

XII INTERNATIONAL CONFERENCE

Topical PROBLEMS — of — SEMICONDUCTOR PHYSICS



Prykarpattya, Drohobych,
UKRAINE, May 25–28, 2026



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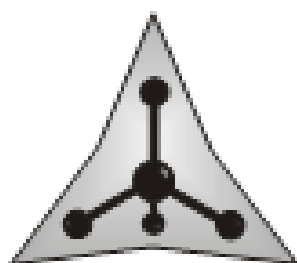
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XII-th International Conference

TOPICAL PROBLEMS OF SEMICONDUCTOR PHYSICS



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Thermal Properties of Sr-Doped LaMnO₃ Cathodes for Fuel Cells

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Sr-doped LaMnO₃ was synthesized using a modified Pechini sol-gel method. The thermal properties of the obtained powders were investigated by differential thermal and thermogravimetric analysis (DTA-TG-DTG). The results indicated that a temperature of approximately 800°C is required for stabilization of the perovskite phase.

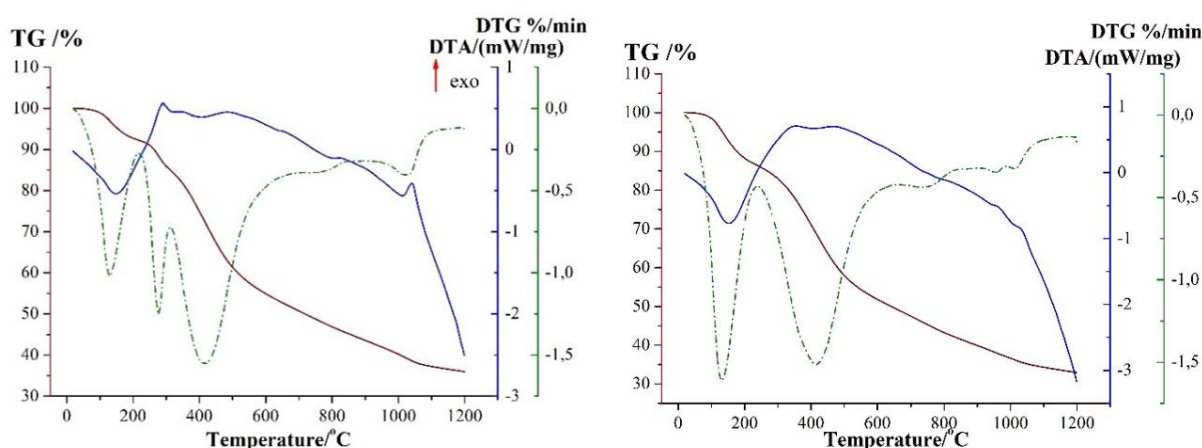


Fig. 1. DTA, TG, and DTG curves of La_{0.85}Sr_{0.15}MnO₃ and La_{0.7}Sr_{0.3}MnO₃ samples

It was shown that an increase in the Sr²⁺ concentration is accompanied by pronounced exothermic effects, particularly in the 400-800°C temperature range, which are associated with phase transitions and oxygen-related reactions. In the sample with $x = 0.15$, these thermal events are less intense, indicating lower reaction activity. In contrast, the La_{0.7}Sr_{0.3}MnO₃ sample exhibits a distinct exothermic peak at approximately 652°C, indicating energetically favorable crystalline structure formation. The mass loss stabilizes at approximately 800°C, which corresponds to the optimal temperature for complete perovskite phase formation, structural stabilization, and preservation of nanoscale features and porosity.

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