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**Optical properties of pure and Ru doped multiferroic material MnTiO<sub>3</sub>** RAJIV MAURYA, BINDU RADHAMNAY, Indian Institute of Technology Mandi — MnTiO<sub>3</sub> is a multiferroic material which establishes in the ilmenite structure with the space group R. This material shows a paramagnetic to antiferromagnetic phase transition TN 64K. This material shows a spin op transition at an applied magnetic field of 6T along the hexagonal c-axis. The linear magnetoelectric effect has been observed in this compound by Mufti et al. The ferrotoroidicity has been observed in the thin film of this material. The samples were prepared by the conventional solid state route. The samples were characterized using the x-ray diffraction, UV-vis spectrophotometer (Shimadzu, UV-2450) and UV/Vis/NIR spectrophotometer. The x-ray diffraction measurements reveal that the samples are single phase. To understand the optical properties of these materials the UV-vis spectra and DRS spectra were recorded on PerkinElmer UV/Vis/NIR spectrophotometer Lambda 750. The observed spectra show that these compounds show a wide band absorption in visible region. With the increase of doping of Ru at Ti site the absorbance is increasing and the value of max is shifting towards the higher wavelengths. In the Ru doped compounds MnTi<sub>0.9</sub>Ru<sub>0.1</sub>O<sub>3</sub> and MnTi<sub>0.8</sub>Ru<sub>0.2</sub>O<sub>3</sub>, the value of band gap has been reduced to the 2.25eV and 2.10eV, respectively. The above behaviour suggests that the materi

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