

Characterisation of K-doped Bi₄V₂O₁₁ by combined XRD and EPMA: a cautionary tale

ABSTRACT

A comparison of X-ray powder diffraction and electron probe microanalyses on samples of Na- and K-doped Bi₄V₂O₁₁ (BIMEVOX) solid electrolytes indicates some of the problems associated with using XRD to assess phase purity, especially in materials of variable composition such as BIMEVOXes. In this study both the Na- and K-doped materials appeared phase pure by XRD. EPMA indicated the Na-doped materials to be single phase with their expected compositions while the K-containing materials were not phase pure with very little K present in the main BIMEVOX phase.

Keyword: BIMEVOX; Cautionary tales; Electron probe microanalyses; K-doped; Na doped