

## **The Effect of Stoichiometry to the Phase Formation of Barium Titanate**

### **Abstract**

This paper focus on the effect of different ratio between barium (Ba) and titanium (Ti) to the production of high purity of barium titanate (BT). On this research, the sample was prepared by solid-state reaction between barium carbonate ( $\text{BaCO}_3$ ) and titanium dioxide ( $\text{TiO}_2$ ) powder at constant sintering temperature of 1350 °C. The sample was prepared at different ratio of Ba:Ti which are 1:0.9, 1:0.95, 1:1, 1:1.05, 1:1.1. All sintered BT was characterized by X-ray diffraction (XRD). All existed phase on these samples was determined and analyzed. Sample from ratio 1:1 produced almost a single phase of BT. While; samples from other ratio produce secondary phase which is barium orthotitanate ( $\text{Ba}_2\text{TiO}_4$ ).

**Keywords:** Barium Carbonate, Barium Titanate, Phase Formation, Solid-State Reaction, Stoichiometry, Titanium Dioxide ( $\text{TiO}_2$ )<sub>2</sub>