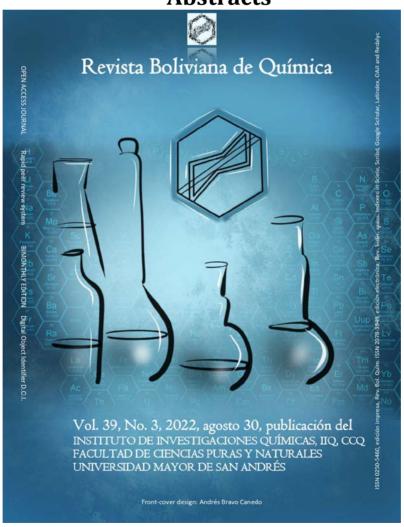


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# **Abstracts**





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SÍNTESIS DE COMPUESTOS LiTi<sub>2</sub> (PO<sub>4</sub>)<sub>3</sub> TIPO NASICON CON SILICIO Y BORO PARA SU EVALUACIÓN COMO ELECTROLITO SÓLIDO Received 04 08 2022 Accepted 08 18 2022 Published 08 30 2022

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#### **ABSTRACT**

Compounds with a NaSICON (Sodium Superionic Conductor) type structure LiTi2(PO4)3 with silicon and boron in their structure have been synthesized by solid-state reactions. The composition stoichiometry is Li4Ti2P3SiB3O with a glass-ceramic type structure. It was possible to maintain and optimize the majority formation of the ion-conducting crystalline phase by regulation of TiO2 and H<sub>3</sub>PO<sub>4</sub> at synthesis temperatures below 1000°C. This was achieved by rigorous temperature control during slow cooling to obtain the phase of interest, considering boron as flux and network former, at temperatures of 600°C, 700°C and 800°C. These phases have been structurally and microstructurally characterized by X-ray powder diffraction (XRD) and scanning electron microscopy (SEM). Structural analysis using the Rietveld method and Fourier maps show that the final compound crystallizes with a NaSICON-type Rombohedral structure. Additionally, the computational calculation of the thermodynamic properties has been carried out to obtain the LiTi<sub>2</sub> (PO<sub>4</sub>)<sub>3</sub> and LiTiOPO<sub>4</sub> phases by DFT for the prediction of the synthesis temperature, obtaining a theoretical value of 695 °C that were compared with the experimental results of 700°C.

Palabras clave: Electrolito sólido, quenching, NaSICON, Refinamiento Rietveld.

# **ABSTRACT**

Compounds with a NaSICON (Sodium Superionic Conductor) type structure LiTi2(PO4)3 with silicon and boron in their structure have been synthesized by solid-state reactions. The composition stoichiometry is Li4Ti2P3SiB3O with a glass-ceramic type structure. It was possible to maintain and optimize the majority formation of the ion-conducting crystalline phase by regulation of TiO2 and H<sub>3</sub>PO<sub>4</sub> at synthesis temperatures below 1000°C. This was achieved by rigorous temperature control during slow cooling to obtain the phase of interest, considering boron as flux and network former, at temperatures of 600°C, 700°C and 800°C. These phases have been structurally and

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SYNTHESIS OF SILICOALUMINATE MESOPOROUS SUPPORT BY THE ATRANO ROUTE, MORPHOLOGICAL AND ACIDITY PROPERTIES OF THE MESOCELLULAR FOAM, MCF, FOR COBALT CATALYSTS DESIGN

Full original article

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Keywords: Mesoporous, Silicoaluminate, Mesocellular foam, Catalyst support

Palabras clave: Mesoporoso, Silicoaluminato, Mesocelular, Espuma, Soporte de catalizador

### **ABSTRACT**

The synthesis of silicoalumina mesoporous supports was carried out by the atran route. The supports obtained showed high homogeneity in the aluminum dispersion, a large surface area and a narrow pore size distribution. The synthesized mesoporous mesocellular foam (MCF) supports contain 5%, 10% and 15% Al2O3 in the SiO2 matrix. 12% cobalt was added to these mesostructured supports by the incipient wetness impregnation method. These materials were characterized by Nitrogen adsorption (BET-BJH), Scanning Electron Microscopy (SEM), X-Ray Diffraction (XRD), Temperature Programmed Reduction of H2 (TPR), and Temperature Programmed Desorption of NH3. (TPD). According to the structural properties of these catalysts, a promising application in Fischer-Tropsch (FTS) syntheses is identified...



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Aug. 2

ANTIOXIDANT CAPACITY ASSESSMENT BY ABTS OF 9'Z-BIXIN, 9'Z-NORBIXIN, 9'Z-METHYLBIXIN AND ALL E-METHYLBIXIN FROM BIXA ORELLANA SEEDS Received 08 23 2022 Accepted 08 29 2022 Published 08 30 2022

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Full original article

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### **ABSTRACT**

The 9'Z-bixin is the major pigment present in the annatto (*Bixa orellana L.*) seeds. Other carotenoids present in the seeds of annatto are 9'Z-norbixin and 9'Z-methylbixin. Annatto seeds extract is used as a food colorant. In this study, we extracted and isolated 9'Z-bixin from annatto seeds. 9'Z-norbixin was obtained and purified by saponification of annatto seeds extract. Then, 9'Z-methylbixin was obtained by Steglich esterification of 9'Z-bixin with EDC/DMAP. Also, all *E*-methylbixin was obtained by esterification of 9'Z-bixin in acid conditions with hydrochloric acid in methanol. The antioxidant capacity of 9'Z-bixin and bixin derivatives was measured in ABTS assay to determine their structure–activity relationship. We observed that the esterification of 9'Z-bixin decreases its antioxidant capacity and that the presence of the free carboxyl group is important in the antioxidant capacity of bixin derivatives.