

Journal of MATERIALS RESEARCH

Volume 20, Number 8, August 2005

RAPID COMMUNICATIONS

- 1931–1934 **Correlation between chemical reaction and brittle fracture found in electroless Ni(P)/immersion gold–solder interconnection** Yoon-Chul Sohn, Jin Yu
- 1935–1938 **Mg–Ca–Zn bulk metallic glasses with high strength and significant ductility** X. Gu, G.J. Shiflet, F.Q. Guo, S.J. Poon
- 1939–1942 **Benefits of mild wet milling of the intermediates for the synthesis of phase-pure Z-type hexaferrite** Jadambaa Temuujin, Masami Aoyama, Mamoru Senna, Taisuke Masuko, Chie Ando, Hiroshi Kishi
- 1943–1946 **Amorphization of cristobalite at high temperature in vacuum** Chang-Ming Xu, S.W. Wang, X.X. Huang, J.K. Guo
- 1947–1951 **Effect of solid solution impurities on dislocation nucleation during nanoindentation** D.F. Bahr, G. Vasquez

REVIEW

- 1952–1972 **Effects of sub-ångstrom (pico-scale) structure of surfaces on adhesion, friction, and bulk mechanical properties** Jacob Israelachvili, Nobuo Maeda, Kenneth J. Rosenberg, Mustafa Akbulut

OUTSTANDING MEETING PAPER

- 1973–1978 **Sodium ion conduction in plastic phases: Dynamic coupling of cations and anions in the picosecond range** D. Wilmer, H. Feldmann, R.E. Lechner, J. Combet

ARTICLES

- 1979–1994 **Simulated soft tissue nanoindentation: A finite element study** Shikha Gupta, Fernando Carrillo, Medhi Balooch, Lisa Pruitt, Christian Puttlitz
- 1995–2003 **Microchannel molding: A soft lithography-inspired approach to micrometer-scale patterning** Christopher R. Martin, Ilhan A. Aksay
- 2004–2011 **Nanoindentation method for determining the initial contact and adhesion characteristics of soft polydimethylsiloxane** Yifang Cao, Dehua Yang, Wole Soboyejo
- 2012–2020 **Evidence for extensive grain boundary meander and overgrowth of substrate grain boundaries in high critical current density ex situ $\text{YBa}_2\text{Cu}_3\text{O}_{7-x}$ coated conductors** D.M. Feldmann, D.C. Larbalestier, T. Holesinger, R. Feenstra, A.A. Gapud, E.D. Specht
- 2021–2029 **Competing fracture modes in brittle materials subject to concentrated cyclic loading in liquid environments: Monoliths** Yu Zhang, Sanjit Bhowmick, Brian R. Lawn
- 2030–2037 **Investigation of the crystallization mechanisms in indium molybdenum oxide films by vacuum annealing** Shi-Yao Sun, Jow-Lay Huang, Ding-Fwu Lii
- 2038–2045 **Non-equilibrium microstructure and thermal stability of plasma-sprayed Al–Si coatings** K.H. Baik, H.K. Seok, H.S. Kim, P.S. Grant
- 2046–2054 **Effects of elevated temperature annealing on the structure and hardness of copper/niobium nanolayered films** A. Misra, R.G. Hoagland
- 2055–2060 **Comparative study of microstructural properties for $\text{YBa}_2\text{Cu}_3\text{O}_7$ films on single-crystal and Ni-based metal substrates** Y. Lin, H. Wang, B. Maiorov, M.E. Hawley, C.J. Wetteland, P.N. Arendt, S.R. Foltyn, L. Civale, Q.X. Jia

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- 2061–2066 **Neutron Rietveld analysis for optimized $\text{CaMgSi}_2\text{O}_6:\text{Eu}^{2+}$ and its luminescent properties** Won Bin Im, Yong-Il Kim, Jong Hyuk Kang, Duk Young Jeon, Ha Kyun Jung, Kyeong Youl Jung
- 2067–2071 **Dielectric and piezoelectric properties of niobium-modified $\text{BiInO}_3\text{-PbTiO}_3$ perovskite ceramics with high Curie temperatures** Shujun Zhang, Ru Xia, Clive A. Randall, Thomas R. Shrout, Runrun Duan, Robert F. Speyer
- 2072–2079 **Electromigration studies of Sn(Cu) and Sn(Ni) alloy stripes** C.C. Wei, C.Y. Liu
- 2080–2093 **Nanoindentation analysis of mechanical properties of low to ultralow dielectric constant SiCOH films** Lugen Wang, M. Ganor, S.I. Rokhlin, Alfred Grill
- 2094–2100 **Spherical indentation creep following ramp loading** Michelle L. Oyen
- 2101–2109 **High barrier effects of $(000\bar{1})(000\bar{1})$ zinc oxide bicrystals: Implication for varistor ceramics with inversion boundaries** Jong-Sook Lee, Joachim Maier
- 2110–2116 **Density- and hardness-optimized pressureless sintered and post-hot isostatic pressed B_4C** Namtae Cho, Zhihao Bao, Robert F. Speyer
- 2117–2126 **Microstructural evolution of an ultrafine-grained cryomilled Al 5083 alloy during thermomechanical processing** David Witkin, Bing Q. Han, Enrique J. Lavernia
- 2127–2139 **Synthesis of oriented BiFeO_3 thin films by chemical solution deposition: Phase, texture, and microstructural development** F. Tyholdt, S. Jørgensen, H. Fjellvåg, A.E. Gunnæs
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- 2154–2160 **Investigation on carbonizing behaviors of nanometer-sized Cr_2O_3 particles dispersed on alumina particles by metalorganic chemical vapor deposition in fluidized bed** Hao-Tung Lin, Jow-Lay Huang, Wen-Tse Lo, Wen-Cheng J. Wei
- 2161–2172 **Mechanical properties of intermetallic compounds in the Au–Sn system** R.R. Chromik, D-N. Wang, A. Shugar, L. Limata, M.R. Notis, R.P. Vinci
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- 2184–2193 **Damages and microstructural variation of high-lead and eutectic SnPb composite flip chip solder bumps induced by electromigration** Yeh-Hsiu Liu, Kwang-Lung Lin
- 2194–2198 **Critical examination of the two-slope method in nanoindentation** M. Troyon, L. Huang
- 2199–2204 **Synthesis of water-soluble silicon oxide material by sol-gel reaction in tetraalkoxysilane-aminoalkyltrialkoxysilane binary system** Yoshiro Kaneko, Nobuo Iyi, Taki Matsumoto, Hisanao Usami
- 2205–2212 **Effects of Cu contents in Sn–Cu solder on the composition and morphology of intermetallic compounds at a solder/Ni interface** D.Q. Yu, C.M.L. Wu, D.P. He, N. Zhao, L. Wang, J.K.L. Lai
- 2213–2217 **Tensile creep behavior in lutetia-doped silicon nitride ceramics** Toshiyuki Nishimura, Naoto Hirotsaki, Yoshinobu Yamamoto, Yoriobu Takigawa, Jian-Wu Cao

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2218–2224 **Adhesion of chemical vapor deposited boron carbo-nitride to dielectric and copper films**

E.R. Engbrecht, P.R. Fitzpatrick,
K.H. Junker, Y-M. Sun, J.M. White,
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2225–2234 **Representative strain of indentation analysis**

Nagahisa Ogasawara,
Norimasa Chiba, Xi Chen

ERRATUM

2235 **Erratum: “Thermal stability enhancement in nanostructured Cu films containing insoluble tungsten carbides for metallization” [J. Mater. Res. 20, 1379 (2005)]**

J.P. Chu, Y.Y. Hsieh, C.H. Lin,
T. Mahalingam