

ADVANCES AND DEVELOPMENTS OF BIONANOMATERIALS WITH ENVIRONMENTAL AND BIOMEDICAL APPLICATIONS

VOLUME - I

Edited by

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**Editors: MS. GREESHMA KP, DR. S. MUTHULINGAM &
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Chapter**2****SYNTHESIS AND APPLICATIONS OF ZINC OXIDE
NANO PARTICLES****A. PRITHIBA¹ & S. MANIMEGALAI^{2*}**

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ABSTRACT

Diverse applications of ZnO nano particles have garnered increasing scientific and industrial community interest towards synthesis of ZnO NP's through several methods. In Recent years, the inexpensive and eco-friendly procedure for synthesis of nano particles has garnered wide spread consideration as using natural sources is an excellent strategy for large-scale synthesis of nano particles with well-defined size. This article is an attempt to discuss the different methods of synthesis of NP's and highlights the superiority of biosynthesis of NP's and the morphological changes that can be noticed in the structure which aids in several applications across various fields.

KEYWORDS: Nano particles, biosynthesis, ZnO NP's, eco-friendly synthesis and biomass.

INTRODUCTION

A main developing branch of science, in current scenario of science and chemistry - Nanotechnology is a developing vast area. The word nano usually used as a prefix (nano is the Greek word of "dwarf") meaning one billion. One nano meter is one billionth or 10^{-9} of a meter; it is a small unit for measurement.

Nanotechnology is an interdisciplinary area where researches include different subjects like Chemistry, Physics, Biosciences, Material science, Computational engineering, tec., that deals particularly the manipulation of individual molecules and atoms. The efficiency of NPs is determined by the chemical composition, surface area, reactivity, and most significantly degree of their effectiveness.

Conventional physical and chemical procedures have various drawbacks when synthesizing nanoparticles, such as the critical conditions of particles, which have become one of the most prominent techniques in recent years. Green synthesis techniques provide a number of benefits, including being simple, affordable, good nanoparticle stability, requiring less time, generating no harmful by-products, and being used on a wide scale.