

X ray investigation of high [001] oriented Piezoelectric PMN-PT Ceramics

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Abstract

Orientation dependent of single crystals properties lead to the prediction that ceramics exhibiting high degrees of appropriate crystallographic texture should have an electromechanical properties approaching those of [001] oriented single crystals. Although very high texture was archived, piezoelectric properties of textured ceramics are far from those obtained for single crystal. Porosity, micro-cracks and [001] misorientation are the factors that could affect and restrict the piezoelectric response of the textured samples. Textured PMN-PT ceramics, with the texture fraction of 95%, were obtained by template grain growth using PMN-PT cubic seeds and template grain growth. Fraction of texture in the cubic were estimated from RXD using Lotgering method. Pole figure and rocking curve of PMN-PT textured ceramics reveals a misorientation of few degrees.