

774
A47/ej

Journal

of the American Ceramic Society

Volume 96 Number 12

December 2013



Feature

- (K, Na)NbO₃-Based Lead-Free Piezoceramics: Fundamental Aspects, Processing Technologies, and Remaining Challenges
Jing-Feng Li, Ke Wang, Fang-Yuan Zhu, Li-Qian Cheng, and Fang-Zhou Yao 3677

Rapid Communications

- Can Die Configuration Influence Field-Assisted Sintering of Oxides in the SPS Process?
Rishi Raj and Ayazur Rehman 3697
- Dielectric Properties of Ba_{0.8}Ca_{0.2}TiO₃-Bi(Mg_{0.5}Ti_{0.5})O₃-NaNbO₃ Ceramics
Aurang Zeb and Steven J. Milne 3701
- Visible Light Transparency for Polycrystalline Ceramics of MgO·2Al₂O₃ and MgO·2.5Al₂O₃ Spinel Solid Solutions
Anthony C. Sutorik, Christopher Cooper, and Gary Gilde 3704

Articles

Processing Science

- Mechanochemical Treatment of Amorphous Silica Powder for Glasses Without Firing
Tran Thi Thu Hien, Takashi Shirai, and Masayoshi Fuji 3708
- Microstructural Evolution and Growth Behavior of *In Situ* TiB Whisker Array in ZrB₂-SiC/Ti6Al4V Brazing Joints
Weiqi Yang, Tiesong Lin, Peng He, Ming Zhu, Changbao Song, Dechang Jia, and Jicai Feng 3712
- Effect of Phase Structure on Sintering Behavior of Zirconia Nanopowders
Martin Trunec, Klara Castkova, and Pavla Roupцова 3720
- Effects of the Susceptor Dielectric Properties on the Microwave Sintering of Alumina
Romain Heuguet, Sylvain Marinell, Anthony Thuault, and Alexandre Badev 3728
- Role of Nano- and Micron-Sized Particles of TiO₂ Additive on Microwave Dielectric Properties of Li₂ZnTi₃O₈ - 4 wt% TiO₂ Ceramics
M. Bari, E. Taheri-Nassaj, and H. Taghipour-Armaki 3737

Electrical, Dielectric, Optical, and Magnetic Properties

- Sintering Mechanism and Microwave Dielectric Properties of Bi₁₂Ti₂₀ Ceramics
Byoung-Jik Jeong, Mi-Ri Joung, Jin-Seong Kim, Sahn Nahm, Ji-Won Choi, and Seong-Ju Hwang 3742
- 2D- and 3D-Photoluminescence Imaging of Eu(III) Embedded in CeO₂ Nanomatrix
Youngku Sohn 3747
- Multifunctional Properties of Multistage Spark Plasma Sintered HA-BaTiO₃-Based Piezobiocomposites for Bone Replacement Applications
Ashutosh Kumar Dubey, Anumol EA, Kantesh Balani, and Bikramjit Basu 3753
- Impedance Spectroscopy and Dielectric Properties of Flash Versus Conventionally Sintered Yttria-Doped Zirconia Electroceramics Viewed at the Microstructural Level
J.-C. M'Peko, J. S. C. Francis, and Rishi Raj 3760
- Green Up-Conversion Photoluminescence and Dielectric Relaxation of Ho³⁺/Yb³⁺-Codoped Bi₂Ti₂O₇ Pyrochlore Thin Films
Jianxiong Zhao, Ni Qin, and Dinghua Bao 3768
- Defects and Transport Properties in TiNb₂O₇
Wen Xing, Liv-Elisif Kalland, Zuoan Li, and Reidar Haugsrud 3775
- Fabrication of Transparent Pb(Mg_{1/3}Nb_{2/3})O₃-PbTiO₃ Based Ceramics by Conventional Sintering
Ichiro Fujii, Ryoichi Yoshida, Takahito Imai, Seiji Yamazoe, and Takahiro Wada 3782
- Temperature Gradient Introduced Ferroelectric Self-Poling in BiFeO₃ Ceramics
Xiaomin Chen, Yuhong Zou, Guoliang Yuan, Min Zeng, J. M. Liu, Jiang Yin, and Zhiguo Liu 3788
- Preparation and Electric Properties of Bi_{0.5}Na_{0.5}TiO₃-Bi(Al_{0.5}Ga_{0.5})O₃ Lead-Free Piezoceramics
Qi Wang, Jun Chen, Longlong Fan, Huidong Song, Wei Gao, Yangchun Rong, Laijun Liu, Liang Fang, and Xianran Xing 3793

Enhancement of Interparticle Exchange Coupling in CoFe₂O₄/CoFe₂ Composite Nanoceramics Via Spark Plasma Sintering Technology Yue Zhang, Rui Xiong, Zhi Yang, Wei Yu, Benpeng Zhu, Shi Chen, and Xiaofei Yang	3798
The Effect of Electric Poling on the Performance of Lead-Free (1-x)Ba(Zr_{0.2}Ti_{0.8})O₃-x(Ba_{0.7}Ca_{0.3})TiO₃ Piezoceramics Matthias C. Ehmke, Julia Glaum, Mark Hoffman, John E. Blendell, and Keith J. Bowman	3805
Proton Conductivity in Solid Solution 0.7(CaWO₄)-0.3(La_{0.99}Ca_{0.01}NbO₄) and Ca_(1-x)La_xW_(1-y)Ta_yO₄ Camilla K. Vigen and Reidar Haugsrud	3812
Luminescence Properties of Dual-Emission (UV/Visible) Long Afterglow Phosphor SrZrO₃: Pr³⁺ Yahong Jin, Yihua Hu, Li Chen, Xiaojuan Wang, Guifang Ju, and Zhongfei Mou	3821
Properties of an Infrared-Transparent MgO:Y₂O₃ Nanocomposite Daniel C. Harris, Lee R. Cambrea, Linda F. Johnson, Robert T. Seaver, Meghan Baronowski, Richard Gentilman, C. Scott Nordahl, Todd Gattuso, Stephanie Silberstein, Patrick Rogan, Thomas Hartnett, Brian Zelinski, Wayne Sunne, Eric Fest, W. Howard Poisl, Charles B. Willingham, Giorgio Turri, Cori Warren, Michael Bass, David E. Zelmon, and Steven M. Goodrich	3828
Enhanced 2.0 μm Emission and Lowered Upconversion Emission in Fluorogermanate Glass-Ceramic Containing LaF₃:Ho³⁺/Yb³⁺ by Codoping Ce³⁺ Ions Jia-Peng Zhang, Wei-Juan Zhang, Jian Yuan, Qi Qian, and Qin-Yuan Zhang	3836
Effect of Ca²⁺ Substitution on the Structure, Microstructure, and Microwave Dielectric Properties of Sr₂Al₂SiO₇ Ceramic Kurusaroor Mana Manu, Chinnathambi Karthik, Rick Ubic, and Mailadil Thomas Sebastian	3842
Low-Fire Processing of Microwave BNBT-Based High-k Dielectric with Li₂O-ZnO-B₂O₃ Glass Yi-Ting Shih and Jau-Ho Jean	3849
Difference in the Nature of Eu³⁺ Environment in Eu³⁺-Doped BaTiO₃ and BaSnO₃ Dinesh K. Patel, Bathula Vishwanadh, Vasanthakumaran Sudarsan, and Shailendra K. Kulshreshtha	3857
Low-Temperature Sinterable (1-x)Ba₃(VO₄)₂-xLiMg_{0.9}Zn_{0.1}PO₄ Microwave Dielectric Ceramics Yang Lv, Ruzhong Zuo, Ying Cheng, and Chen Zhang	3862
Compositional Dependence of CdSe Quantum Dot Formation on Silicate Host Glass Composition Yi Kwon Lee, Yong Gyu Choi, Jong Heo, and Woon Jin Chung	3868
Invar Like Behavior of the Cr₂AlC MAX Phase at Low Temperature Michel Jaouen, Patrick Chartier, Thierry Cabioch, Vincent Mauchamp, Gilles André, and Michel Viret	3872
Ion-Beam Etching on Nanostructured La₂Ti₂O₇ Piezoelectric Thin Films Anthony Ferri, Sébastien Saitzek, Zhenmian Shao, Gaëtan Declercq, Jean Costecalde, Denis Rémiens, Dominique Deresmes, David Troadec, and Rachel Desfeux	3877
The Lowered Dielectric Loss and Grain-Boundary Effects in La-doped Y_{2/3}Cu₃Ti₄O₁₂ Ceramics Pengfei Liang, Xiaolian Chao, Fang Wang, Zhanqing Liu, and Zupei Yang	3883
 <i>Mechanical, Thermal, and Chemical Properties</i>	
Theoretical Prediction and Experimental Investigation on the Thermal and Mechanical Properties of Bulk β-Yb₂Si₂O₇ Yan-Chun Zhou, Cen Zhao, Feng Wang, Yin-Jie Sun, Li-Ya Zheng, and Xiao-Hui Wang	3891
Correlations Between Microstructure and Mechanical Properties of Air Plasma-Sprayed Thermal Barrier Coatings Exposed to a High Temperature Julián D. Osorio, Deiby Maya, Augusto C. Barrios, Adrián Lopera, Freddy Jiménez, Juan M. Meza, Juan P. Hernández-Ortiz, and Alejandro Toro	3901
Flexural Strength by Fractography in Modern Brittle Materials Roberto Dugnani and Ricardo Zednik	3908
Energetic Effects of Substitution of La-Nd and Si-Ge Oxyapatite-Type Materials Seyedeh Mahboobeh Hosseini and Alexandra Navrotsky	3915

Contents

Structure, Characterization, and Phase Equilibria

Inhomogeneous Structure and Magnetic Properties of Aurivillius Ceramics $\text{Bi}_4\text{Bi}_{n-3}\text{Ti}_3\text{Fe}_{n-3}\text{O}_{3n+3}$ Jing-Bo Li, Yong-Ping Huang, Hai-Bo Jin, Guang-Hui Rao, and Jing-Kui Liang	3920
Improvement of SiC-Si/MAS Interface in the Joints via <i>In Situ</i> Synthesizing SiC Nanowires Yanhui Chu, Hejun Li, Han Peng, Lehua Qi, Huijuan Luo, and Zhanwei Xu	3926
Thermodynamic Properties of LaCrO_4, La_2CrO_6, and $\text{La}_2\text{Cr}_3\text{O}_{12}$, and Subsolidus Phase Relations in the System Lanthanum–Chromium–Oxygen Thomas Jacob Kallarackel, Sapna Gupta, and Prabhakar Singh	3933
Structure, Mechanisms of Reaction, and Strength of an Alkali-Activated Blast-Furnace Slag Oswaldo Burciaga-Díaz and José Iván Escalante-García	3939