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The Li⁺ conducting composite based on LiTi₂(PO₄)₃ and Li₃BO₃ glass

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Abstract

The LiTi₂(PO₄)₃ based composites containing amorphous Li₃BO₃ 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 LiTi₂(PO₄)₃ material is sintered with Li₃BO₃ glass, the resultant ceramics exhibit very high total ion conductivity. The maximum conductivity of $1.43 \times 10^{-4} \text{ S}\cdot\text{cm}^{-1}$ at 30 °C was achieved for the LTP–0.3LBO material sintered at 900 °C compared to $5.15 \times 10^{-8} \text{ S}\cdot\text{cm}^{-1}$ of the ceramic LiTi₂(PO₄)₃.

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