

## Effects of the Solvent and Calcination Temperature on LaFeO<sub>3</sub> Catalysts for Methanol Oxidation

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### Abstract

In this work, two types of solvents ethanol or water were used in preparation of the LaFeO<sub>3</sub> catalysts by citrate sol gel method. The obtained samples were subjected to various calcination temperatures in order to study the catalytic activity and stability for methanol electro-oxidation by XRD, cyclic voltammetry and chronoamperometry. The crystallinity of the LaFeO<sub>3</sub> phase in both cases is improved with increasing calcination temperature. The samples prepared using ethanol exhibit higher catalytic properties than those prepared in water for different calcination temperatures. Moreover, the catalyst prepared in ethanol and calcined at 1050 °C, exhibits a high catalytic activity in methanol electro-oxidation and is ~ two times greater than that obtained at 750 °C.

**Keywords:** LaFeO<sub>3</sub>; Solvent effect ; Calcination temperature ; Methanol oxidation.

knowledge:

This study was funded by Scientific Research Project (PRFU) approved by the Algerian Ministry of Higher Education and Scientific Research

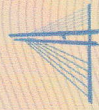
Project number: B 00L01UN280120230004. Under the title: Study of the influence of synthesis conditions on the physicochemical properties of a mixed oxide based on lanthanum, copper and cobalt .

### References

- [1]. Prasad R., Kennedy L.A., Ruckenstein E., *Catalytic Combustion of Propane Using Transitional Metal Oxides*, *Combustion Science and Technology*, 22: 271 - 280 (1980).
- [2]. Spinicci R., Tofanari A., Faticanti M., Pettiti I., Porta P., *Hexane Total Oxidation on LaMO<sub>3</sub> (M = Mn, Co, Fe) Perovskite-Type Oxides*, *Journal of Molecular Catalysis A: Chemical*, 176: 247-252 (2001).
- [3]. Einaga H., Hyodo S., Teraoka Y., *Complete Oxidation of Benzene Over Perovskite-Type Oxide Catalysts*, *Topics in Catalysis*, 53: 629-634 (2010).
- [4]. Levasseur B., Kaliaguine S., *Methanol Oxidation on LaBO<sub>3</sub> (B = Co, Mn, Fe) Perovskite-Type Catalysts Prepared by Reactive Grinding*, *Applied Catalysis, A: General*, 343 (1): 29–38 (2008).



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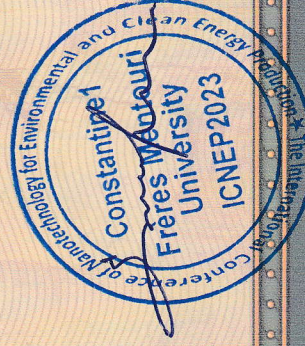
**Mahmoud Ibbid**

FOR ATTENDING THE SECOND INTERNATIONAL CONFERENCE OF NANOTECHNOLOGY FOR ENVIRONMENTAL PROTECTION & CLEAN ENERGY PRODUCTION HELD AT THE FRÈRES MENTOURI UNIVERSITY-CONSTANTINE 1, ALGERIA ON OCTOBER 09-10TH, 2023 WITH ORAL/POSTER REPORT ENTITLED:  
"EFFECTS OF THE SOLVENT AND CALCINATION TEMPERATURE ON LAFeO<sub>3</sub> CATALYSTS FOR METHANOL OXIDATION"

THE INCLUDED CO-AUTHORES RESPECTIVELY ARE: HOUCINE SAADI AND SOUAD TALHI.

DATE

10/10/2023



**SMAIL HAMAMDA**  
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No 024