

## Production of barium zirconate ( $\text{BaZrO}_3$ ) nanoparticles by sol-gel method

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**Abstract:** In this work, barium zirconate nanoparticles were prepared by sol gel technique in four different conditions. In these conditions zirconium n-propoxide ( $\text{Zr}(\text{OPr}^n)_4$ ) was used as the source of zirconium. Also barium hydroxide ( $\text{Ba}(\text{OH})_2 \cdot 8\text{H}_2\text{O}$ ) and barium acetate ( $\text{Ba}(\text{CH}_3\text{COO})_2$ ) were used as the source of barium. Water and isopropyl alcohol were used as the solvents. The samples were characterized by SEM and XRD. The optimum preparation condition was chosen considering the production time, the sintering temperature, homogeneity and the particle size of obtained nanoparticles. In optimum condition, the  $\text{BaZrO}_3$  nanoparticles were produced at  $100^\circ\text{C}$  with about 80 nm in size.

**Keywords:** *Nanoparticles;  $\text{BaZrO}_3$ ; SEM; XRD*

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