Characterization and comparison of PZT powder synthesis by solid state and sol gel methods

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Abstract

This paper describes the synthesis of Pb(Zr₀.₉₅Ti₀.₀₅)O₃ powder by sol gel and solid state methods. PZT powders were fabricated by solid-state reaction process using metal oxides and in sol gel method salts and organic compounds were employed. The powders were calcined at 700 and 950 °C in sol gel and solid state methods, respectively. The synthesized powders were analyzed by FTIR and XRD. The average crystal grain size of PZT powders determined by X-ray diffraction method using the Scherrer equation, and in sol gel and solid state methods measured 42 and 330 nm, respectively. The optical constants of powders were evaluated and compared using FTIR transmittance spectroscopy and Kramers-Kronig analysis.

Keywords: PZT, sol gel, solid state, perovskite

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