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Study of the structural and magnetic properties of Fe-doped ZnO

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Abstract: In this work we study the ZnO powder nanoparticles mechanically alloyed doped with iron to investigate the structural, microstructural and magnetic properties using X-ray diffraction (XRD) and Vibrating Sample Magnetometer (VSM). The ZnO starting pure powder exhibited a hexagonal crystal structure with space group P63mc of ZnO, however, with the introduction of 1% Fe in the ZnO milled powder, the hexagonal ZnO phase remained unchanged, whereas the microstructural parameters were subject to significant variations due to the introduction of Fe atoms into the ZnO hexagonal matrix to replace oxygen ones.

Keywords : microstructure, ZnO, Mechanical Alloying, DRX, VSM