

Synthesis of BaTiO₃ nanoparticles using different type of TiO₂ ; size controllable synthesis

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Barium titanate, one of the most important materials in electronics industry, has been widely studied for its outstanding dielectric property and applied to various electronics devices. As electronics devices are miniaturized, requirement of reduced tiny barium titanate particles with narrow size distribution is increased.

In this study, barium titanate nanoparticles were prepared by hydrothermal method using supercritical water. Barium hydroxide and two types of titanium dioxide were used to synthesize barium titanate with different size. 100 nm sized barium titanate nanoparticles were synthesized for the use of 100 nm sized titanium dioxide, and 30 nm sized barium titanate were prepared for the use of 25 nm sized titanium dioxide. Size of titanium dioxide also affects its reactivity; to synthesize pure barium titanate from 100 nm sized titanium dioxide, KOH was added.