

**SINTESIS DAN KARAKTERISASI BAHAN PIEZOELEKTRIK RAMAH
LINGKUNGAN $\text{Bi}_{0,5}\text{Na}_{0,5}\text{TiO}_3\text{-BaTiO}_3\text{-K}_{0,5}\text{Na}_{0,5}\text{NbO}_3$ (BNT-BT-KNN)
DENGAN METODE *SOLID-STATE REACTION***

ABSTRAK

Sintesis dan karakterisasi bahan piezoelektrik ramah lingkungan $\text{Bi}_{0,5}\text{Na}_{0,5}\text{TiO}_3\text{-BaTiO}_3\text{-K}_{0,5}\text{Na}_{0,5}\text{NbO}_3$ (BNT-BT-KNN) dengan metode *solid-state reaction*. Sintesis BNT-BT dengan penambahan % mol KNN yaitu 3%, 6%, 8%, 10% dengan besar tekanan optimal 3500 psi dan suhu sintering 1000 °C. BNT-BT-KNN juga mendapatkan struktur *perovskite* dengan komposisi yang optimal pada penambahan 10% mol KNN. Daerah perubahan fasa ini dikenal dengan MPB yang terjadi pada komposisi penambahan KNN 6%. Mikrograph SEM, menunjukkan penambahan 3% KNN pada BNT-BT memiliki bentuk partikel seperti balok dengan panjang 2 μm - 3 μm .

Kata Kunci : BNT, BNT-BT-KNN, MPB, Piezoelektrik, PZT.

Synthesis and Characterization Lead-free Piezoelectric Ceramics $\text{Bi}_{0.5}\text{Na}_{0.5}\text{TiO}_3\text{-BaTiO}_3\text{-K}_{0.5}\text{Na}_{0.5}\text{NbO}_3$ (BNT-BT-KNN) by Solid State Reaction Method

ABSTRACT

Synthesis and characterization lead-free piezoelectric ceramics $\text{Bi}_{0.5}\text{Na}_{0.5}\text{TiO}_3\text{-BaTiO}_3\text{-K}_{0.5}\text{Na}_{0.5}\text{NbO}_3$ (BNT-BT-KNN) by solid state reaction method. Synthesis of BNT-BT with the addition of mole% KNN namely 3%, 6%, 8%, 10% with a large gain optimum pressure of 3500 psi, and temperature of sintering 1000 °C. BNT-BT-KNN also get a perovskite structure with an optimal composition of the addition of 10 mole% KNN. Area is known as phase change that occurs in the composition of MPB addition of 6 mole% KNN. Mikrograph SEM, showed the addition of 3 mole% KNN on BNT-BT has the form of log - like particles with an average length of 2 to 3 μm .

Keywords : BNT, BNT-BT-KNN, MPB, Piezoelectric, PZT.