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# Preparation and study of Ni<sup>7+</sup> swift heavy ions irradiation on Mn doped ZnO thin films

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In this paper we have investigated the study of different properties and effect of Swift Heavy Ion (SHI) irradiation on Zn<sub>1-x</sub>Mn<sub>x</sub>O thin films with 5% concentration of Mn. The samples were synthesized by dip-coating technique. X-ray diffraction revealed that the increase the particle size with enhanced the Mn concentration up to 5 % and increase the intensity after SHI irradiation on the thin films. Unit cell parameters, a and c, reduced with the enhancing the Mn content as well as SHI irradiation, which indicated that Mn ions substitute into the lattice of ZnO. The presence of functional groups and Zn-O stretching vibration mode in the samples were observed from FTIR spectra. A strong ZnO band was observed from the Raman spectra for pristine ZnO samples as well as irradiated, while the presence of a strong ZnO band for the intensive phonon mode at 436.19 cm<sup>-1</sup> were confirmed at fluences 5×10<sup>12</sup> ions per cm<sup>2</sup> in all pristine as well as irradiated thin films.

Topics

[Phonons](#), [Materials synthesis and processing](#), [Raman spectroscopy](#), [Thin films](#), [X-ray diffraction](#), [Metal oxides](#)

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