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Effect of Temperature on Structural and Optical Properties of Sm₂O₃

Metal oxides are very popular because of their irreplaceable properties. In recent times, these metal oxides are used in several areas and particularly a number of research activities have been undertaken to explore rare-earth metal oxides. A series of rare-earth-based compounds are extensively used in several grounds of current science and technology as a result of their unusual optical, magnetic, electrical and catalytic properties ascending from their distinctive 4 *f* electrons. Samarium oxide (Sm₂O₃) amongst other rare-earth metal oxides is one of the promising rare-earth oxide functional materials due to its high electrical resistivity, high dielectric constant, energy gap, better chemical and thermal stability. This work focuses on the synthesis of Sm₂O₃ sample which has synthesized and calcined at 500 and 700 °C. These are followed by structural, morphological and optical properties analysis. The structural analysis through x-ray diffraction (XRD) confirmed that the compounds crystallizes in a cubic structure with lattice parameter, *a*, is 10.94 Å. The optical and surface morphology results are found to corroborate the crystal growth at two different temperatures.

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None

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