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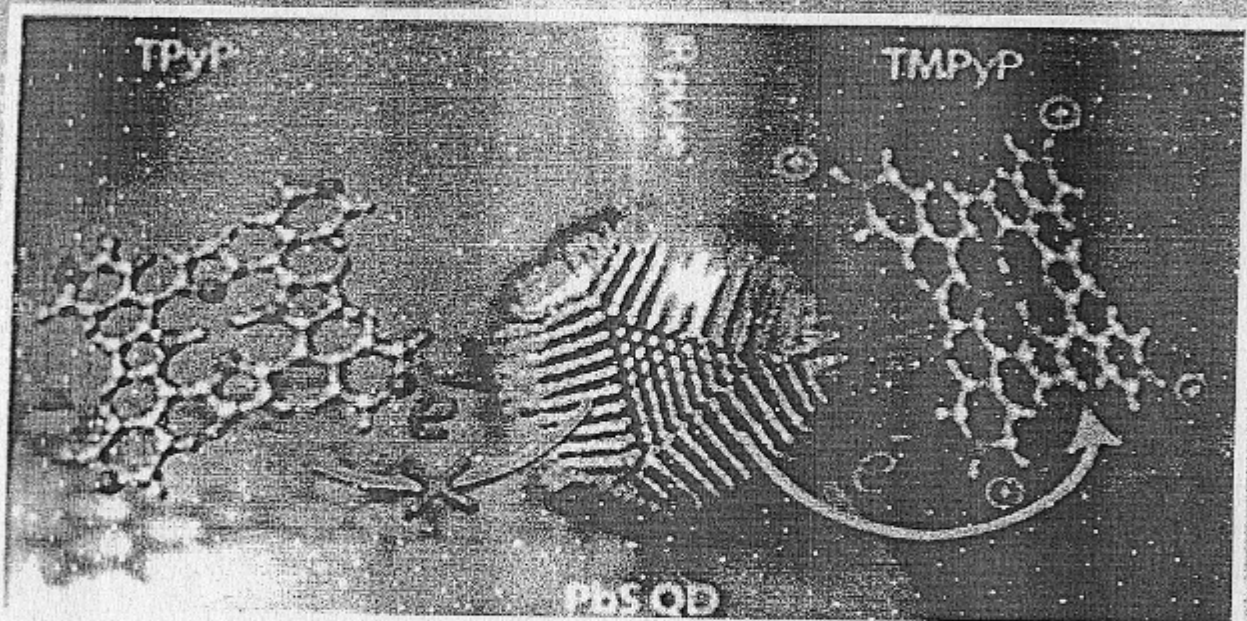


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BOOK OF ABSTRACTS



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PPP12: Thermal Studies of Undoped and Doped Crystals Grown by Silica Gel

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Single crystals of Cu-doped Barium tartrate hydrate were grown by single diffusion gel technique. The doping of Cu was varied by mixing 0.01M, 0.05M, 0.1M, solutions of BaCl₂ with 0.1M BaCl₂ solution in equal volumes in the supernatant solutions. The powder XRD of the samples suggested no significant change in the unit cell dimensions and the presence of any extra phase. Surface morphology and composition of materials were studied in scanning electron microscopy and dispersive analysis of x-ray. SEM shows triangular, pentagonal, rod and plate like shape and broad at the border like structure of the grown crystals and not affected significantly by doping. And thermal analysis (TGA) have been done for crystals for pure Barium tartrate and with x = 0.05 for Copper-doped. Derivative thermogravimetry analysis DTG curve corresponds to the weight loss in the TG curve. DSC the differential scanning calorimetry analysis of the grain crystals was recorded. Two stages of DSC curve are studied Copper Barium tartrate crystals. A detailed comparison has been made between pure and doped crystals. The results are discussed.

Keywords: Crystal growth technique, XRD, SEM, TGA, DTG, DSC.

PPP13: Structural and Microstructural Studies of Strontium Doped Lanthanum Manganite by Solution Combustion Synthesis

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A simple self propagating solution combustion synthesis has been used for the preparation of Strontium doped Lanthanum manganite (La_{0.7}Sr_{0.3}MnO₃) by using lanthanum oxide, strontium carbonate and nitric acid as oxidizers and manganese acetate as fuel. This synthesised sample is palletized and further sintered at 800°C for 8 hours. Structural properties of La_{0.7}Sr_{0.3}MnO₃ are studied by X-ray diffraction (XRD) and Raman Spectra and microstructural properties by Scanning Electron Microscope (SEM) and Atomic Force Microscope (AFM). The broadness of XRD peaks indicates the nanocrystalline nature of the combustion derived products and is an orthorhombic system with pnma space group. Crystallite size estimated from X-ray line broadening of the maximum intensity peak using the Scherrer's formula is about 26 nm. Raman spectrum corresponds to high frequency peaks around 438.77 cm⁻¹ and 641.73 cm⁻¹. SEM image shows agglomerated grains with no definite shape or size. AFM shows roughly grains and a wide particle size distribution is observed with average particle sizes of ~30-100 nm.

Keywords: Lanthanum manganite; solution combustion synthesis; X-ray diffraction; microstructural properties.

