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Quantitative structural analysis of $Li_{0.5}Bi_{0.5}TiO_3$ ceramics prepared by high energy ball milling and sintered at 600 ℃

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Abstract: $Li_{0.5}Bi_{0.5}TiO_3$ ceramic powder was synthesized by high energy ball milling. The X-ray diffraction pattern of the sample was analyzed in a quantitative manner using rietveld analysis. X-rays being the finger print of a material and the diffracted intensity can be used to dig out a lot of information related to the material, size-strain rietveld analysis method is adopted to get quantitative information of the material. The phase of the material along with crystallite size, lattice strain of various planes and displacement of the particular plane is analysed. As the material is a good lead free energy harvester, it is tried to present a in-depth study of the material in term of its atomic positions, bond lengths, bond angles etc. Keywords: X-ray diffraction; Rietveld refinement; Structure

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[Full Paper]