

**Synthesis and Characterization of Lanthanum Oxide (La<sub>2</sub>O<sub>3</sub>) Nanostructures By  
Using Sol-Gel Method**

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**ABSTRACT**

Lanthanum oxide (La<sub>2</sub>O<sub>3</sub>) nanostructures were synthesized by a simple sol-gel technique using Lanthanum nitrate, Urea and NaOH starting precursor. The Precursor solution was maintained at 80°C for 6 hours. The samples were washed, dried and calcinated at a temperature of 500°C for 1 hour. The as-prepared and calcinated samples have been subjected to various characterizations The structural and morphological studies of the prepared Lanthanum oxide (La<sub>2</sub>O<sub>3</sub>) nanoparticles were investigated by means of X-ray diffraction (XRD) and Scanning Electron Microscope (SEM). The X-ray Diffraction (XRD) pattern confirms the formation of Lanthanum oxide (La<sub>2</sub>O<sub>3</sub>) nanostructures and average size crystallite size was calculated using Debye-Scherrer formula. The prepared samples were subjected to FTIR analysis in order to investigate their vibrational behaviour .

**Key words:** Lanthanum oxide, Sol-gel technique, Vibrational analysis, SEM.

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