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## *Nanostructure metal oxide - synthesis and characterization*

**Rosemary George<sup>1</sup>**  
Assistant Professor, Department Lifesciences, BS Abdur Rahman University, Chennai, Tamilnadu

**Rajina Kannan<sup>\*2</sup>**  
Department Lifesciences, BS Abdur Rahman University, Chennai, Tamilnadu

*Email: k.rajina5689@gmail.com*  
*\*Corresponding Author: Rajina Kannan*

## **Abstract:**

The use of a capping agent, undoped ZnO or Ni- as well as Fe-doped ZnO nanoparticles were synthesized via chemical precipitation. The structural, optical, vibrational, and electrical properties of the samples prepared for the chemical precipitation procedure were studied using a battery of characterization techniques. Specifically, a model and mechanism were proposed to explain the notable structural transformation of Ni as well as Fe-doped ZnO nanostructures. This method exhibited numerous characteristics, including do pant type and concentration, that give rise to distinct structural transformations of transition metal doped ZnO nanoparticles, and it did so without the need for a substrate or elaborate synthesis conditions or procedures. To obtain copper oxide samples, the novel synthesis process of Exploding Wire Technique (EWT) has been used. In an initial effort, scientists utilized the EWT technique to artificially create nanoparticles with a composition consisting of Cu, Cu<sub>2</sub>O, and CuO. In this case, it adjusted the current architecture to make better use of the infrastructure's components. Not only did it improve the technique, but it also paved the way for the creation of CuO pure phase nanoparticles via annealing at various temperatures.

## **Keywords:**

Nanoparticles, Exploding Wire Technique, Electronic Properties Nanomaterials, ZnO Nanomaterials