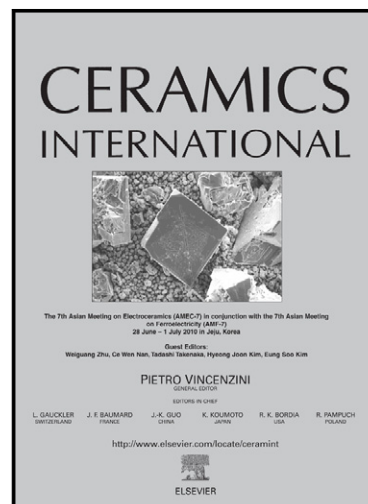


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Effects of the Two-step Sintering Process on the Optical Transmittance and Mechanical Strength of Polycrystalline Alumina Ceramics

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Abstract

The effects of a two-step sintering (TSS) process on the optical transmittance and mechanical strength of polycrystalline alumina ceramics were analyzed. High-purity alumina with a ppm impurity level was fabricated using a ceramic injection molding process by applying a TSS process in a high temperature vacuum atmosphere. A temperature of 1780°C was effective for the first step sintering, which represents the highest densification rate, and a second isothermal sintering condition of 1300 - 1600°C was applied for a different length of time to prevent surface diffusions and the secondary phases. An increasing sintering temperature and hold time in the TSS process proportionally

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