



Contribution ID: 244

Type: **Poster Presentation**

Low Temperature Synthesis of ZnO nanoparticles and Nanorods via Wet Chemistry Route

Wednesday, 13 July 2011 17:00 (2 hours)

A wet chemistry route is an essential method used today to synthesize high quality ZnO nanoparticles and nanorods. It is a novel low cost method to produce nanoparticles and nanorods with relatively high dispersivity. In this study optical properties and morphology of the nanoparticles and nanorods were investigated. The X-ray diffraction (XRD) patterns of both nanoparticles and nanorods revealed the hexagonal wurtzite structure, the diffraction peaks matched well with the JCPDS (card no 80-0075) standard data. The transmission electron microscopy (TEM) revealed the nanoparticles and nanorods with different diameters and lengths. The optical absorption and photoluminescence (PL) were also obtained and it was demonstrated that the PL exhibited a strong near-band-edge emission (UV) and weak visible emission bands. The PL intensity increased with increasing precursor concentration (0.1M-1.5M) and was quenched at higher concentrations, which may be attributed to concentration quenching effects. The Fourier transform infrared spectroscopy (FTIR) was used to determine the distinct stretching mode frequencies. The ZnO nanoparticles and nanorods were investigated for possible applications in transparent electrodes in solar cells and gas sensors.

Level (Hons, MSc, PhD, other)?

PhD

Consider for a student award (Yes / No)?

Yes

Would you like to submit a short paper for the Conference Proceedings (Yes / No)?

Yes

Primary author: Ms MBULE, Pontsho Sylvia (University of the Free State)

Co-authors: Prof. SWART, Hendrik (UFS); Prof. O.M NTWAEABORWA, Martin (UFS)

Presenter: Ms MBULE, Pontsho Sylvia (University of the Free State)

Session Classification: Poster1

Track Classification: Track A - Condensed Matter Physics and Material Science