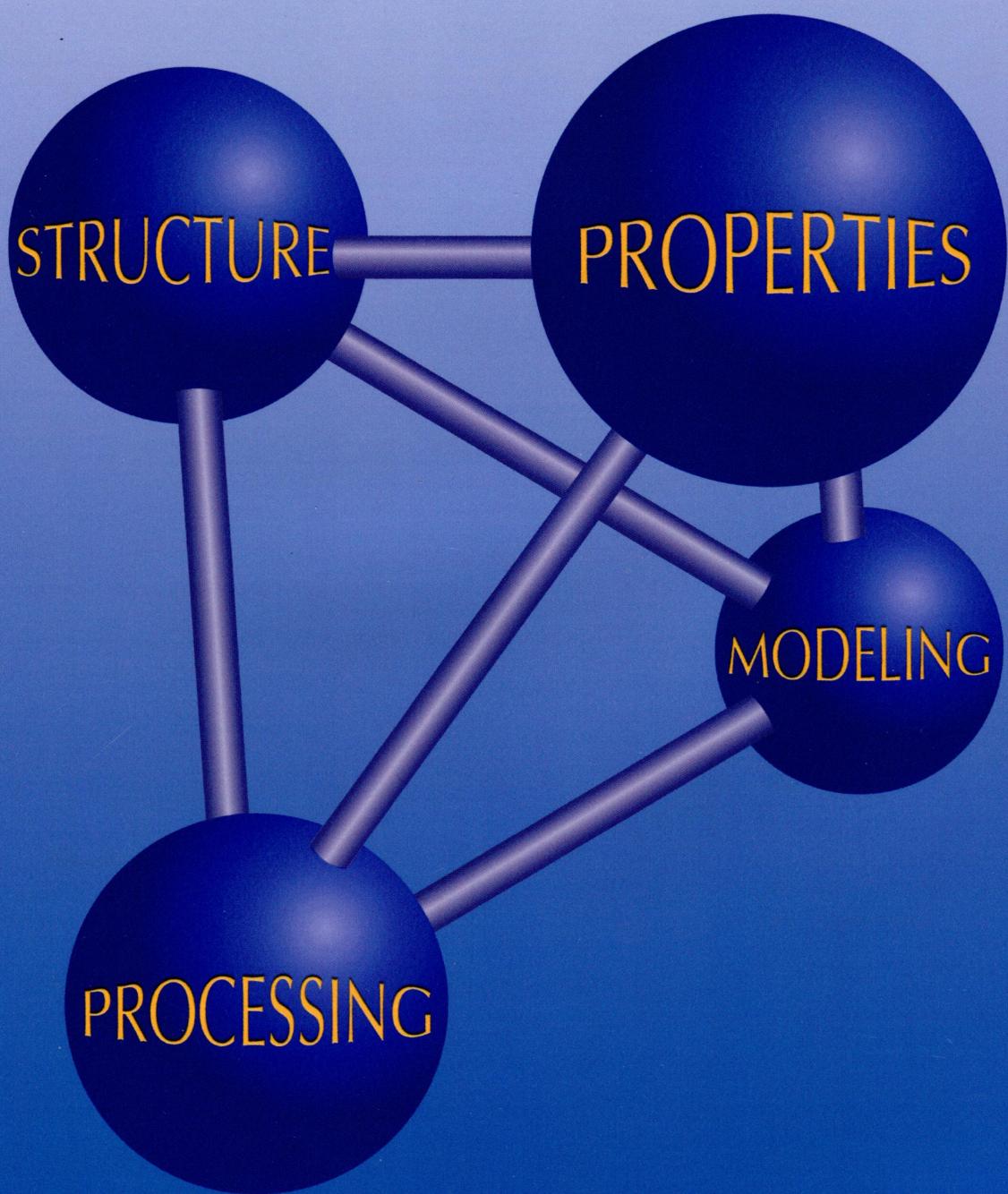


Volume 79, 15 October 2014

ISSN 1359-6454

Acta MATERIALIA





www.elsevier.com/locate/actamat

Acta MATERIALIA

VOLUME 79

PUBLISHED 20 AUGUST 2014

Awards

S. Mahajan

434 Recipients of the 2013 Acta Student Awards

Regular Articles

A. T. Phan, M.-K. Paek and Y.-B. Kang

1 Phase equilibria and thermodynamics of the Fe–Al–C system: Critical evaluation, experiment and thermodynamic optimization

A. Perron, C. Toffolon-Masclet, X. Ledoux, F. Buy, T. Guilbert, S. Urvoy, S. Bossonnet, B. Marini, F. Cortial, G. Texier, C. Harder, V. Vignal, Ph. Petit, J. Farré and E. Suzon

16 Understanding sigma-phase precipitation in a stabilized austenitic stainless steel (316Nb) through complementary CALPHAD-based and experimental investigations

J. Q. Wang, N. Chen, P. Liu, Z. Wang, D. V. Louzguine-Luzgin, M. W. Chen and J. H. Perepezko

30 The ultrastable kinetic behavior of an Au-based nanoglass

X. Zhang, W. Gao, P. Bellon, R. S. Averback and J.-M. Zuo

37 A kinetic Monte Carlo study of coarsening resistance of novel core/shell precipitates

J. L. Sun, P. W. Trimby, F. K. Yan, X. Z. Liao, N. R. Tao and J. T. Wang

47 Shear banding in commercial pure titanium deformed by dynamic compression

E. Shaffir, Y. Kauffmann and I. Riess

59 Void formation in gold films on yttrium-doped zirconia in the initial stage of de-wetting

M. Bugnet, A. Kula, M. Niewczas and G. A. Botton

66 Segregation and clustering of solutes at grain boundaries in Mg–rare earth solid solutions

R. F. Zhang, T. C. Germann, X.-Y. Liu, J. Wang and I. J. Beyerlein

74 Layer size effect on the shock compression behavior of fcc–bcc nanolaminates

D. Xu, W. L. Li, L. D. Wang, W. Wang, W. P. Cao and W. D. Fei

84 Large piezoelectric properties induced by doping ionic pairs in BaTiO₃ ceramics

T. Doshida and K. Takai

93 Dependence of hydrogen-induced lattice defects and hydrogen embrittlement of cold-drawn pearlitic steels on hydrogen trap state, temperature, strain rate and hydrogen content

[continued on inside back cover]

Available online at www.sciencedirect.com

ScienceDirect



1359-6454(20141015)79:C;1-4

Acta mater. is Indexed/Abstracted in: Appl. Mech. Rev.; Res. Alert; Chem. Abstr. Serv.; Curr. Cont./Phys. Chem. Earth Sci.; Curr. Cont./Engng Tech. Appl. Sci.; Ed. Metals Abstr.; Engng Ind.; IBZ & IBR; INSPEC Data.; Metals Abstr.; PASCAL-CNRS Data.; Curr. Cont. Sci. Cit. Ind.; Curr. Cont. SCISEARCH Data.; SSSA/CISA/ECA/ISMEC; MSCI; Also covered in the abstract and citation database Scopus®. Full text available on ScienceDirect®.

ISSN 1359-6454

[CONTENTS—continued from outside back cover]

- D. K. Patel, H. F. Al-Harbi and S. R. Kalidindi 108 Extracting single-crystal elastic constants from polycrystalline samples using spherical nanoindentation and orientation measurements
- P. Hirel, A. Kraych, P. Carrez and P. Cordier 117 Atomic core structure and mobility of [1 0 0](0 1 0) and [0 1 0](1 0 0) dislocations in MgSiO₃ perovskite
- P. Krooß, C. Somsen, T. Niendorf, M. Schaper, I. Karaman, Y. Chumlyakov, G. Eggeler and H. J. Maier 126 Cyclic degradation mechanisms in aged FeNiCoAlTa shape memory single crystals
- X. Liu, A. P. Warren, N. T. Nuhfer, A. D. Rollett, K. R. Coffey and K. Barmak 138 Comparison of crystal orientation mapping-based and image-based measurement of grain size and grain size distribution in a thin aluminum film
- S. Basu and M. R. Shankar 146 Spatial confinement-induced switcheroe in microstructure evolution during severe plastic deformation at micrometer length scales
- X. Xu, T. Kanomata and R. Kainuma 159 Specific heat and entropy change during martensitic transformation in Ni₅₀Mn_{50-x}Ga_x ferromagnetic shape memory alloys
- S. Karagadde, L. Yuan, N. Shevchenko, S. Eckert and P. D. Lee 168 3-D microstructural model of freckle formation validated using in situ experiments
- R. Caballero, I. Victorov, R. Serna, J. M. Cano-Torres, C. Maffiotte, E. Garcia-Llamas, J. M. Merino, M. Valakh, I. Bodnar and M. León 181 Band-gap engineering of Cu₂ZnSn_{1-x}Ge_xS₄ single crystals and influence of the surface properties
- J.-H. Kang, S. H. Kim, M. Ebaid, J. K. Lee and S.-W. Ryu 188 Efficient photoelectrochemical water splitting by a doping-controlled GaN photoanode coated with NiO cocatalyst
- J. Timoshenko, A. Anspoks, A. Kalinko and A. Kuzmin 194 Temperature dependence of the local structure and lattice dynamics of wurtzite-type ZnO
- I. Ghamarian, Y. Liu, P. Samimi and P. C. Collins 203 Development and application of a novel precession electron diffraction technique to quantify and map deformation structures in highly deformed materials—as applied to ultrafine-grained titanium
- B. Liu, D. Raabe, F. Roters and A. Arsenlis 216 Interfacial dislocation motion and interactions in single-crystal superalloys
- M. M. Elcombe, C. S. Kealley, V. K. Bhatia, G. J. Thorogood, D. J. Carter, M. Avdeev and M. B. Cortie 234 Determination of martensite structures of the Au₇Cu₅Al₄ and Au₇Cu_{5.7}Al_{3.3} shape-memory alloys
- R. Lu, Y. Wang, W. Wang, L. Gu and J. Sha 241 Epitaxial growth of silver nanoislands on the surface of silicon nanowires in ambient air
- A. V. Karavaev, V. V. Dremov, G. V. Ionov and B. W. Chung 248 Equilibrium thermodynamics of helium in δ-phase Pu–Ga alloys
- L. Deillon, T. Hessler, A. Hessler-Wyser and M. Rappaz 258 Growth of intermetallic compounds in the Au–In system: Experimental study and 1-D modelling
- M-M. Wang, C. C. Tasan, D. Ponge, A. Kostka and D. Raabe 268 Smaller is less stable: Size effects on twinning vs. transformation of reverted austenite in TRIP-maraging steels
- S. J. Zheng, J. Wang, J. S. Carpenter, W. M. Mook, P. O. Dickerson, N. A. Mara and I. J. Beyerlein 282 Plastic instability mechanisms in bimetallic nanolayered composites
- C. Puncreobutr, A. B. Phillion, J. L. Fife, P. Rockett, A. P. Horsfield and P. D. Lee 292 In situ quantification of the nucleation and growth of Fe-rich intermetallics during Al alloy solidification

[continued on back matter]

[CONTENTS—continued from inside back cover]

- J. Svoboda and F. D. Fischer
- Z. Liu, D. Qiu, F. Wang, J. A. Taylor and M. Zhang
- D. Räßiger, Y. Zhang, V. Galindo, S. Franke, B. Willers and S. Eckert
- D. Wu, H. Kahn, J. C. Dalton, G. M. Michal, F. Ernst and A. H. Heuer
- S. C. Lumley, R. W. Grimes, S. T. Murphy, P. A. Burr, A. Chroneos, P. R. Chard-Tuckey and M. R. Wenman
- M. Mačković, F. Niekiel, L. Wondraczek and E. Speecker
- J. Cui, J.-P. Choi, E. Polikarpov, M. E. Bowden, W. Xie, G. Li, Z. Nie, N. Zarkevich, M. J. Kramer and D. Johnson
- M. E. Krug, Z. Mao, D. N. Seidman and D. C. Dunand
- J. H. Ke, A. Boyne, Y. Wang and C. R. Kao
- B. R. Patterson, D. J. Rowenhorst, V. Tikare, R. T. DeHoff and T. M. Kaub
- J. E. Darnbrough and P. E. J. Flewitt
- Corrigenda**
- K. Maung, J. C. Earthman and F. A. Mohamed
- H. Rodriguez-Alvarez, N. Barreau, C. A. Kaufmann, A. Weber, M. Klaus, T. Painchaud, H.-W. Schock and R. Mainz
- R. Oruganti
- 304 Generalization of the Lifshitz–Slyozov–Wagner coarsening theory to non-dilute multi-component systems
- 315 The grain refining mechanism of cast zinc through silver inoculation
- 327 The relevance of melt convection to grain refinement in Al–Si alloys solidified under the impact of electric currents
- 339 Orientation dependence of nitrogen supersaturation in austenitic stainless steel during low-temperature gas-phase nitriding
- 351 The thermodynamics of hydride precipitation: The importance of entropy, enthalpy and disorder
- 363 Direct observation of electron-beam-induced densification and hardening of silica nanoballs by *in situ* transmission electron microscopy and finite element method simulations
- 374 Effect of composition and heat treatment on MnBi magnetic materials
- 382 Comparison between dislocation dynamics model predictions and experiments in precipitation-strengthened Al–Li–Sc alloys
- 396 Phase field microelasticity model of dislocation climb: Methodology and applications
- 411 Affinities for topological arrangements in grain structures
- 421 Growth of abnormal planar faceted grains in nanocrystalline nickel containing impurity sulphur
- 435 Corrigendum to “Inverse Hall–Petch behavior in diamantane stabilized bulk nanocrystalline aluminum” [Acta Mater. 60 (2012) 5850–5857]
- 436 Corrigendum to “Recrystallization of Cu(In,Ga)Se₂ thin films studied by X-ray diffraction” [Acta Mater. 61 (2013) 4347–4353]
- 437 Corrigendum to “A new approach to dislocation creep” [Acta Mater. 60 (2012) 1695–1702]