

Sol-gel preparation and characterization of lanthanum titanate, $\text{La}_2\text{Ti}_2\text{O}_7$

Ionela CARAZEANU POPOVICI^{a*}, Mihai GIRTU^b, Victor CIUPINA^b,
Gabriel PRODAN^b and Nicoleta TARANU^a

^a*Department of Chemistry, Ovidius University of Constanta, 124 Mamaia Blvd, 900527 Constanta, Romania*

^b*Electron Microscopy Laboratory, Ovidius University of Constanta, Constantza, Romania*

Abstract Lanthanum titanate, belonging to the solid solution $\text{La}_2\text{Ti}_2\text{O}_7$, was prepared by sol-gel method from $\text{La}(\text{NO}_3)_3 \cdot 6\text{H}_2\text{O}$ and $\text{Ti}(\text{OC}_4\text{H}_9)_4$ in ideal cation stoichiometry for $\text{La}_2\text{Ti}_2\text{O}_7$. The synthesized product was characterized by X-ray powder diffractometry (XRD) and thermal analyses (DTA-TG). Electron microscopy investigations (SEM and TEM) were used to evaluate the morphology of synthesized $\text{La}_2\text{Ti}_2\text{O}_7$. The bulk quantities of nano-sized particles of layered $\text{La}_2\text{Ti}_2\text{O}_7$ have been obtained at 1000°C using the modified sol – gel method. The mean diameter of $\text{La}_2\text{Ti}_2\text{O}_7$ nano-crystals was about 104 nm.

Keywords: lanthanum titanate, $\text{La}_2\text{Ti}_2\text{O}_7$, sol-gel method, XRD, SEM, TEM.
