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SYNTHESIS AND CHARACTERIZATION OF ZnO NANOPARTICLES

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Abstract: In this paper, we report the comparison between ZnO nanoparticles prepared via two different routes; i) via sol-gel route and ii) by sublimation condensation technique (SCT) using a solar furnace. It was found that when prepared under the same ambient conditions viz temperature, pressure etc. and keeping all the parameters same viz precursors, molarity, solvent etc; the nanoparticles prepared by sublimation condensation technique were highly crystalline and had smaller crystallite size (~ 29 nm) as compared to the one prepared via Sol-gel route (~ 55 nm). The crystallinity and the crystallite size were examined by XRD and MEB. Variation in the bandgap as a function of size of the particles was determined using the absorption spectra obtained by UV-Vis spectrophotometer.

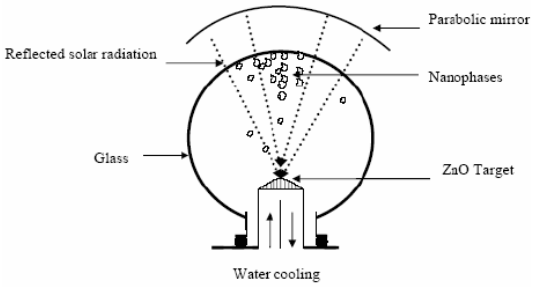

Fig. 1. Solar reactor for the preparation of nanophases of ZnO by sublimation-condensation.

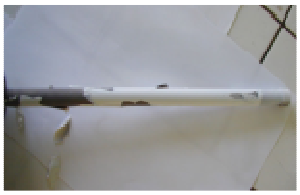

Fig2. Porous stick covered by ZnO nanopowder .