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# Characterization of The Structure, Microstructure of ZnO Powder Nanostructures as Transparent Ceramic for Optical Applications

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**Abstract :** ZnO powder nanoparticles have been studied to investigate their structural and microstructural properties using X-ray diffraction (XRD) and optical microscope for examined ZnO pure powder. The ZnO powder exhibited a hexagonal crystal structure with space group  $P6_3mc$  of ZnO, XRD patterns of powder ZnO were obtained from the full pattern XRD using the MATCH program. For the applications of Zinc oxide as transparent ceramic for optical applications, ZnO is a potential candidate material for optics applications, which has attracted considerable attention over past decades due to its wide potential applications.

**Keywords :** ZnO, microstructure, XRD, Optical Microscope.