
Contents

Preface	ix
Introduction	xi
ADVANCED DIELECTRIC, PIEZOELECTRIC AND FERROELECTRIC MATERIALS	
Lead Strontium Zirconate Titanate (PSZT) Thin Films for Tunable Dielectric Applications Mark D. Losego and Jon-Paul Maria	3
Nanosize Engineered Ferroelectric/Dielectric Single and Multilayer Films for Microwave Applications R. Wördenweber, E. Hollmann, Mahmood Ali, J. Schubert, and G. Pickartz	9
Construction and Characterization of (Y,Yb)MnO ₃ /HfO ₂ Stacking Layers for Application to FeRAM Kazuyuki Suzuki, Kaori Nishizawa, Takeshi Miki, and Kazumi Kato	17
Temperature Dependence on the Structure and Property of Li _{0.06} (Na _{0.5} K _{0.5}) _{0.94} NbO ₃ Piezoceramics Ken-ichi Kakimoto, Kazuhiko Higashide, Tatsuro Hotta, and Hitoshi Ohsato	25
Polar Axis Orientation and Electrical Properties of Alkoxy-Derived One Micro-Meter-Thick Ferro-/Piezoelectric Films Kazumi Kato, Shingo Kayukawa, Kazuyuki Suzuki, Yoshitake Masuda, Tatsuo Kimura, Kaori Nishizawa, and Takeshi Miki	33
Processing of Porous Li _{0.06} (Na _{0.5} K _{0.5}) _{0.94} NbO ₃ Ceramics and Their Piezoelectric Composites with Hetero-Crystals Tomoya Imura, Ken-ichi Kakimoto, Katsuya Yamagiwa, Takeshi Mitsuoka, and Kazushige Ohbayashi	43
Electric-Field-Induced Dielectric, Domain and Optical Phenomena in High-Strain Pb(In _{1/2} Nb _{1/2}) _{1-x} Ti _x O ₃ (x=0.30) Single Crystal C.-S. Tu, C.-M. Hung, R.R. Chien, V.H. Schmidt, and F.-T. Wang	49

Effects of Electric Field on the Biaxial Strength of Poled PZT Hong Wang and Andrew A. Wereszczak	57
Piezoelectric Ceramic Fiber Composites for Energy Harvesting and Active Structural Control R.B. Cass and Farhad Mohammadi	69
Dielectric Property of Resin-Based Composites Dispersing Ceramic Filler Particles Jun Furuhashi, Ken-ichi Kakimoto, Toshiaki Yagi, Hidetoshi Ogawa, and Minoru Aki	79
The Effect of Sintering Conditions and Dopants on the Dielectric Loss of the Giant Dielectric Constant Perovskite $\text{CaCu}_3\text{Ti}_4\text{O}_{12}$ Barry A. Bender and Ming-Jen Pan	87

ELECTROCERAMIC MATERIALS FOR SENSORS

Multifunctional Potentiometric Gas Sensor Array with an Integrated Heater and Temperature Sensors Bryan M. Blackburn, Briggs White, and Eric D. Wachsman	101
Prussian Blue Nanoparticles Encapsulated Within Ormosil Film P.C. Pandey and B. Singh	109
Gas-Sensing Property of Highly Selective NO_x Decomposition Electrochemical Reactor Koichi Hamamoto, Yoshinobu Fujishiro, and Masanobu Awano	125
The Structure, Electrical and CO -Sensing Properties of Perovskite-Type $\text{La}_{0.8}\text{Pb}_{0.2}\text{Fe}_{0.8}\text{Cu}_{0.2}\text{O}_3$ Ceramic Peng Song, Mingliang Shao, and Xijian Zhang	133
NiCr_2O_4 and NiO Planar Impedance- NO_x Sensors for High Temperature Applications M. Stranzenbach and B. Saruhan	141

THERMOELECTRIC MATERIALS FOR POWER CONVERSION APPLICATIONS

The Development of Thermoelectric Oxides with Perovskite-Type Structures for Alternative Energy Technologies A. Weidenkaff, M. Aguirre, L. Bocher, M. Trottmann, and R. Robert	151
Power Generation of p-Type $\text{Ca}_3\text{Co}_4\text{O}_9$ /n-Type CaMnO_3 Module S. Urata, R. Funahashi, T. Mihara, A. Kosuga, S. Sodeoka, and T. Tanaka	161

Thermoelectric Properties of Pb and Sr Doped $\text{Ca}_3\text{Co}_4\text{O}_9$ Hiroshi Nakatsugawa, Hyeon Mook Jeong, Natsuko Gomi, Hiroshi Fukutomi, and Rak Hee Kim	171
Thermoelectric Properties of Mix-Crystal Compound $\text{Mg}_2\text{Si-Mg}_3\text{Sb}_2$ Dongli Wang and G.S. Nolas	185
Thermoelectric Performance of Doped $\text{SrO}(\text{SrTiO}_3)_n$, ($n = 1, 2$) Ruddlesden-Popper Phases Kyu Hyoung Lee, Yi Feng Wang, Hiromichi Ohta, and Kunihito Koumoto	193
Growth of $\text{Bi}_2\text{Ca}_2\text{Co}_{1.69}\text{O}_x$ Cobaltite Rods by Laser Floating Zone Method E. Guilmeau, A. Sotelo, M.A. Madre, D. Chateigner, and D. Grebille	203
Growth and Characterization of Germanium-Based Type I Clathrate Thin Films Deposited by Pulsed Laser Ablation Robert Hyde, Matt Beekman, George S. Nolas, Pritish Mukherjee, and Sarath Witanachchi	211
Synthesis and Characterization of Chalcogenide Nanocomposites J. Martin and G.S. Nolas	221
Anomalous Thermal Conductivity Observed in the $\text{Na}_{1-x}\text{Mg}_x\text{V}_2\text{O}_6$ Single Crystals Z. Su, J. He, and T. M. Tritt	227
Physical Properties of Hot-Pressed $\text{K}_8\text{Ge}_4\text{□}_2$ M. Beekman and G.S. Nolas	233
TRANSPARENT ELECTRONIC CERAMICS	
Advanced Indium Tin Oxide Ceramic Sputtering Targets and Transparent Conductive Thin Films Eugene Medvedovski, Neil A. Alvarez, Christopher J. Szepesi, Olga Yankov, and Maryam K. Olsson	243
Author Index	257

