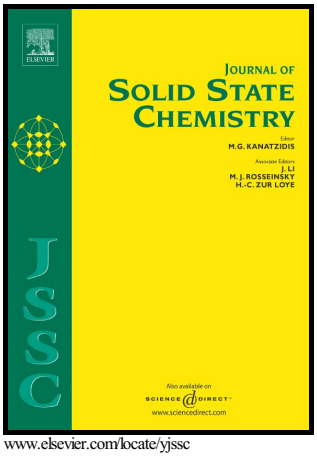

www.elsevier.com/locate/yjssc

The Li^+ conducting composite based on $LiTi_2(PO_4)_3$ and Li_3BO_3 glass

K. Kwatek, M. Świniarski, J.L. Nowiński

PII: S0022-4596(18)30269-X
DOI: https://doi.org/10.1016/j.jssc.2018.06.028
Reference: YJSSC20275

To appear in: *Journal of Solid State Chemistry*

Received date: 22 July 2017
Revised date: 20 June 2018
Accepted date: 25 June 2018

Cite this article as: K. Kwatek, M. Świniarski and J.L. Nowiński, The Li^+ conducting composite based on $LiTi_2(PO_4)_3$ and Li_3BO_3 glass, *Journal of Solid State Chemistry,* https://doi.org/10.1016/j.jssc.2018.06.028

The Li^+ conducting composite based on $LiTi_2(PO_4)_3$ and Li_3BO_3 glass

K. Kwatek*, M. Świniarski, J.L. Nowiński

Warsaw University of Technology, Faculty of Physics, 00–662 Warsaw, Poland

*Corresponding author. E–mail address: kwatek@if.pw.edu.pl

Abstract

The $LiTi_2(PO_4)_3$ based composites containing amorphous Li_3BO_3 were formed and investigated by means of X–ray diffractometry, thermogravimetry, scanning electron microscopy, impedance spectroscopy and density methods. The study shows that when a polycrystalline $LiTi_2(PO_4)_3$ material is sintered with Li_3BO_3 glass, the resultant ceramics exhibit very high total ion conductivity. The maximum conductivity of 1.43×10^{-4} $S \cdot cm^{-1}$ at 30 °C was achieved for the LTP–0.3LBO material sintered at 900 °C compared to 5.15×10^{-8} $S \cdot cm^{-1}$ of the ceramic $LiTi_2(PO_4)_3$.

Graphical abstract: