

# Synthesis and characterization of bismuth alkaline titanate powders ( Conference Paper )

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## Abstract

In this work, samples of bismuth alkaline titanate,  $(K_{0.5}Na_{0.5})_{(2-x/2)}Bi_{(x/6)}TiO_3$ , ( $x = 0.05-0.75$ ) have been prepared by conventional ceramic technique and molten salts. Metal oxides or carbonates powders were used as starting raw materials. The crystalline phase of the synthesized powders was identified by the X-ray diffraction (XRD) and particle morphology was characterized by scanning electron microscopy (SEM). Solid state reaction method was unsuccessful to obtain pellets. From XRD results, a rhombohedral structure was detected and the parameter lattice were estimated to be  $a = 5.5478$  and  $\alpha = 59.48^\circ$ . These parameters were used to refine the structure by Rietveld analysis. SEM results showed several morphologies. Apparently, bismuth is promoting the grain growth whose sizes vary from 30 nm to 180 nm It is expected that these materials can be utilized in practical applications as substitutes for lead zirconatetitanate (PZT)-based ceramics. © 2011 Elsevier B.V. All rights reserved.

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