

압전 액추에이터와 트랜스듀서용 고효율 압전 PMN-PZT 단결정 개발 :
브리츠만법 PMN-PT 단결정과 고상단결정 성장법 PMN-PZT 단결정 비교

이호용, 이성민*, 김동호*

선문대학교 신소재공학과, (주) 세라콤*

High T_c/E_c PMN-PZT Single Crystals for Piezoelectric Actuator and Transducer Applications :
Bridgman PMN-PT Crystals vs. SSCG PMN-PZT Crystals

Ho-Yong Lee, Sung-Min Lee* and Dong-Ho Kim*

Sunmoon University, Ceracomp Co., Ltd.*

Abstract : Piezoelectric single crystals in the ternary MPB PMN-PZ-PT system with high T_c s ($T_c > 200\sim 300^\circ\text{C}$) and E_c s ($E_c > 5\sim 10$ kV/cm) were fabricated by the cost-effective solid-state crystal growth (SSCG) technique. Chemically uniform PMN-PZT single crystals were successfully grown up to 60 mm by the SSCG method and their dielectric and piezoelectric properties characterized. Compared to Bridgman PMN-PT single crystals, the high T_c/E_c PMN-PZT single crystals were found to exhibit a much wider usage range with respect to electric field as well as temperature, and thus become best candidates for medical transducers, actuators, and naval applications.