

# Journal of MATERIALS RESEARCH

Volume 21, Number 2, February 2006

## OUTSTANDING MEETING PAPER

### Review

- 309–319 **Phase field theory of crystal nucleation and polycrystalline growth: A review**

L. Gránásy, T. Pusztai,  
T. Börzsönyi, G. Tóth, G. Tegze,  
J.A. Warren, J.F. Douglas

### ARTICLES

- 320–328 **High-temperature phase equilibria in the system Zr–O–N**

Alexandre Ermoline,  
Mirko Schoenitz, Edward L. Dreizin

- 329–342 **Recovery of deformation substructure and coarsening of particles on annealing severely plastically deformed Al–Mg–Si alloy and analysis of strengthening mechanisms**

I. Gutierrez-Urrutia,  
M.A. Muñoz-Morris, D.G. Morris

- 343–348 **Gluconate controls one-dimensional growth of tellurium nanostructures**

Feng Gao, Qingyi Lu,  
Sridhar Komarneni

- 349–354 **Preparation and characterization of Ag/AgO nanoshells on carboxylated polystyrene latex particles**

Rongwei Zhang, Dan Zhang,  
Hui Mao, Wenlong Song, Ge Gao,  
Fengqi Liu

- 355–368 **Solvothermal synthesis of titania-zirconia composite**

Xin M. Wang, Ping Xiao

- 369–374 **Formation and properties of Pr-based bulk metallic glasses**

Z.F. Zhao, P. Wen, R.J. Wang,  
D.Q. Zhao, M.X. Pan, W.H. Wang

- 375–379 **Growth morphologies and mechanisms of non-equilibrium solidified MC carbide**

Y. Chen, H.M. Wang

- 380–385 **Effects of aging conditions on the structural properties of mesoporous SiO<sub>2</sub>/TiO<sub>2</sub> composite materials with crystallized framework**

Hua Li, Wei-hua Shen, Jian-lin Shi,  
Liang-ming Xiong, Jian Liang,  
Meilin Ruan

- 386–395 **Mechanical properties of porous and fully dense low- $\kappa$  dielectric thin films measured by means of nanoindentation and the plane-strain bulge test technique**

Y. Xiang, X. Chen, T.Y. Tsui,  
J-I. Jang, J.J. Vlassak

- 396–401 **Optical and magnetic properties of EuSi<sub>2</sub>O<sub>2</sub>N<sub>2</sub>**

Y.Q. Li, K.V. Ramanujachary,  
S.E. Lofland, G. de With,  
H.T. Hintzen

- 402–408 **Oxidation behavior of bulk Ti<sub>3</sub>SiC<sub>2</sub> at intermediate temperatures in dry air**

H.B. Zhang, Y.C. Zhou, Y.W. Bao,  
J.Y. Wang

- 409–419 **Experimental, analytical, and finite element analyses of nanoindentation of multilayer PZT/Pt/SiO<sub>2</sub> thin film systems on silicon wafers**

C. Chima-Okereke, A.J. Bushby,  
M.J. Reece, R.W. Whatmore,  
Q. Zhang

- 420–427 **Thermal instability of Co-substituted barium hexaferrites with U-type structure**

Darja Lisjak, Paul McGuiness,  
Miha Drofenik

- 428–436 **Variations of structure and composition in magnesium incorporated hydroxyapatite/β-tricalcium phosphate**

Hyun-Seung Ryu, Kug Sun Hong,  
Jung-Kun Lee, Deug Joong Kim

- 437–447 **Deformation of a hard coating on ductile substrate system during nanoindentation: Role of the coating microstructure**

Z-H. Xie, M. Hoffman, R.J. Moon,  
P.R. Munroe

- 448–454 **Preparation and properties of aluminium titanate-alumina composites with a corrugated microstructure**

Aleš Dakskobler, Tomáž Kosmač

(Continued)

- 455–464 **Mechanisms for the enhancement of the thermal stability of organic thin films by aluminum oxide capping layers**  
S. Sellner, A. Gerlach, F. Schreiber,  
M. Kelsch, N. Kasper, H. Dosch,  
S. Meyer, J. Pflaum, M. Fischer,  
B. Gompf, G. Ulbricht
- 465–472 **ZrO<sub>2</sub>-nucleated calcium aluminate glass-ceramics with mid-infrared transparency**  
Jiin-Jyh Shyu, Hung-Chuan Mai
- 473–479 **Atomic force microscopy study of the role of molecular weight of poly(acrylic acid) in chemical mechanical planarization for shallow trench isolation**  
Chae-Woong Cho, Sang-Kyun Kim,  
Ungyu Paik, Jea-Gun Park,  
Wolfgang M. Sigmund
- 480–483 **Improved thermoelectric properties of gadolinium intercalated compounds Gd<sub>x</sub>TiS<sub>2</sub> at the temperatures from 5 to 310 K**  
D. Li, X.Y. Qin, J. Zhang
- 484–491 **Concrete reinforced with irradiated nylon fibers**  
Gonzalo Martínez-Barrera,  
Carmina Menchaca-Campos,  
Susana Hernández-López,  
Enrique Vigueras-Santiago,  
Witold Brostow
- 492–499 **Shear localization of nanoscale W in metallic glass composites**  
Min Ha Lee, Daniel J. Sordelet
- 500–504 **Synthesis and characterization of nanocrystalline (Zr<sub>0.84</sub>Y<sub>0.16</sub>)O<sub>1.92</sub>–(Ce<sub>0.85</sub>Sm<sub>0.15</sub>)O<sub>1.925</sub> heterophase thin films**  
Aniruddha Kulkarni,  
Alexander Bourandas,  
Junhang Dong, Paul A. Fuierer,  
Hai Xiao
- 505–511 **Interfacial adhesion of nanoporous zeolite thin films**  
Lili Hu, Junlan Wang, Zijian Li,  
Shuang Li, Yushan Yan
- 512–521 **Competing fracture modes in brittle materials subject to concentrated cyclic loading in liquid environments: Trilayer structures**  
Ilja Hermann, Sanjit Bhowmick,  
Yu Zhang, Brian R. Lawn
- 522–528 **Enhanced yield strength in iron nanocomposite with in situ grown single-wall carbon nanotubes**  
A. Goyal, D.A. Wiegand,  
F.J. Owens, Z. Iqbal
- 529–534 **C<sub>60</sub> fullerene tubes as removable templates**  
Jun-ichi Minato, Kun'ichi Miyazawa

**ERRATUM**

- 535–537 **Erratum: “Nanoindentation of polydimethylsiloxane elastomers: Effect of crosslinking, work of adhesion, and fluid environment on elastic modulus” [J. Mater. Res. 20, 2820 (2005)]**

Fernando Carrillo, Shikha Gupta,  
Mehdi Balooch, Sally J. Marshall,  
Grayson W. Marshall, Lisa Pruitt,  
Christian M. Puttlitz