



## Synthesis of Nanoparticle of ZnO for Drug Delivery

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### Abstract:

Nanocrystalline ZnO powders were synthesized using ultrasonic atomization technique. Effect of precursor concentration (0.1, 0.35, 0.5 and 0.75 M), pyrolysis temperature (973, 1073 and 1273 K) and aerosol carriers (Air/Oxygen) on ultrasonically atomized nanocrystalline ZnO powders was studied. The powders were characterized using X-ray diffraction (XRD), transmission electron microscopy (TEM), selective area electron diffraction (SAED), absorption spectroscopy (UV-vis) and photoluminescence (PL). It was observed from XRD and TEM that the powder consisted of nanocrystallites with sizes less than 20 nm. The nanocrystalline ZnO powder showed that crystallite sizes were observed to increase with an increase in the concentration of solution and pyrolysis temperature. The influence of air and oxygen on crystallite morphology was studied using TEM. It was confirmed from TEM analysis that the crystallites were nearly spherical in powder prepared in the presence of compressed air. In the presence of pure oxygen, the crystallites could acquire regular hexagonal shape. The effect of precursor concentration, pyrolysis temperature and aerosol carriers on crystallite size and morphology of nanocrystalline ZnO powders is reported in the present study. This nanocrystalline ZnO

powder is used for the delivery of drugs.

### Biography:

Dr. Anil Ramdas Bari has completed his PhD at the age of 30 years from Kavayitri Bahinabai Chaudhari North Maharashtra University, Jalgaon. He is the Head of Department of Physics, IQAC / NAAC Coordinator and NSS Programme Officer of Arts, Commerce and Science College, Bodwad. He has published more than 48 papers in reputed journals and presented more than 80 research papers in seminars, conferences and workshops and over 100 on online mode. He attained more than 120 online webinars. He has been serving as an editorial board member of reputed journals. He has participated as an Organizing Committee Member in the Scientific Committee of 17 conferences and associations as well as served as a reviewer in a wide range of National and International Journals. He has been given Keynote Speech at 05 the International Conferences. He has chaired the sessions of the International Conferences and member of various scientific societies. He has organized 04 online national conference /seminar and workshops. His Scopus h-index is 12, Google Scholar h-index is 16 and Google Scholar i10-index is 21. He is an Executive Member of the Board of Studies, Maharashtra State Bureau of Textbook Production and Curriculum Research (Balbharti), Pune. He is an Academic Counsellor: Indira Gandhi National Open University, New Delhi. He has been awarded with Platinum Medal and Leadership Certificate by Samabhand Foundation for noteworthy efforts in promoting the SPIT FREE INDIA MOVEMENT through NSS to prevent the spread of COVID-19.