

ANALYSIS OF THE CRYSTALLINE STRUCTURE AND MORPHOLOGICAL FEATURES OF PEROVSKITE MATERIALS PERFORMED THROUGH DIFFERENT WAYS

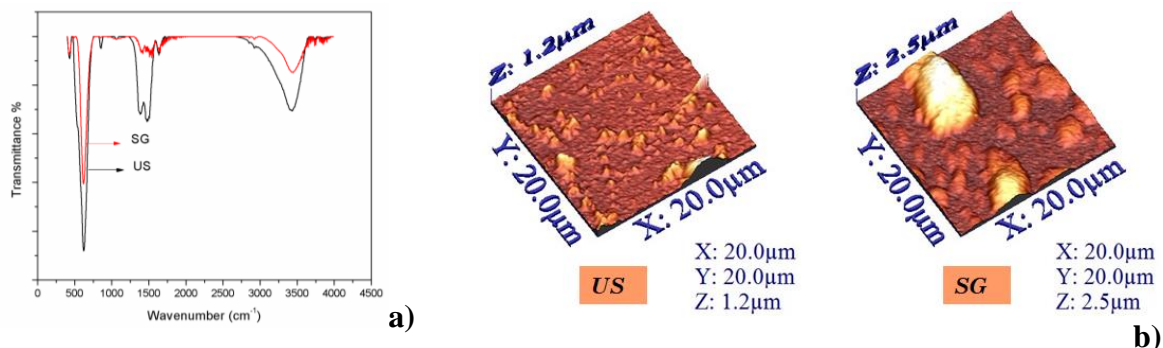
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Abstract

Manganites are mixed oxides of manganese whose broad stoichiometric formula is ABO_3 , where A is a lanthanide element and B is manganese, with possible oxygen non-stoichiometry. Usually the manganite compounds crystallize within perovskite structure, with the following possible space groups: ideal cubic structure $Pm\bar{3}m$, orthorhombic $Pbnm$ or rhombohedral $R\bar{3}CH$ [1, 2]. The phase purity and physico-chemical properties of perovskites depends upon the preparation methods, thus a variety of chemical methods have been developed to prepare lanthanum manganite nanoparticles at low cost and lower processing temperature [3].

In order to analyze the crystalline structure and morphological properties, $LaMnO_3$ materials were prepared by ultrasonic method with immersed sonotrode in the reaction medium (US) and the sol-gel technique (SG), followed by thermal treatment at low temperature. Structural characterization was performed by X-ray diffraction (XRD), Raman and Fourier transform infrared spectroscopy (FTIR), and morphological analysis was achieved using atomic force microscopy (AFM) and transmission electron microscopy (TEM).



FTIR spectra (a) and AFM images (b) of the $LaMnO_3$ materials obtained through different methods

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References

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