

ПИ
A47/cj

Journal

of the American Ceramic Society

Volume 97 Number 2

February 2014



Feature

Ferroelectric Transition and Low-Temperature Dielectric Relaxations in Filled Tungsten Bronzes Xiao Li Zhu, Kun Li, and Xiang Ming Chen	329
--	-----

Rapid Communications

Cathodoluminescence Properties of Blue Emitting Eu ²⁺ -Doped AlN-Polytypoids for Field-Emission Displays Xiao-Jun Wang, Benjamin Dierre, Rong-Jun Xie, Takashi Takeda, Naoto Hirosaki, Takashi Sekiguchi, Huili Li, and Zhuo Sun	339
Stable and Color-Tailorable White Light from Blue LEDs Using Color-Converting Phosphor-Glass Composites Seungryeol Yi, Woon Jin Chung, and Jong Heo	342
Hydrothermal Synthesis of BaTiO ₃ Nanopowders Using TiO ₂ Nanoparticles Jae-Min Han, Mi-Ri Joung, Jin-Seong Kim, Youn-Seon Lee, Sahn Nahm, Youn-Kyu Choi, and Jong-Hoo Paik	346
Direct Evidence for the Modulation Caused by Ti Substitution of Ta in a (Ta ₂ O ₅) _{0.92} (TiO ₂) _{0.08} Ceramic by Analytical Electron Microscopy Xiaodong Wang, Jian-Min Zuo, Hefei Hu, and Yonghua Rong	350
Parallel Plate Viscometry for Glass at High Viscosity Dhananjay Joshi and Paul F. Joseph	354
Intense Red Photoluminescence Emission of Sol-Gel-Derived Nanocrystalline Mg ₂ TiO ₄ Thin Films Yi-Da Ho, Chia-Hui Su, and Cheng-Liang Huang	358
Mechanical Properties of a Lithium Disilicate Strengthened Lithium Aluminosilicate Glass-Ceramic Maria Laczka, Karolina Laczka, Katarzyna Cholewa-Kowalska, Alain B. Kounga, and Christoph Appert	361

Articles

Processing Science

An Application of Computer-Aided Molecular Design (CAMD) Using the Signature Molecular Descriptor—Part 1. Identification of Surface Tension Reducing Agents and the Search for Shrinkage Reducing Admixtures Hamed M. Kayello, Naresh K. R. Tadisina, Natalia Shlonimskaya, Joseph J. Biernacki, and Donald P. Visco Jr.	365
An Application of Computer-Aided Molecular Design (CAMD) Using the Signature Molecular Descriptor—Part 2. Evaluating Newly Identified Surface Tension-Reducing Substances for Potential Use as Shrinkage-Reducing Admixtures Natalia Shlonimskaya, Joseph J. Biernacki, Hamed M. Kayello, and Donald P. Visco	378
The Influence of Pore Solutions Properties on Drying in Cementitious Materials Chiara Villani, Robert Spragg, Mohammad Pour-Ghaz, and W. Jason Weiss	386
Dispersion of Boron Nitride Powders in Aqueous Suspensions with Cellulose Florian Bouville and Sylvain Deville	394
Structural Influence on the Thermal Conversion of Self-Catalyzed HfB ₂ /ZrB ₂ Sol-Gel Precursors by Rapid Ultrasonication of Oxychloride Hydrates Lukc S. Walker and Erica L. Corral	399
Rattle-Structured Ag/TiO ₂ Nanocomposite Capsules with Bactericide and Photocatalysis Activities Wenjia J. Tseng, Chia-Chin Cheng, and J. H. Hsieh	407
Preparation of Phase-Pure K _{0.5} Na _{0.5} NbO ₃ Fine Powders by a Solid-State Reaction at 625°C from a Precursor Comprising Nb ₂ O ₅ and K, Na Acetates Mamoru Senna, Jernej Pavlic, Tadej Rojac, Barbara Malic, and Maria Kosec	413
Pb(Mg _{1/3} Nb _{2/3})O ₃ –PbTiO ₃ Textured Ceramics with High Piezoelectric Response by a Novel Tempered Grain Growth Approach Harvey Amorín, Hana Uršić, Pablo Ramos, Janez Holc, Rodrigo Moreno, Daniel Chateigner, Jesús Ricote, and Miguel Algueró	420

Glass Science

Structural and Luminescence Studies on Barium Sodium Borosilicate Glasses Containing Uranium Oxides Raman K. Mishra, Vasanthakumaran Sudarsan, Savita Jain, Chetan P. Kaushik, Rajesh K. Vatsa, and Avesh K. Tyagi	427
First Identification of Rare-Earth Oxide Nucleation in Chalcogenide Glasses and Implications for Fabrication of Mid-Infrared Active Fibers Zhuoqi Tang, David Furniss, Michael Fay, Nigel C. Neate, Yin Cheng, Emma Barney, Lukasz Sojka, Slawomir Sujecki, Trevor M. Benson, and Angela B. Seddon	432
Effective Thermal Conductivity of Soda-Lime Silicate Glassmelts with Different Iron Contents Between 1100°C and 1500°C Laurent Pilon, Filip Janos, and Rei Kitamura	442
Energetics of Silica-Poor Glasses in the Systems MgO–SiO ₂ and Mg _{0.5} Ca _{0.5} O–SiO ₂ Nektarios K. Nasikas and Alexandra Navrotsky	451

Surface Analysis of Cr₂O₃, CoO⁺, and Al₂O₃-Doped Iron–Phosphate Glasses at High Temperature	457
Tetsuji Yano, Hayato Tateno, Tetsuo Kishi, Shuichi Shibata, Kanae Matsuyama, Takeshi Okita, Shinya Miyamoto, Hirohide Kofuji, and Muetaka Myochin	457
Role of Interface(s) for the Growth of Ultra-Thin Amorphous Oxides on Al–Si Alloys: A Thermodynamic Analysis	465
Emila Panda and Krishna Manwani	465

Electrical, Dielectric, Optical, and Magnetic Properties

Improved Crystal Quality of Transparent Conductive Ga-doped ZnO Films by Magnesium Doping Through Radio-Frequency Magnetron Sputtering Preparation	473
Wei-Sheng Liu, Wei-Ku Chen, Shen-Yu Wu, and Kuang-Po Hsueh	473
Pulsed Electrical Stimulation and Surface Charge Induced Cell Growth on Multistage Spark Plasma Sintered Hydroxyapatite–Barium Titanate Piezobicomposite	481
Ashutosh K. Dubey and Bikramjit Basu	481
Characterization of the High-Temperature Ferroelectric (100–x–y)BiScO₃–(x)Bi(Zr_{0.5}Zn_{0.5})O₃–(y)PbTiO₃ Perovskite Ternary Solid Solution	490
Ben A. Kowalski, Alp Sehirhoglu, Fred W. Dyns, and Ali Sayir	490
Ba₂Li₂W₃O₁₅: A New Li-Containing Perovskite-Type Microwave Ceramic with High <i>Q</i> and Low τ_f	498
Liang Fang, Zhenhai Wei, Wei Liao, Huanfu Zhou, Hui Zhang, and Fei Xiang	498
Microstructure of Eu³⁺-Doped Perovskites-Type Niobate Ceramic La₂Mg₂NbO₉	501
Shuyun Qi, Donglei Wei, Yanlin Huang, Sun Il Kim, Young Moon Yu, and Hyo Jin Seo	501
Effects of A1/A2-Sites Occupancy upon Ferroelectric Transition in (Sr_xBa_{1-x})Nb₂O₆ Tungsten Bronze Ceramics	507
C. J. Huang, K. Li, X. Q. Liu, X. L. Zhu, and X. M. Chen	507
Multi-Site and Multi-Ionization of Sn in the Doping of BaTiO₃	513
Chung-Eun Lee, Clive A. Randall, Doo-Young Kim, and Sang Hyuk Kim	513
Structural Investigation and Functional Properties of Mg_xNi_{1-x}Fe₂O₄ Ferrites	519
Mirela Airimioaei, Mircea-Nicolae Palamaru, Alexandra Raluca Iordan, Patrick Berthet, Claudia Decorse, Lavinia Curecheriu, and Liliana Mitoseriu	519
The Effect of Electric Field on Sintering and Electrical Conductivity of Titania	527
Shikhar K. Jha and Rishi Raj	527

Mechanical, Thermal, and Chemical Properties

Micromechanics of ITZ–Aggregate Interaction in Concrete Part I: Stress Concentration	535
Markus Königberger, Bernhard Pichler, and Christian Hellmich	535
Micromechanics of ITZ–Aggregate Interaction in Concrete Part II: Strength Upscaling	543
Markus Königberger, Bernhard Pichler, and Christian Hellmich	543
Improving the High-Temperature Oxidation Resistance of Nb₄AlC₃ by Silicon Pack Cementation	552
Liya Zheng, Jingyang Wang, and Yanchun Zhou	552
Thermal Conductivity in Nanocrystalline Ceria Thin Films	562
Marat Khafizov, In-Wook Park, Aleksandr Chernatyntsiy, Lingfeng He, Jianliang Lin, John J. Moore, David Swank, Thomas Lillo, Simon R. Philpot, Anter El-Azab, and David H. Hurley	562
A High-Temperature Neutron Diffraction and First-Principles Study of Ti₃AlC₂ and Ti₃(Al_{0.8}Sn_{0.2})C₂	570
Nina J. Lane, Sven C. Vogel, El'ad N. Caspi, Sylvain Dubois, Véronique Gauthier-Brunet, Guo Ping Bei, and Michel W. Barsoum	570
Fatigue Threshold <i>R</i>-curves Predict Fatigue Endurance Strength for Self-Reinforced Silicon Nitride	577
Rawley B. Greene, Stefan Fünfschilling, Theo Fett, Michael J. Hoffmann, and Jamie J. Kruzic	577
Impact of Annealing on the Early Hydration of Tricalcium Silicate	584
Amélie Bazzoni, Marco Cantoni, and Karen L. Scrivener	584
Determining the Strength of Coarse-Grained AlON and Spinel	592
Jeffrey J. Swab, Robert Pavlacka, Gary Gilde, Steve Kilczewski, Jared Wright, and Donovan Harris	592

Structure, Characterization, and Phase Equilibria

Raman Responses in Mechanically Activated BaTiO₃	601
Vera P. Pavlovic, Maria V. Nikolic, Vladimir B. Pavlovic, Jovan Blanusa, Suzana Stevanovic, Vojislav V. Mitic, Maja Scepanovic, and Branislav Vlahovic	601
Phase Evolution and Microstructural Studies in CaZrTi₂O₇–Nd₂Ti₂O₇ System	609
Mohsin Jafar, Pranesh Sengupta, Sungarpur N. Achary, and Avesh K. Tyagi	609
Atomic Structure of ZnO Σ13 [0001]/[1340] Symmetric Tilt Grain Boundary	617
Ji-Young Roh, Yukio Sato, and Yuichi Ikuhara	617

Contents

Influence of Y and La Additions on Grain Growth and the Grain-Boundary Character Distribution of Alumina Stephanie A. Bojarski, Michael Stuer, Zhe Zhao, Paul Bowen, and Gregory S. Rohrer	622
Rearrangement of Multiferroic BiFeO₃ Nanodots Smaller than 15 nm Using Atomic Force Microscopy Wan J. Meang and Jong Y. Son	631
Quantitative Analysis on the Influence of SiO₂ Content on the Phase Behavior of ZrO₂ Subramaniyan Vasanthavel, Ponnusamy Nandha Kumar, and Sanjeevi Kannan	635
Dopant Site Occupancy and Chemical Expansion in Rare Earth-Doped Barium Zirconate Donglin Han, Kozo Shinoda, and Tetsuya Uda	643
Effect of Fe Doping on Layered GdBa_{0.5}Sr_{0.5}Co₂O_{5+δ} Perovskite Cathodes for Intermediate Temperature Solid Oxide Fuel Cells Junyoung Kim, Areum Jun, Jeeyoung Shin, and Guntac Kim	651
The Effects of Magnetic Field Size on the Electronic Structure of Al-Doped ZnO Thin Films Studied by X-ray Absorption and Emission Spectroscopy Jau-Wern Chiou, Wei-Hao Huang, Shih-Jye Sun, Chang-Feng Yu, Hsiung Chou, Hung-Duen Yang, Yueh-Chung Yu, Ting-Shan Chan, Hong-Ji Lin, Krishna Kumar, Wanli Yang, and Jinghua Guo	657
Reply	
Reply to the Comment on “The Effect of Barium Substitution on the Ferroelectric Properties of Sr₂Nb₂O₇ Ceramics” [J. Am. Ceram. Soc., 96 [4] 1163–1170 (2013)] Zhipeng Gao, Baogui Shi, Haitao Ye, Haixue Yan, and Michael J. Reece	662