

Fabrication and Characteristic of BaTiO₃ Based Ceramic by Molten Salt Synthesis

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In this work, barium titanate; BaTiO₃ (BT) powder was successfully synthesized by the molten-salt method. The molten-salt method is a simple technique for preparation of fine powder also can control the shapes and sizes in the order of nanometers. The metal oxides of BaCO₃ and TiO₂ were mixed and ball-milled. After that, BT powder were mixed with KCl : NaCl salt and then washed with hot DI water. Heating temperatures were studied in the range of 800 to 1000 °C with using dwelling time of 2 hours. In order to investigate the microstructure and phase structure, they were studied by SEM and XRD techniques. The results found that all samples showed a single pure perovskite phase using a low temperature of ~900 °C, which was confirmed by JCPDS No. 01-083-1879. The grain shapes of BT powder had a mixing of polygon and equiaxed grains. The particle size of BT powder increased from ~381 to ~860 nm with increasing heating temperatures from 800 to 1000 °C. Results confirmed that BT nanoparticles were obtained by using the molten salt method.

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