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TITLE

Fabrication of Zno nanofiber by electrospinning method for sensor applications

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ne-dimensional (1D) nanostructures of semiconductor have been of particular interest over the past few years because of their potential exploitation for the preparation of optical signal processors and switches. Until now, a large number of methods have already been demonstrated for generating 1D nanostructures, including chemical vapor deposition, vapor- liquid-solid, solution-solid, solvothermal routes, and so on. But they are not suitable for synthesizing organic-inorganic materials. Recently, electrospinning, a drawing process based on electrostatic force, has been proved to be a relatively simple and versatile method for generating 1D nanostructures from organic-inorganic materials. ZnO nanofibers were fabricated by electro spinning. The Electro spinning apparatus was operated at 20kV. ZnO nanofibers with a diameter of 50 -100 nm could be successfully obtained. Uniform and smooth nanofibers were observed at a calcination temperature of 500°C for 4 h. The calcination process of the ZnO/PVP composite nanofibers brought forth a random network of polycrystalline quartzite ZnO nanofibers with a reduction in diameter. The sample was characterized by scanning electron microscopy (SEM), X-ray diffraction (XRD), PL spectroscopy and Raman technique. Scanning electron microscopy (SEM) shows that the obtained ZnO nanofibers were randomly aligned on the substrates. XRD and Raman patterns show that the ZnO nanofibers are the quartzite structure. Optical properties were measured by PL spectroscopy. Experimental results suggest that the calcination temperature was most essential in determining the nanofibers morphology and size. The present findings demonstrate that electro spinning is the easiest way to assemble one-dimensional nano structures for building integrated nano devices for various applications, such as transistors, sensors, diodes, and photo detectors.

Biography

R.Hema Priya is pursuing her M.tech final year in Anna University, Chennai- India. And she wishes to carry out her PhD in well-known institutions /research centers were she find a place to prove her skills and knowledge. And also she finished her BE in Electronic and Communication Engineering at 2010.