

# SYNTHESIS AND CHARACTERIZATION OF CALCIUM MOLYBDATE VIA CO-PRECIPITATION AND SOL-GEL TECHNIQUES: A COMPARATIVE STUDY ON THE PROPERTIES OF OBTAINED PRODUCTS

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Metal molybdates of the general formula  $AMoO_4$  ( $A = Mg, Ca, Sr, Ba, Cd, Zn, Pb, \text{etc.}$ ) have been studied extensively for decades, owing to their technological importance in a variety of applications such as phosphors, scintillation materials, microwave devices, catalysts, or optoelectronic devices. Many different preparation techniques have been used for the preparation of  $AMoO_4$  ( $A = Mg, Ca, Sr, \text{ and } Ba$ ) ceramics. The choice of synthesis technique usually depends on variety factors that can shorten, facilitate, and reduce the preparation way [1]. Below, in the Fig. 1, there is possible to see the differences that occur after the annealing at the same temperature but using different heat-treatment ways of the same double oxide [2].

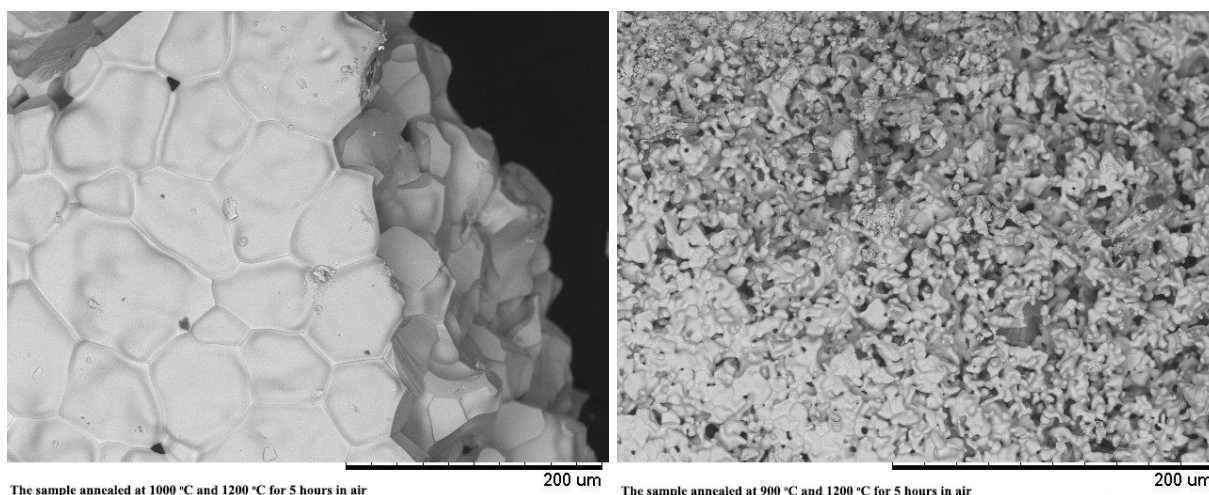


Fig. 1. SEM images of  $La_2Mo_2O_9$  ceramic using different heat-treatment proceeding ways [2].

This is the reason why, in this work both the aqueous sol–gel synthesis method and co-precipitation technique were successfully used for the preparation of  $CaMoO_4$  ceramic material. Moreover, in order to show the peculiarities of the final compounds, the SEM, XRD and TGA–DTA characterization techniques were additionally also applied, which clearly revealed all differences of obtained products that was mainly provided by the uniqueness of the synthesis method.

[1] G. Braziulis, G. Janulevičius, R. Stankeviciute, A. Žalga, Aqueous sol–gel synthesis and thermoanalytical study of the alkaline earth molybdate precursors, *Journal of Thermal Analysis and Calorimetry* **118** 613–621 (2014).

[2] A. Žalga, G. Gaidamavičienė, Ž. Gričius, E. Užpurvytė, J. Gadeikis, A. Diktanaitė, M. Barre, T. Šalkus, A. Kežionis, E. Kazakevičius, Aqueous sol–gel synthesis, thermoanalytical study and electrical properties of  $La_2Mo_2O_9$ , *Journal of Thermal Analysis and Calorimetry* **132** 1499–1511 (2018).