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Impedance Spectroscopy Analysis of Fe doped Sr_{0.98}Zn_{0.02}TiO₃ Ceramic Powders at Room Temperature HEMALATHA B RUDRAMADEVI, J GURAVAMMA, Department of Physics, Sri Venkateswara University, Tirupati-517 502 — Fe doped Sr_{0.98}Zn_{0.02}TiO₃ (Sr_{0.98} Zn_{0.02} Ti (1-x) Fe x O₃) (x = 0.1) ceramics were prepared by standard solid-state reaction method. The structural and morphological properties of the ceramics were characterized by the XRD and SEM-EDS. The XRD results confirmed that the cubic structure of the host SrZnTiO₃ and Fe doped Sr_{0.98}Zn_{0.02}TiO₃ ceramic powders. The dielectric properties of these samples have also been measured as a function of frequency in the range of 1Hz – 1MHz at room temperature. The dielectric constant (ϵ) and tangent loss ($\tan \delta$) of all the samples are decreases while increasing the AC conductivity (σ_{ac}) as a function of frequency. The cole-cole plots of all the samples studied show the bulk resistance (R_b) is decreasing with an increasing the concentration. The dc conductivity (σ_{dc}) of all the samples increasing while increasing the Fe concentration. Improved conductivity values make them distinctive as potential materials in the fields of spintronics, electro ceramic applications, electromagnetic sensors, transducers and multiple state memory elements. Key words: Sr_{0.98}Zn_{0.02}TiO₃, XRD, dielectric measurements, dc conductivity

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