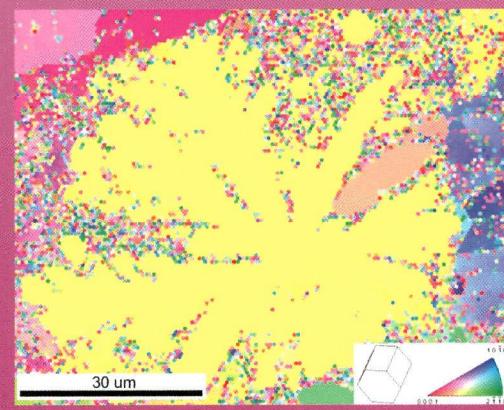
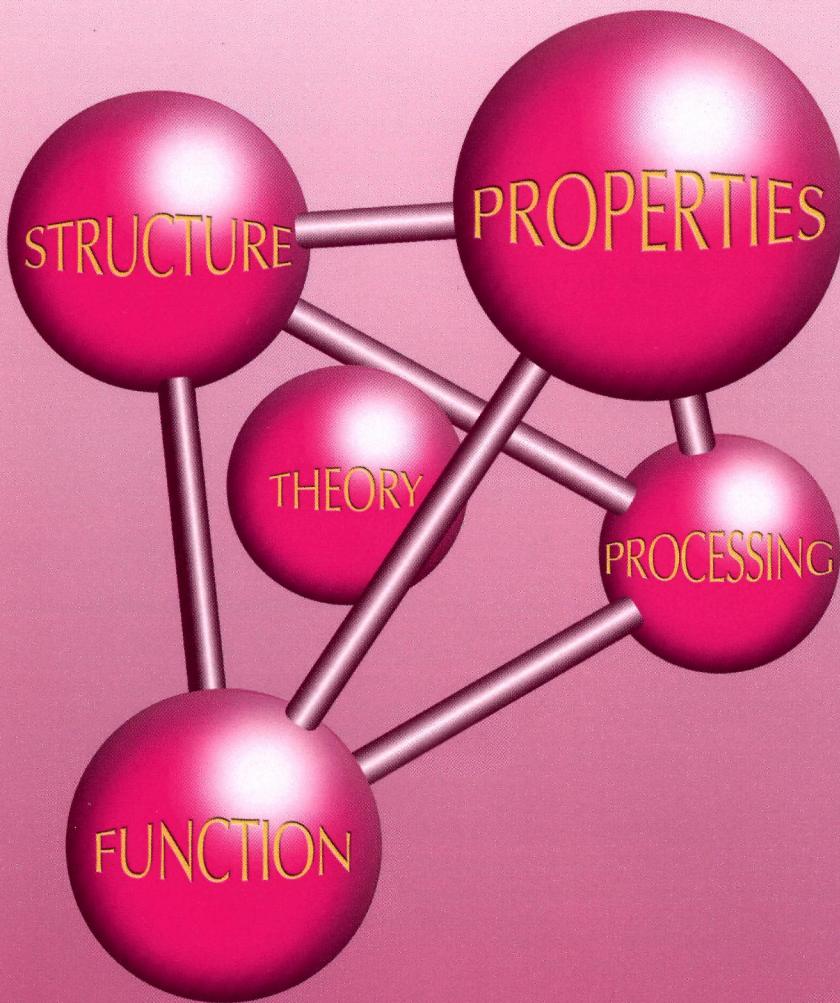
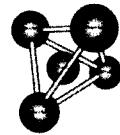


# Scripta MATERIALIA

A LETTERS JOURNAL





# Scripta MATERIALIA

Volume 68, Issue 8  
(Published 5 February 2013)

## CONTENTS

P. Lejček, M. Šob, V. Paidar & V. Vitek	547	Why calculated energies of grain boundary segregation are unreliable when segregant solubility is low
N. Karanjaokar, F. Stump, P. Geubelle & I. Chasiotis	551	A thermally activated model for room temperature creep in nanocrystalline Au films at intermediate stresses
X. Kai, Z. Li, G. Fan, Q. Guo, Z. Tan, W. Zhang, Y. Su, W. Lu, W.-J. Moon & D. Zhang	555	Strong and ductile particulate reinforced ultrafine-grained metallic composites fabricated by flake powder metallurgy
Z. Chen, G. Ji, N. Prud'homme, A. Addad, V. Ji, J. Chevalier & G. Bernard-Granger	559	Stabilization of the tetragonal phase in large columnar zirconia crystals without incorporating dopants
P.J. Bocchini, E.A. Lass, K.-W. Moon, M.E. Williams, C.E. Campbell, U.R. Kattner, D.C. Dunand & D.N. Seidman	563	Atom-probe tomographic study of $\gamma/\gamma'$ interfaces and compositions in an aged Co-Al-W superalloy
P. Murali, R. Narasimhan, T.F. Guo, Y.W. Zhang & H.J. Gao	567	Shear bands mediate cavitation in brittle metallic glasses
O. Benafan, R.D. Noebe, S.A. Padula II, D.J. Gaydosh, B.A. Lerch, A. Garg, G.S. Bigelow, K. An & R. Vaidyanathan	571	Temperature-dependent behavior of a polycrystalline NiTi shape memory alloy around the transformation regime
H. Okuda, T. Horiuchi, T. Tsukamoto, S. Ochiai, M. Yamasaki & Y. Kawamura	575	Evolution of long-period stacking ordered structures on annealing as-cast Mg <sub>85</sub> Y <sub>9</sub> Zn <sub>6</sub> alloy ingot observed by synchrotron radiation small-angle scattering
C. Yue, W. Liu, L. Zhang, T. Zhang & Y. Chen	579	Fracture toughness and toughening mechanisms in a (ZrB <sub>2</sub> -SiC) composite reinforced with boron nitride nanotubes and boron nitride nanoplatelets
B. Srinivasarao, A.P. Zhilyaev, I. Gutiérrez-Urrutia & M.T. Pérez-Prado	583	Stabilization of metastable phases in Mg-Li alloys by high-pressure torsion
W. Yang, D. Yan & L. Rong	587	The separation of recrystallization and precipitation processes in a cold-rolled Al-Mg-Sc solid solution
S.W. Park, T. Sugahara, S. Nagao & K. Suganuma	591	High-strength Si wafer bonding by self-regulated eutectic reaction with pure Zn
Y.Q. Wu, S.D. McDonald, J. Read, H. Huang & K. Nogita	595	Determination of the minimum Ni concentration to prevent the $\eta$ to $\eta^{4+1}$ polymorphic transformation of stoichiometric Cu <sub>6</sub> Sn <sub>5</sub>
C.-Q. Hong, J.-C. Han, X.-H. Zhang & J.-C. Du	599	Novel nanoporous silica aerogel impregnated highly porous ceramics with low thermal conductivity and enhanced mechanical properties

(Continued on inside back cover)

INDEXED IN Current Contents, BIOSIS/CAS Selects, Camb. Sci. Abstr., Eng. Ind. Monthly and Author Ind., IBZ, Energy Res. Abstr., Energy Data Base, Metals Abstr., World Alum. Abstr., and the MSCI. Also covered in the abstract and citation database SciVerse Scopus®. Full text available on SciVerse ScienceDirect®

Printed by Polestar Wheatons Ltd, Exeter, UK

ISSN 1359-6462

Available online at [www.sciencedirect.com](http://www.sciencedirect.com)

SciVerse ScienceDirect



1359-6462(201304)68:8;1-J



# *Scripta MATERIALIA*

(Contents continued from outside back cover)

I. Álvarez-Clemares, A. Borrell, S. Agouram, R. Torrecillas & A. Fernández	603	Microstructure and mechanical effects of spark plasma sintering in alumina monolithic ceramics
Y. Zhang, H. Zhu, M. Fujiwara, J. Xu & M. Dao	607	Low-temperature creep of SnPb and SnAgCu solder alloys and reliability prediction in electronic packaging modules
N. Park, S. Khamsuk, A. Shibata & N. Tsuji	611	Effect of austenite grain size on kinetics of dynamic ferrite transformation in low carbon steel
N. Takata, H. Ghassemi Armaki, Y. Terada, M. Takeyama & K.S. Kumar	615	Plastic deformation of the C14 Laves phase $(\text{Fe},\text{Ni})_2\text{Nb}$
R.S. Kalubarme, C.-H. Ahn & C.-J. Park	619	Electrochemical characteristics of graphene/manganese oxide composite catalyst for Li-oxygen rechargeable batteries
K. Kiryukhina, H. Le Trong, Ph. Tailhades, J. Lacaze, V. Baco, M. Gougeon, F. Courtade, S. Dareys, O. Vendier & L. Raynaud	623	Silver oxalate-based solders: New materials for high thermal conductivity microjoining
J. Zhang, C. Wang, R. Chowdhury & S. Adhikari	627	Size- and temperature-dependent piezoelectric properties of gallium nitride nanowires
S.R. Dey, L. Hollang, B. Beausir, E. Hieckmann & W. Skrotzki	631	Formation of micro shear bands during cyclic deformation of sub-micro-crystalline nickel
S.-B. Mi & Q.-Q. Jin	635	New polytypes of long-period stacking ordered structures in Mg–Co–Y alloys
J.Y. Zhang, J.C. Cui, G. Liu & J. Sun	639	Deformation crossover in nanocrystalline Zr micropillars: The strongest external size
J. Yu, W. Zhao, H. Zhou, P. Wei & Q. Zhang	643	Rapid preparation and thermoelectric properties of Ba and In double-filled p-type skutterudite bulk materials
Y.N. Zhang, X.D. Liu, Z. Altounian & M. Medraj	647	Coherent nanoscale ternary precipitates in crystallized $\text{Ca}_4\text{Mg}_{72}\text{Zn}_{24}$ metallic glass
E.G. Dere, H. Sharma, R.H. Petrov, J. Sietsma & S.E. Offerman	651	Effect of niobium and grain boundary density on the fire resistance of Fe–C–Mn steel
X. Yu, X. Gu, S. Yuan, K. Guo & D. Yang	655	Two-peak characteristic distribution of iron impurities at the bottom of cast quasi-single-crystalline silicon ingot
G. Miyamoto, K. Shinbo & T. Furuhara	658	Corrigendum to: “Quantitative measurement of carbon content in Fe–C binary alloys by atom probe tomography” [Scripta Materialia 67 (2012) 999–1002]