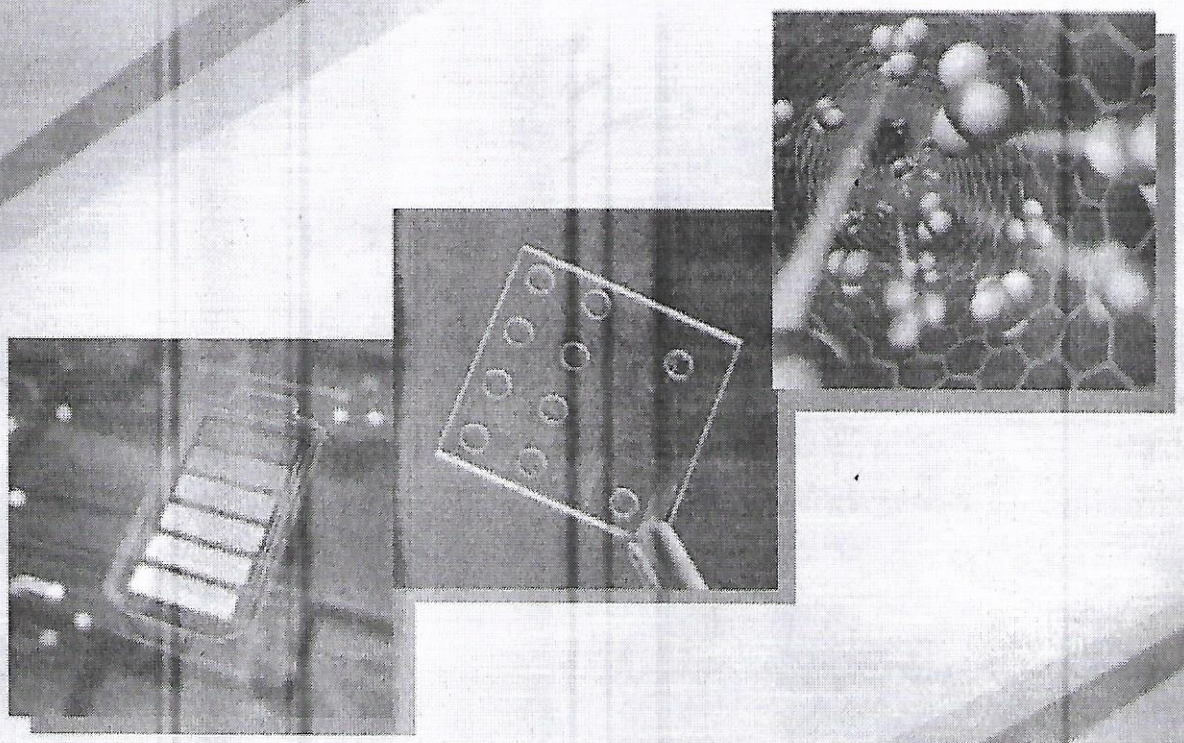
INNOVATION IN SMART AND TECHNOMATERIALS



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PP-77: Structural Properties of Lanthanum Doped Fe_3O_4 Thin Films

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Abstract: Thin films of Fe_3O_4 and lanthanum doped Fe_3O_4 nanomaterials were prepared by well known SILAR method. X-ray diffraction (XRD) and Fourier Transform Infrared Spectroscopy (FTIR) tools were used to characterize the nanomaterials. The presence of (220), (311), (400),(422),(511) and (440) planes in X- ray diffraction patterns of Fe_3O_4 and lanthanum doped Fe_3O_4 confirms the formation of cubic spinal structure without any ambiguity peak. Lattice constant of lanthanum doped Fe_3O_4 nanomaterial becomes lower whereas its crystallite size becomes higher than that of Fe_3O_4 nanomaterials. The presence of required absorption bands corresponding to Fe_3O_4 nanomaterials in the Fourier Transformation Infrared Spectra also confirms the formation of single cubic spinal structure. The absorption bands observed at 669cm^{-1}, 854cm^{-1}, 1020 cm^{-1} and 1463 cm^{-1} may be due to stretching vibration of La-O bond.

Keywords: Fe_3O_4 nanomaterial thin films; SILAR Method ; XRD ; FTIR.