

GRAIN SIZE AND CRYSTALLOGRAPHIC TEXTURE EFFECT ON THE PIEZOELECTRIC COEFFICIENT d_{33} OF BaTiO₃ CERAMICS

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The following investigation has the purpose to describe the effect of grain size and the crystallographic texture on the piezoelectric coefficient d_{33} for BaTiO₃. Dense BaTiO₃ ceramics with different grain sizes were fabricated by stress assisted sintering in sinter-forging unit using micro size powders. Different temperatures and forces were applied to create different grain sizes and texture on the BaTiO₃ pellet samples. The results show density above 96.5% for all the samples. The average grain sizes range in different sizes. The DRX analysis shows some preferred orientation on the samples with higher applied force during sintering. The direct piezoelectric coefficient d_{33} shows different values at different conditions. Also, the inverse piezoelectric coefficient d_{33} presented a similar tendency.

Keywords: sinter-forging, BaTiO₃, piezoelectric coefficient

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