Abstract

Double perovskites exhibit interesting properties due to the presence of different $B^{/}$ and $B^{//}$ cations in their crystal lattice. The phase stabilization of rare earth double Perovskite oxides (La_2BSiO_6, B=Fe, Ni, Co) is carried out using conventional solid-state method and sintered at 1300 °C for 8h. We used X-ray Diffraction patterns (XRD), Scanning Electron Microscopy (SEM), EDS, Fourier Transform Infrared Spectroscopy (FTIR), and UV-vis diffuse reflectance spectroscopy to analyses the samples that we had created (DRS). In the case of (La_2BSiO_6, B=Fe, Ni, Co), all of the diffraction patterns belong to Perovskites. SEM images showed the sub-micrometric character of its granular surface with irregular shape. The energy gap value was experimentally corroborated from diffuse reflectance spectra with the Kubelka-Munk fit of the experimental result. Direct and Indirect band gap values have been calculated for La_2FeSiO_6 (2.02eV and 1.8eV), La_2NiSiO_6 (2.35eV and 1.89eV), and for La_2CoSiO_6 (2.73eV and 2.46 eV) respectively. All of these chemicals have optical characteristics that indicate they might be used in optoelectronic devices.