductivity. ZnO nanostructures has a good potential as gas sensors by their responsives of butane gas. The resistance value of ZnO nanostructures change for 0,17 MΩ/s at 200 mL/minute flow of butane gas with the speed of recovery time were 30 second as exposed to butane gas for one minutes. ZnO nanostructures change of sensitivity value by 0,000495 MΩ/mL at butane gas flow ranging from 50-250 mL/minute.

Keywords: *hydrothermal, ZnO nanostructures, gas sensor*