

# Journal of MATERIALS RESEARCH

Volume 21, Number 1, January 2006

## RAPID COMMUNICATIONS

- 1–4 Nitrate-based metalorganic deposition of CeO<sub>2</sub> on yttria-stabilized zirconia

D.E. Wesolowski, M.J. Cima

## OUTSTANDING MEETING PAPERS

### Review

- 5–12 Electronically stimulated degradation of silicon solar cells

J. Schmidt, K. Bothe,  
D. Macdonald, J. Adey, R. Jones,  
D.W. Palmer

### Articles

- 13–20 Domain switch toughening in polycrystalline ferroelectrics  
21–26 Formation and morphology of Kurnakov type D0<sub>22</sub> compound in disordered face-centered cubic  $\gamma$ -(Ni, Fe) matrix alloys

Jianxin Wang, Chad M. Landis  
Akane Suzuki, Masao Takeyama

### ARTICLES

- 27–33 Low-temperature polymer precursor-based synthesis of nanocrystalline particles of lanthanum calcium manganese oxide (La<sub>0.67</sub>Ca<sub>0.33</sub>MnO<sub>3</sub>) with enhanced ferromagnetic transition temperature  
34–40 Plasmon resonance absorption in sulfide-coated gold nanorods  
41–44 Energetics of cubic Si<sub>3</sub>N<sub>4</sub>  
45–61 Structural characterization of electrodeposited nanophase Ni–Cu alloys  
62–70 Electrochemical corrosion study of Pb-free solders  
71–74 Mechanochemical synthesis of nano-sized Bi<sub>2</sub>V<sub>0.9</sub>Cu<sub>0.1</sub>O<sub>5.35</sub> powders  
75–81 Instrumented indentation study of plastic deformation in bulk metallic glasses  
82–87 Grain growth in nanocomposite Ti–B–N films during deposition: The effect of amorphous phase precipitation  
88–104 Silicon-germanium films deposited by low-frequency plasma-enhanced chemical vapor deposition: Effect of H<sub>2</sub> and Ar dilution  
105–111 Synthesis of silver-gold alloy nanoparticles by a phase-transfer system

K. Shantha Shankar,  
A.K. Raychaudhuri

K. Chatterjee, S. Basu,  
D. Chakravorty

Yahong Zhang,  
Alexandra Navrotsky,  
Toshimori Sekine

S.K. Ghosh, A.K. Grover, G.K. Dey,  
U.D. Kulkarni, R.O. Dusane,  
A.K. Suri, S. Banerjee

B.Y. Wu, Y.C. Chan, M.O. Alam,  
W. Jillek

T.S. Zhang, J. Ma, L.B. Kong

W.H. Li, T.H. Zhang, D.M. Xing,  
B.C. Wei, Y.R. Wang, Y.D. Dong

Z-J. Liu, Y.H. Lu, Y.G. Shen

A. Kosarev, A. Torres,  
Y. Hernandez, R. Ambrosio,  
C. Zuniga, T.E. Felter, R. Asomoza,  
Y. Kudriavtsev, R. Silva-Gonzalez,  
E. Gomez-Barojas, A. Ilinski,  
A.S. Abramov

R.J. Chimentão, I. Cota, A. Dafinov,  
F. Medina, J.E. Sueiras,  
J.L. Gómez de la Fuente,  
J.L.G. Fierro, Y. Cesteros,  
P. Salagre

(Continued)

- 112–118 **Synthesis and characterization of organic–inorganic poly(3,4-ethylenedioxothiophene)/MoS<sub>2</sub> nanocomposite via in situ oxidative polymerization**  
A. Vadivel Murugan,  
Mathieu Quintin,  
Marie-Helene Delville, Guy Campet,  
A. Kasi Viswanath,  
Chinnakonda S. Gopinath,  
K. Vijayamohan
- 119–124 **Consolidation and properties of Gd<sub>0.1</sub>Ce<sub>0.9</sub>O<sub>1.95</sub> nanoparticles for solid-oxide fuel cell electrolytes**  
A.I.Y. Tok, L.H. Luo, F.Y.C. Boey,  
J.L. Woodhead
- 125–131 **Bioactive comparison of a borate, phosphate and silicate glass**  
Wen Liang, Christian Rüssel,  
Delbert E. Day, Günter Völksch
- 132–136 **Electrical transport properties of size-tuned ZnO nanorods**  
Young Su Yun, Jae Young Park,  
Hwangyou Oh, Ju-Jin Kim,  
Sang Sub Kim
- 137–146 **Relieving the current crowding effect in flip-chip solder joints during current stressing**  
S.W. Liang, T.L. Shao, Chih Chen,  
Everett C.C. Yeh, K.N. Tu
- 147–152 **Preferable orientation of turbostratic BN basal planes from an x-ray absorption study**  
X.T. Zhou, T.K. Sham, C.Y. Chan,  
W.J. Zhang, I. Bello, S.T. Lee,  
F. Heigl, A. Jürgen, H. Hofäss
- 153–160 **Characterization of rate-dependent shear behavior of Zr-based bulk metallic glass using shear-punch testing**  
L.F. Liu, L.H. Dai, Y.L. Bai,  
B.C. Wei, J. Eckert
- 161–173 **Instrumented Vickers microindentation of alumina-based materials**  
S. Bueno, C. Baudin
- 174–184 **Microstructural evolution in laser-ablation-deposited Fe–25 at.% Ge thin film**  
Krishanu Biswas,  
Puspender Kumar Das,  
Kamanio Chattopadhyay
- 185–193 **Compressive properties of lotus-type porous stainless steel**  
T. Ide, M. Tane, T. Ikeda,  
S.K. Hyun, H. Nakajima
- 194–198 **Ion beam assisted deposition of textured magnesium oxide templates on un-buffered glass and silicon substrates**  
Ronald N. Vallejo, Judy Z. Wu
- 199–208 **Modified embedded-atom method interatomic potential for the Fe–Pt alloy system**  
Jaesong Kim, Yangmo Koo,  
Byeong-Joo Lee
- 209–214 **Growth stresses and viscosity of thermal oxides on silicon and polysilicon**  
H. Kahn, N. Jing, M. Huh,  
A.H. Heuer
- 215–224 **On the determination of reduced Young's modulus and hardness of elastoplastic materials using a single sharp indenter**  
Yan Ping Cao, Xiu Qing Qian,  
Jian Lu
- 225–233 **Evaluation of the effectiveness of representative methods for determining Young's modulus and hardness from instrumented indentation data**  
Dejun Ma, Taihua Zhang,  
Chung Wo Ong
- 234–241 **High glass-forming ability and good mechanical properties of new bulk glassy alloys in Cu–Zr–Ag ternary system**  
W. Zhang, A. Inoue
- 242–254 **Structural development and electronic properties of hot filament low pressure chemical vapor deposited fluorocarbon polymer films**  
A.C. Rastogi, S.B. Desu
- 255–262 **Study of copper-refractory metal interfaces via solid-state wetting for emerging nanoscale interconnect applications**  
Oscar van der Straten, Yu Zhu,  
Jonathan Rullan, Kathleen Dunn,  
Alain E. Kaloyeros
- 263–269 **CeO<sub>2</sub> insulating films for application to high-temperature superconducting digital devices**  
Ai Kamitani, H. Wakana, A. Ogawa,  
S. Adachi, K. Higuchi,  
H. Yamamoto, K. Tanabe

(Continued)

- 270–275 **Domain size change of spinodal phase separation structure in the sol-gel derived TiO<sub>2</sub> thin film**  
Ryohei Mori, Masahide Takahashi,  
Toshinobu Yoko
- 276–286 **Formation of discontinuous Al<sub>2</sub>O<sub>3</sub> layers during high-temperature oxidation of RuAl alloys**  
P.J. Bellina, A. Catanoiu,  
F.M. Morales, M. Rühle
- 287–292 **Elephant ivory: A low thermal conductivity, high strength nanocomposite**  
Michael B. Jakubinek,  
Champika J. Samarasekera,  
Mary Anne White
- 293–301 **Electrochemical deposition and characterization of Fe<sub>3</sub>O<sub>4</sub> films produced by the reduction of Fe(III)-triethanolamine**  
Hiten M. Kothari, Elizabeth A. Kulp,  
Steven J. Limmer, Philippe Poizot,  
Eric W. Bohannan, Jay A. Switzer

## COMMENTS AND REPLY

- 302–305 **Comments on “Comment on the determination of mechanical properties from the energy dissipated during indentation” by J. Malzbender [J. Mater. Res. 20, 1090 (2005)]**  
J. Alkorta, J.M. Martínez-Esnaola,  
J. Gil Sevillano
- 306 **Reply to the comments on “Comment on the determination of mechanical properties from the energy dissipated during indentation” by J. Malzbender [J. Mater. Res. 20, 1090 (2005)]**  
Jürgen Malzbender