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EDUCATION

B. Sc. in Applied Physics (1st Class Honors); June 1978;
Strathclyde University, Glasgow, Scotland.

D. Phil. Feb. 1982;
University of Oxford, Oxford, England.

PROFESSIONAL EXPERIENCE

Research Associate	Department of Metallurgy, University of Illinois	1982 - 1983
Visiting Assistant Professor	Department of Metallurgy, University of Illinois	1983-1984
Assistant Professor	Department of Metallurgy, University of Illinois	1984-1989
Associate Professor	Department of Materials Science and Engineering, University of Illinois	1989-1995
Professor	Department of Materials Science and Engineering, University of Illinois	1995-present
Interim Department Head	Department of Materials Science and Engineering, University of Illinois	2003 - 2004
Department Head	Department of Materials Science and Engineering, University of Illinois	2004-present
Donald B. Willett Professor of	Department of Materials Science and Engineering,	2005-present

	Engineering	University of Illinois

ADMINISTRATIVE EXPERIENCE

Chair of the Metallurgy Division • Organization of division functions • Interacting with alumni from the metallurgy program • Teaching schedules	1992 – 1995and 2000 -2000
Associate Head of Department • Day-to-day management of the department • Oversight of building renovations. • Interacting with alumni. • Making teaching assignments. • Curriculum revision. • Development activities.	1995-1999
Assistant Dean, College of Engineering and Director of the Office of Continuing Engineering Education • Oversight of the online-educational program for the College of Engineering. • Oversight of professional development and short courses. • Developing strategy to make programs at least revenue neutral • Developing and implementing new marketing capabilities for OCEE • Oversight of the WYSE scholastic program	2001- 2003
Department Head, Materials Science and Engineering • Leadership and management of the department • Development of alumni relations and fund raising	2003 interim, 2004 -

- Building renovations
- Curriculum development
- ABET

PROFESSIONAL ACTIVITIES

Visiting staff Argonne National Laboratory,	1992
Chairmen USER committee of the Materials Research Laboratory Facilities	1989-1991
Member Operations committee MRL,	1991 – 2000
Visiting staff Argonne National Laboratory,	1992
Chairmen USER committee of the Materials Research Laboratory Facilities	1989-1991
Member Operations committee MRL,	1991 – 2000
Member of the Steering Committee for the Microscopy Center at Argonne National Laboratory	1992 – 2000
External Advisory Board for the Department of Materials Science and Engineering, Georgia Institute of Technology.	2006-
External review board for the Department of Materials Science and Engineering, Seoul National University,	2006 –
National Science Foundation Math and Physical Sciences Advisory Board	2006 -2009
Department of Energy, Basic Energy Sciences, Division of Materials Science and Engineering Council member.	2007- 2010
Key reader and member of the Board of Review of Metallurgical Transactions	1994 - present.
Principal Editor, Journal of Materials Research	1995 – present

Key editor for Focus issue of Journal of Materials Research	2004 - 2005.
Editorial Board International Materials Review.	2008-
Co-editor of a special issue on in-situ electron microscopy for Microscopy Analysis and Technique	2009
Editor-in Chief for an international materials review journal, in negotiation stage.	
University Materials Council (Council of materials science and engineering department heads and chairs in the United States)	
Member	2004-2005
Executive council	2005-2006
Vice Chair	2006-2007
Chair	2007-2008
	2007-2008
Co-chair NSF workshop on Future of materials science and engineering education	
Co-chair NSF/DOE gender equity workshop planning committee	2007-2008
Co-chair DOE/BES workshop on materials for extreme environments – Energetic Particles and Photons	2007
NIMS international advisory board	2007-2010

Conference organization

	1993
• Principal Organizer of the International Summer School on Radiation Effects, University of Illinois.	1994
• Principal Organizer of Symposium Y, Microstructure of Irradiated Materials, MRS Fall Meeting.	1996
• Co- Organizer of Symposium B, Microstructure Evolution During Irradiation MRS Fall Meeting	1999
• Co-organizer of Symposium A, Multiscale phenomena in materials- experiments and modeling,	

MRS Fall Meeting	2004
• Co-organizer of symposium "Materials for hydrogen Storage, MRS Fall Meeting	2005
• Co-organizer of symposium "in situ microscopy techniques" MRS Fall Meeting	2006
• Co-organizer of symposium "Materials for hydrogen Storage, MRS Fall Meeting, 2006	2007
• Co-organizer of focus session on "Deformation, fracture and friction" APS Spring meeting,	
Member of ASM, TMS, APS, ACS, MRS	

AWARDS AND RECOGNITIONS

Prizes for excellence in all years of the B. Sc. Program.	
Carnegie Travel Award,	1977
British Local Government Travel Award,	1977
DOE Award for Outstanding Scientific Accomplishment in Metallurgy and Ceramics, (Shared with H. K. Birnbaum).	1984
Elected a Senior Associate Member of Pembroke College, Oxford University,	1994
U.K. Science and Engineering Research Council Fellowship,	1994
Burnett Teaching Award, University of Illinois	
Advisors list for advising excellence,	1996, 1997 and 1999
Listed in Who's Who in America.	
MRS Fall 2004 Gold Trophy award for outstanding conference proceeding	2004
Donald B. Willett Professor of Engineering	2005 –
Midwest Microscopy and Microanalysis Society award for an outstanding poster	2005
PASI Conference, Argentina, second place poster award.	2006
Award winning art. Featured on December 2006 cover of Materials Today.	2006
Gordon conference on Physical Metallurgy award for an outstanding poster	2006
D.K.C. MacDonald Memorial Lecture Canadian Materials Society	2008

PUBLICATIONS

[1] I.M. Robertson.
Radiation enhanced diffusion in a Ag-4 atomic percent Al alloy. Applied Physics Dept., B. Sc. Thesis. Glasgow, Scotland: Strathclyde University, 1977.

[2] I.M. Robertson.
A TEM study of the radiation damage structure in alpha-iron. Dept. of Metallurgy and Science of Materials, D. Phil. Oxford, England: University of Oxford, 1982.

[3] I.M. Robertson, M.L. Jenkins, C.A. English.
Low-dose neutron-irradiation damage in a-iron. J. Nucl. Mater. 108 -109:209 1982.
http://dx.doi.org/10.1016/0022-3115(82)90489-5

[4] M.A. Kirk, I.M. Robertson, W.E. King, E.A. Ryan, A. Philippides.
HVEM Investigation of in-Situ Self-Ion Damage in Iron at 40 and 300 degrees K.
Symposium on the scientific basis for nuclear waste management. Boston, MA, USA.: Materials Research Society, 7; 1984.

[5] I.M. Robertson, H.K. Birnbaum.
Effect of hydrogen on the dislocation structure of deformed nickel. Scripta Metall. 18:269; 1984.
http://dx.doi.org/10.1016/0036-9748(84)90521-0

[6] I.M. Robertson, M.A. Kirk, W.E. King.
Formation of dislocation loops in iron by self-ion irradiations at 40K. Scripta Metall. 18:317; 1984.
http://dx.doi.org/10.1016/0036-9748(84)90444-7

[7] I.M. Robertson, T. Tabata, W. Wei, F. Heubaum, H.K. Birnbaum.
Hydrogen embrittlement and grain boundary fracture. Scripta Metall. 18:841; 1984.
http://dx.doi.org/10.1016/0036-9748(84)90407-1

[8] H.K. Birnbaum, D.S. Shih, I.M. Robertson.
HVEM environmental cell studies of hydrogen effects in alpha-titanium. Proc. Int. Symp. on Behavior of Lattice Imperfections in Materials. - In-situ Experiments with HVEM. Osaka; 1985.

[9] M.L. Jenkins, T.J. Chandler, I.M. Robertson, M.A. Kirk.
In-Situ Observations of the Development of Heavy-Ion Damage in Semiconductors. Proc 4th Int. Conf. on Semiconductors. Oxford UK, 7p; 1985.

[10] I.M. Robertson, G.M. Bond, H.K. Birnbaum, H.G.F. Wilsdorf.
Dislocation-free zones at crack tips: do they exist? Detroit, MI, Engl: Metallurgical Soc Inc, Warrendale, PA, USA, 119; 1985.

[11] D.W. Worthem, C.J. Altstetter, I.M. Robertson, D.F. Socie.
Cyclic deformation and damage microstructure in inconel 718. . Conf. on Fatigue. Sheffield, England; 1985.

[12] H.K. Birnbaum, I.M. Robertson, D.S. Shih, G.M. Bond, T. Tabata, .
Effect of environmental interactions on deformation and fracture of solids. Proc 11th Int. Cong. on Electron Microscopy. Kyoto, 971; 1986.

[13] G.M. Bond, I.M. Robertson, H.K. Birnbaum.
On the determination of the hydrogen fugacity in an environmental cell TEM facility. Scripta Metall. 20:653; 1986.
http://dx.doi.org/10.1016/0036-9748(86)90484-9

[14] M.A. Kirk, I.M. Robertson, J.S. Vetrano, M.L. Jenkins, L.L. Funk.
Collapse of Defect Cascades to Dislocation Loops During Self-Ion Irradiations of Fe, Ni and Cu at 30, 300 and 600 deg K. 13th international symposium on the effects of radiation on materials. Seattle, WA, USA, 24p; 1986.

[15] I.M. Robertson.
Microtwin formation in deformed nickel. Phil. Mag. A 54:821; 1986.

[16] I.M. Robertson, H.K. Birnbaum.
HVEM study of hydrogen effects on the deformation and fracture of nickel. Acta Metall. 34:353; 1986.
http://dx.doi.org/10.1016/0001-6160(86)90071-4

[17] I.M. Robertson, T. Tabata, W. Wei, F. Heubaum, H.K. Birnbaum.
Hydrogen embrittlement and grain boundary fracture. Perspect in Hydrogen in Metals: Pergamon Press, Oxford, Engl, 717; 1986.

[18] G.M. Bond, I.M. Robertson, H.K. Birnbaum.
The influence of hydrogen on deformation and fracture processes in high-strength aluminum alloys. Acta Metall. 35:2289; 1987.
http://dx.doi.org/10.1016/0001-6160(87)90076-9

[19] G.M. Bond, I.M. Robertson, H.K. Birnbaum.
Effect of boron on the mechanism of strain transfer across grain boundaries in Ni_3Al. J. Mater. Res. 2:436; 1987.

[20] G.M. Bond, I.M. Robertson, F.M. Zeides, H.K. Birnbaum.
`Sub-threshold' electron irradiation damage in hydrogen-charged aluminium. Phil. Mag. A 55:669; 1987.

[21] M.A. Kirk, I.M. Robertson, M.L. Jenkins, C.A. English, T.J. Black, J.S. Vetrano.
The collapse of defect cascades to dislocation loops. J. Nucl. Mater. 149:21; 1987.

http://dx.doi.org/10.1016/0022-3115(87)90494-6

[22] I.M. Robertson, C.A. English, M.L. Jenkins.
Dissolution of nitride precipitates in iron by low-dose neutron irradiation. Rad. Effects 102:53; 1987.

[23] L.T. Romano, I.M. Robertson, J.E. Greene, J.E. Sundgren.
Domain structure in epitaxial metastable zinc-blende $(GaAs)_{1-x}(Ge_2)_x$ (001) alloys. Phys. Rev. B 36:7523; 1987.
http://dx.doi.org/10.1103/PhysRevB.36.7523

[24] M.W. Bench, I.M. Robertson, M.A. Kirk.
In situ TEM observations of heavy ion damage in gallium arsenide. Fundamentals of Beam-Solid Interactions and Transient Thermal Processing. Boston, MA, USA: Mater. Res. Soc, 293; 1988.

[25] M.W. Bench, I.M. Robertson, M.A. Kirk.
The formation and recrystallization of amorphous zones produced in GaAs by ion irradiation. Amorphous Materials I, EMSA 1988.

[26] G.M. Bond, I.M. Robertson, H.K. Birnbaum.
Effects of hydrogen on deformation and fracture processes in high-purity aluminum. Acta Metall. 36:2193; 1988.
http://dx.doi.org/10.1016/0001-6160(88)90320-3

[27] I.M. Robertson, G.M. Bond, T.C. Lee, P. Rozenak, H.K. Birnbaum.
Evidence from in-situ tem straining studies for the mechanism of transfer of slip across a grain boundary. . Grain boundaries II, EMSA 1988.

[28] I.M. Robertson, G.M. Bond, T.C. Lee, D.S. Shih, H.K. Birnbaum.
Dynamic studies of deformation and fracture at grain boundaries. Journal de Physique Colloque 49:677; 1988.

[29] P. Rozenak, I.M. Robertson, H.K. Birnbaum.
HVEM studies of the effects of hydrogen on the deformation and fracture of AISI type 316 austenitic stainless steel. Israel J. Technol. 24:231; 1988.

[30] P. Rozenak, E. Siros, I.M. Robertson, H.K. Birnbaum, S. Spooner.
Hydrogen effects in aluminum. Israel J. Technol. 24:183; 1988.

[31] D.S. Shih, I.M. Robertson, H.K. Birnbaum.
Hydrogen embrittlement of a titanium: in situ TEM studies. Acta Metall. 36:111; 1988.
http://dx.doi.org/10.1016/0001-6160(88)90032-6

[32] H.K. Birnbaum, I.M. Robertson.
Hydrogen embrittlement. EMSA. San Antonio; 1989.

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[33] G.M. Bond, I.M. Robertson, H.K. Birnbaum.
On the mechanisms of hydrogen embrittlement of Ni_3Al alloys. Acta Metall. 37:1407; 1989.
http://dx.doi.org/10.1016/0001-6160(89)90172-7

[34] D.K. Dewald, T.C. Lee, I.M. Robertson, H.K. Birnbaum.
Dislocation structures ahead of advancing cracks. Scripta Metall. 23:1307; 1989.
http://dx.doi.org/10.1016/0036-9748(89)90050-1

[35] S.H. Doong, T.C. Lee, I.M. Robertson, H.K. Birnbaum.
Dynamic studies of the crack initiation and growth mechanisms in Al/SiC_p composites. Scripta Metall. 23:1413; 1989.
http://dx.doi.org/10.1016/0036-9748(89)90069-0

[36] T.C. Lee, I.M. Robertson, H.K. Birnbaum.
Anomalous slip in an FCC system. Ultramicroscopy 29:212; 1989.
http://dx.doi.org/10.1016/0304-3991(89)90248-9

[37] T.C. Lee, I.M. Robertson, H.K. Birnbaum.
An HVEM in situ deformation study of nickel doped with sulfur. Acta Metall. 37:407; 1989.
http://dx.doi.org/10.1016/0001-6160(89)90225-3

[38] T.C. Lee, I.M. Robertson, H.K. Birnbaum.
Prediction of slip transfer mechanisms across grain boundaries. Scripta Metall. 23:799; 1989.
http://dx.doi.org/10.1016/0036-9748(89)90534-6

[39] D.H. Mei, Y.W. Kim, D. Lubben, I.M. Robertson, J.E. Greene.
Growth of single-crystal metastable $(GaAs)_{1-x}(Si_2)_x$ alloys on GaAs and $(GaAs)_{1-x}(Si_2)_x$/GaAs strained-layer superlattices. Appl. Phys. Lett. 55:2649; 1989.
http://dx.doi.org/10.1063/1.102300

[40] I.M. Robertson, T.C. Lee, D.K. Dewald, H.K. Birnbaum.
In-situ TEM studies of deformation and fracture. EMSA. San Antonio; 1989.

[41] I.M. Robertson, T.C. Lee, P. Rozenak, G.M. Bond, H.K. Birnbaum.
Dynamic observations of the transfer of slip across a grain boundary. Ultramicroscopy 30:70; 1989.
http://dx.doi.org/10.1016/0304-3991(89)90174-5

[42] R. Subramanian, I.M. Robertson, H.K. Birnbaum.
Dislocation structures in deformed Ni_3Al. EMSA. San Antonio; 1989.

[43] J.S. Vetrano, M.W. Bench, I.M. Robertson, M.A. Kirk.

In situ studies of ion irradiation effects in an electron microscope. Metall. Trans. A 20A:2673; 1989.

[44] T.D.d.l. Rubia, K. Smalinskas, R.S. Averback, I.M. Robertson, H. Hseih, R. Benedek. *Mechanisms of cascade collapse* MRS Fall Meeting, vol. 138. Boston, 29; 1989

[45] H.K. Birnbaum, I.M. Robertson.
Environmental cell studies of deformation and fracture,. Proc. XII International Congress for Electron Microscopy; 1990.

[46] G.M. Bond, I.M. Robertson, H.K. Birnbaum.
Deformation and fracture at grain boundaries in Ni_3Al. In: S.H. Whang, C.T. Liu, D.P. Pope, J.O. Steigler, editors. high temperature aluminides and intermetallics: TMS 1990.

[47] T.X. Bui, E. Sirois, I.M. Robertson, M.A. Kirk.
Effects of internal hydrogen on the vacancy loop formation probability in Al. Symposium on effects of radiation on materials (15th). Nashville, United States, 21p; 1990.

[48] D.K. Dewald, T.C. Lee, J.A. Eades, I.M. Robertson, H.K. Birnbaum.
An environmental cell transmission electron microscope. Proc. XII International Congress for Electron Microscopy; 1990.

[49] D.K. Dewald, T.C. Lee, I.M. Robertson, H.K. Birnbaum.
Dislocation structures ahead of advancing cracks. Metall. Trans. A 21A:2411; 1990.

[50] T. Diaz de la Rubia, R.S. Averback, R. Benedek, I.M. Robertson.
Molecular dynamics studies of the primary state of radiation damage. Rad. Eff. and Def. Sol. 113:39; 1990.

[51] S.H. Doong, T.C. Lee, I.M. Robertson, H.K. Birnbaum.
An In-situ TEM study of the fracture mechanisms of Al/SiCp composites. In: P.K. Liaw, M.N. Gungor., editors. Fundamental Relationships between Microstructure and Mechanics Properties of Metal-Matrix composites: The Minerals, Metals and Materials Society, 301; 1990.

[52] T.C. Lee, I.M. Robertson, H.K. Birnbaum.
TEM in situ deformation study of the interaction of lattice dislocations with grain boundaries in metals. Phil. Mag. A 62:131; 1990.

[53] T.C. Lee, I.M. Robertson, H.K. Birnbaum.
In situ transmission electron microscope deformation study of the slip transfer mechanisms in metals. Metall. Trans. A 21A:2437; 1990.

[54] S. Paddada, I.M. Robertson, H.K. Birnbaum.
A microstructural investigation into the effect of the ambient atmosphere on chromium/polyimide interfaces. Mat. Res. Soc. Symp. Proc., vol. 181, 85; 1990.

[55] P. Rozenak, I.M. Robertson, H.K. Birnbaum.
HVEM studies of the effects of hydrogen on the deformation and fracture of AISI type 316 austenitic stainless steel. Acta Metall. et Mater. 38:2031; 1990.
http://dx.doi.org/10.1016/0956-7151(90)90070-W

[56] P. Rozenak, I.M. Robertson, H.K. Birnbaum.
HVEM studies of the effects of hydrogen on the deformation and fracture of aisi type 316 austenitic stainless steel In: N.R. Moody, A.W. Thompson, editors. Hydrogen effects on mechanical behavior: TMS; 1990.

[57] D. Shiing-Hwa, D.F. Socie, I.M. Robertson.
Dislocation substructures and nonproportional hardening. J. Engin. Mater. and Tech. Trans. ASME. 112:456; 1990.

[58] J.S. Vetrano, I.M. Robertson, R.S. Averback, M.A. Kirk.
Cascade collapse in copper and nickel. Symposium on effects of radiation on materials (15th). Nashville, TN (USA), 22p; 1990.

[59] J.S. Vetrano, I.M. Robertson, M.A. Kirk.
Experimental evidence favoring local melting within heavy-ion generated displacement cascades in copper. Scripta Metall. et Mater. 24:157; 1990.
http://dx.doi.org/10.1016/0956-716X(90)90584-4

[60] D.W. Worthem, I.M. Robertson, F.A. Leckie, D.F. Socie, C.J. Altstetter.
Inhomogeneous deformation in Inconel 718 during monotonic and cyclic loadings. Metall. Trans. A 21A:3215; 1990.

[61] M.W. Bench, I.M. Robertson, M.A. Kirk.
Transmission electron microscopy investigation of the damage produced in individual displacement cascades in GaAs and GaP. Nucl. Instr. Methods in Phys. Res., B B59-B60:372; 1991.
http://dx.doi.org/10.1016/0168-583X(91)95240-E

[62] D.K. Dewald, T.C. Lee, J.A. Eades, I.M. Robertson, H.K. Birnbaum.
An environmental cell transmission electron microscope. In: S.M. Bruemmer, E.I. Meletis, R.H. Jones, W.W. Gerberich, F.P. Ford, R.W. Staehle, editors. Parkins Symposium on Aspects of Stress Corrosion Cracking: TSM Warrendale, PA; 1991.

[63] I. Jencic, M.W. Bench, I.M. Robertson, M.A. Kirk.
A comparison of the amorphization induced in $Al_xGa_{1-x}As$ and GaAs by heavy-ion irradiation. J. Appl. Phys. 69:1287; 1991.
http://dx.doi.org/10.1063/1.347262

[64] I. Jencic, M.W. Bench, I.M. Robertson, M.A. Kirk, J. Peternelj.

Comparison of the rates of amorphization in the $Al_xGa_{1-x}As/GaAs$ system. Proceedings of the International Conference on Ion Beam Modification of Materials. Knoxville, TN, USA: Publ by Elsevier Science Publ BV (North-Holland), Amsterdam, Neth, 458; 1991.

[65] I. Jencic, M.W. Bench, I.M. Robertson, M.A. Kirk, J. Peternelj.
Comparison of the rates of amorphization in the $Al_xGa_{1-x}As/GaAs$ system. Nucl. Instr. Meth in Phys. Res. B 59-60:458; 1991.

[66] T.C. Lee, D.K. Dewald, J.A. Eades, I.M. Robertson, H.K. Birnbaum.
An environmental cell transmission electron microscope. Rev. Sci. Instr. 62:1438; 1991.
http://dx.doi.org/10.1063/1.1142464

[67] T.C. Lee, R. Subramanian, I.M. Robertson, H.K. Birnbaum.
Dislocation-grain boundary interactions in Ni_3Al effects of structure and chemistry. Scripta Metall. et Mater. 25:1265; 1991.
http://dx.doi.org/10.1016/0956-716X(91)90398-K

[68] D. Legzdina, I.M. Robertson, H.K. Birnbaum.
Hydride structures in Ti-aluminides subjected to high temperature and hydrogen pressure charging conditions. J. Mater. Res. 6:1230; 1991.

[69] I.M. Robertson, J.S. Vetrano, M.A. Kirk, M.L. Jenkins.
On the formation of vacancy type dislocation loops from displacement cascades in nickel. Phil. Mag. A 63:299; 1991.

[70] R. Subramanian, I.M. Robertson, H.K. Birnbaum.
Nickel segregation to grain boundaries in Ni_3Al alloys. Scripta Metall. et Mater. 25:2763; 1991.
http://dx.doi.org/10.1016/0956-716X(91)90153-R

[71] M.W. Bench, I.M. Robertson, M.A. Kirk.
Energetic electron beam induced recrystallization of ion implantation damage in semiconductors. Phase Formation and Modification by Beam-Solid Interactions. Boston, MA, USA: Mater. Res. Soc, 27; 1992.

[72] M.W. Bench, D.K. Tappin, I.M. Robertson.
On the suitability of the down-zone imaging technique to the study of radiation damage. Phil. Mag.Lett. 66:39; 1992.

[73] T.X. Bui, E. Sirois, I.M. Robertson, M.A. Kirk.
Effects of internal hydrogen on the vacancy loop formation probability in aluminum. Nashville, TN, USA: Publ by ASTM, Philadelphia, PA, USA, 463; 1992.

[74] J. Giapintzakis, M.A. Kirk, W.C. Lee, J.P. Rice, D.M. Ginsberg, I.M. Robertson, R. Wheeler.

Flux pinning defects induced by electron irradiation in $Y_1Ba_2Cu_3O_7$-d single crystals. Layered Superconductors: Fabrication, Properties and Applications. San Francisco, CA, USA: Mater. Res. Soc, 741; 1992.

[75] J. Giapintzakis, W.C. Lee, J.P. Rice, D.M. Ginsberg, I.M. Robertson, R. Wheeler, M.A. Kirk, M.O. Ruault.
Production and identification of flux-pinning defects by electron irradiation in $YBa_2Cu_3O_{7-x}$ single crystals. Phys. Rev. B 45:10677; 1992.
http://dx.doi.org/10.1103/PhysRevB.45.10677

[76] J. Kim, J.J. Alwan, D.V. Forbes, J.J. Coleman, I.M. Robertson, C.M. Wayman, F.H. Baumann, M. Bode, Y. Kim, A. Ourmazd.
Chemical characterization of (In,Ga)As/(Al,Ga)As strained interfaces grown by metalorganic chemical vapor deposition. Appl. Phys. Lett. 61:28; 1992.
http://dx.doi.org/10.1063/1.107651

[77] T.C. Lee, I.M. Robertson, H.K. Birnbaum.
Interaction of dislocations with grain boundaries in Ni_3Al. Acta Metall. et Mater. 40:2569; 1992.
http://dx.doi.org/10.1016/0956-7151(92)90326-A

[78] D. Legzdina, I.M. Robertson, H.K. Birnbaum.
Redistribution of Ti and Al in deuterium charged TiAl. Scripta Metall. et Mater. 26:1737; 1992.
http://dx.doi.org/10.1016/0956-716X(92)90544-O

[79] I.M. Robertson, T.C. Lee, H.K. Birnbaum.
Application of the in situ TEM deformation technique to observe how 'clean' and doped grain boundaries respond to local stress concentrations. Ultramicroscopy 40:330; 1992.
http://dx.doi.org/10.1016/0304-3991(92)90130-C

[80] I.M. Robertson, T.C. Lee, R. Subramanian, H.K. Birnbaum.
The effect of grain boundary chemistry on the slip transmission process through grain boundaries in Ni_3Al. In: W.A. Clark, U. Dahmen, C.L. Briant, editors. Structure and properties of materials, vol. 238: MRS; 1992.

[81] J.S. Vetrano, I.M. Robertson, R.S. Averback, M.A. Kirk.
Cascade collapse in copper and nickel. Nashville, TN, USA: Publ by ASTM, Philadelphia, PA, USA, 375; 1992.

[82] T.X. Bui, I.M. Robertson, J.L. Klatt, R.S. Averback, M.A. Kirk.
Radiation-induced segregation behavior in random and ordered face-centered cubic materials. J. Nucl. Mater. 205:312; 1993.
http://dx.doi.org/10.1016/0022-3115(93)90094-F

[83] H.E. Hanninen, T.C. Lee, I.M. Robertson, H.K. Birnbaum.

CV

In situ observations on effects of hydrogen on deformation and fracture of A533B pressure vessel steel. J. Mater. Engin. and Performance 2:807; 1993.

[84] I. Jencic, J. Peternelj, I.M. Robertson.
A computer simulation of local amorphization in III-V compounds. J. Phys 5:7907; 1993.
http://dx.doi.org/10.1088/0953-8984/5/43/004

[85] S.R. Peddada, I.M. Robertson, H.K. Birnbaum.
Hydride precipitation in vapor deposited Ti thin films. J. Mater. Res. 8:291; 1993.

[86] K. Smalinskas, G. Chen, J. Haworth, D.K. Tappin, I.M. Robertson, M.A. Kirk.
Study of the probability of vacancy loop formation in Ni-Cu and Ag-Pd alloys. J. Nucl. Mater. 205:483; 1993.
http://dx.doi.org/10.1016/0022-3115(93)90113-D

[87] D.K. Tappin, I.M. Robertson, M.A. Kirk, K. Smalinskas.
The role of melting temperature and electron-phonon coupling in the formation of clustered vacancy defects from heavy ion generated displacement cascades in Cu-Ni alloys. Scripta Metall. et Mater. 28:879; 1993.
http://dx.doi.org/10.1016/0956-716X(93)90370-8

[88] J.S. Vetrano, I.M. Robertson, M.A. Kirk.
Influence of dilute impurities on the evolution of defect cascades in nickel. J. Nucl. Mater. 205:68; 1993.
http://dx.doi.org/10.1016/0022-3115(93)90072-7

[89] J.S. Vetrano, I.M. Robertson, M.A. Kirk.
Effect of dilute solute additions on loop formation from heavy-ion produced displacement cascades in Ni. Phil. Mag. A 68:381; 1993.

[90] H.Z. Xiao, R. Tsu, I.M. Robertson, H.K. Birnbaum, J.E. Greene.
Growth of Si on Ge(001) by gas-source molecular beam epitaxy. Proceedings - Annual Meeting, Microscopy Society of America. Cincinnati, OH, USA: Publ by San Francisco Press Inc, San Francisco, CA, USA, 806; 1993.

[91] *Proceedings of the International Summer School on the Fundamentals of Radiation Damage*. vol. 216. Urbana, IL, USA: Elsevier Science Publishers B.V., Amsterdam, Neth, 361; 1994.

[92] T.M. Cockerill, D.V. Forbes, H. Han, B.A. Turkot, J.A. Dantzig, I.M. Robertson, J.J. Coleman.
Wavelength tuning in strained layer InGaAs-GaAs-AlGaAs quantum well lasers by selective-area MOCVD. J. Elect. Mater. 23:115; 1994.

[93] S. Rao Peddada, I.M. Robertson, H.K. Birnbaum.

Effects of thermal cycling in a reducing atmosphere on metal/polyimide interfaces. J. Mater. Res. 9:504; 1994.

[94] J. Shirokoff, I.M. Robertson, H.K. Birnbaum.
Slip transfer process through grain boundaries in HCP Ti. In: A.H. King, M.J. Mills, T.D. Sands, V. Vitek, editors. Materials Research Society Symposium, vol. 319. Boston, MA, USA: Publ by Materials Research Society, Pittsburgh, PA, USA, 263; 1994.

[95] D.K. Tappin, I.M. Robertson, M.A. Kirk.
The role of electron-phonon coupling in the formation of clustered vacancy defects in elemental metals from heavy-ion irradiation. Phil. Mag. A 70:463; 1994.

[96] B.A. Turkot, D.V. Forbes, H. Xiao, I.M. Robertson, J.J. Coleman, M.A. Kirk, L.E. Rehn, P. Baldo.
Ion damage studies in GaAs/$Al_{0.6}Ga_{0.4}$As/GaAs heterostructures. Materials Research Society Symposium, vol. 316. Boston, MA, USA: Materials Research Society, 81; 1994.

[97] T.X. Bui, I.M. Robertson, M.A. Kirk.
Cascade damage in the ordered alloy Ni_3Al. Materials Research Society Symposium, vol. 373. Boston, MA, USA: Materials Research Society, Pittsburgh, PA, USA, 63; 1995.

[98] I. Jencic, M.W. Bench, I.M. Robertson, M.A. Kirk.
Evidence for electronic energy loss processes stimulating solid phase epitaxial regrowth of spatially isolated amorphous regions in semiconductor systems. Microstructure of Irradiated Materials. Boston, MA, USA: Mater. Res. Soc, 481; 1995.

[99] I. Jencic, M.W. Bench, I.M. Robertson, M.A. Kirk.
Electron-beam-induced crystallization of isolated amorphous regions in Si, Ge, GaP, and GaAs. J. Appl. Phys. 78:974; 1995.
http://dx.doi.org/10.1063/1.360764

[100] I. Jencic, J. Peternelj, I.M. Robertson.
Modelling of amorphous zones in semiconductors by using the randomization-and-relaxation method. Nucl. Instr. Meth in Phys. Res. B 102:202; 1995.
http://dx.doi.org/10.1016/0168-583X(95)00283-9

[101] I. Jencic, I.M. Robertson, M.W. Bench, M.A. Kirk.
Evidence for electronic energy loss processes stimulating solid phase epitaxial regrowth of spatially isolated amorphous regions in semiconductor systems. United States, 7p; 1995.

[102] I.M. Robertson.
Investigation of the Loss of Ductility in Hydrogen Charged beta-Ti Alloys. United States, 15p; 1995.

[103] D.K. Tappin, I.M. Robertson, H.K. Birnbaum.

The formation of a periodic surface profile on Zr_3Al by anodic dissolution. Electron Microscopy and Analysis 1995. Proceedings of the Institute of Physics Electron Microscopy and Analysis Group Conference. Birmingham, UK: IOP Publishing, 225; 1995.

[104] D.K. Tappin, I.M. Robertson, H.K. Birnbaum.
Enhancement of the electron-irradiation-induced amorphization of Zr_2Ni and Zr_3Al by hydrogen. Phys. Rev. B 51:14854; 1995.
http://dx.doi.org/10.1103/PhysRevB.51.14854

[105] D.K. Tappin, I.M. Robertson, H.K. Birnbaum.
The enhancement of electron irradiation induced amorphization by hydrogen. Electron Microscopy and Analysis 1995; Proceedings of the Institute of Physics Electron Microscopy and Analysis Group Conference. Birmingham, UK: IOP Publishing, 487; 1995.

[106] D.K. Tappin, I.M. Robertson, M.A. Kirk.
An examination of the factors which determine the thermal spike lifetime of displacement cascade. Microstructure of Irradiated Materials. Boston, MA, USA: Mater. Res. Soc, 41; 1995.

[107] B.A. Turkot, D.V. Forbes, I.M. Robertson, J.J. Coleman, L.E. Rehn, M.A. Kirk, P.M. Baldo.
Ion implantation damage in $Al_{0.6}Ga_{0.4}As/GaAs$ heterostructures. J. Appl. Phys. 78:97; 1995.
http://dx.doi.org/10.1063/1.360586

[108] B.A. Turkot, I.M. Robertson, M.A. Kirk, L.E. Rehn, P.M. Baldo, D.V. Forbes, J.J. Coleman.
Ion damage production in $GaAs/Al_{0.6}Ga_{0.4}As$ heterostructures. MRS Fall meeting, Microstructure of Irradiated Materials. Boston, MA, USA: Mater. Res. Soc, 451; 1995.

[109] J.S. Vetrano, S.M. Bruemmer, I.M. Robertson.
In-situ TEM studies of recrystallization and grain growth. In: R. Sharma, P.L. Gai, M. Gajdardziska Josifovska, R. Sinclair, L.J. Whitman, editors. In Situ Electron and Tunneling Microscopy of Dynamic Processes, 177; 1995.

[110] H.J. Christ, A.M. Alvarez, H.K. Birnbaum, I.M. Robertson.
The influence of hydrogen on the fatigue behavior of the beta-titanium alloy Ti-3Al-8V-6Cr-4Mo-4Zr. Fatigue Fract. Eng. Mater. Struct. 19:1421; 1996.

[111] P.J. Ferreira, I.M. Robertson, H.K. Birnbaum.
Influence of hydrogen on the stacking-fault energy of an austenitic stainless steel. Mater. Sci. Forum 207-209:93; 1996.

[112] I. Jencic, I.M. Robertson.

Low-energy electron beam induced regrowth of isolated amorphous zones in Si and Ge. J. Mater. Res. 11:2152; 1996.

[113] I.M. Robertson, I. Jencic.
Regrowth of amorphous regions in semiconductors by sub-threshold electron beams. J. Nucl. Mater. 239:273; 1996.
http://dx.doi.org/10.1016/S0022-3115(96)00485-0

[114] I.M. Robertson, D. Teter.
Microscopic studies on hydrogen effects on mechanical properties. JOM 48:55; 1996.

[115] D.K. Tappin, I.M. Robertson, H.K. Birnbaum.
On the formation of a periodic surface structure on Zr_3Al during anodic dissolution. Acta Mater. 44:735; 1996.
http://dx.doi.org/10.1016/1359-6454(95)00207-3

[116] D. Teter, P. Ferreira, I.M. Robertson, H.K. Birnbaum.
An environmental cell TEM for studies of gas-solid interactions. New Techniques for Characterizing Corrosion and Stress Corrosion. Cleveland, OH, USA: TMS - Miner. Metals and Mater. Soc, 53; 1996.

[117] B.A. Turkot, B.W. Lagow, I.M. Robertson, D.V. Forbes, J.J. Coleman, L.E. Rehn, P.M. Baldo.
Depth dependence of ion implantation damage in $Al_xGa_{1-x}As/GaAs$ heterostructures. J. Appl. Phys. 80:4366; 1996.
http://dx.doi.org/10.1063/1.363395

[118] H.Z. Xiao, I.M. Robertson, H.K. Birnbaum.
Effects of hydrogen on the microstructure and microchemistry of Ti_3Al-Nb intermetallics at high temperatures and high pressures. J. Mater. Res. 11:2186; 1996.

[119] I. Jencic, J. Peternelj, I.M. Robertson.
Randomization-and-relaxation model revisited. Rad. Eff. and Def. Sol. 142:449; 1997.

[120] I. Jencic, I.M. Robertson, J. Skvarc.
Electron beam induced recrystallization of amorphous zones in semiconductors. 33rd International Conference on Microelectronics, Devices and Materials. MIDEM Conference '97. Proceedings. Gozd Martuljek, Slovenia: MIDEM Soc. Microelectron., Electron. Components and Mater, 203; 1997.

[121] I. Jencic, I.M. Robertson, J. Skvarc.
Determination of the electron beam-induced shrinkage rates of isolated amorphous zones in germanium. Materials Research Society Symposium - Proceedings, vol. 439. Boston, MA, USA: Materials Research Society, Pittsburgh, PA, USA, 691; 1997.

[122] I.J. Jencic, I.M. Robertson, J. Skvarc.

Determination of the electron beam-induced shrinkage rates of isolated amorphous zones in germanium. Microstructure Evolution During Irradiation. Boston, MA, USA: Mater. Res. Soc, 691; 1997.

[123] B.W. Lagow, B.A. Turkot, I.M. Robertson, L.E. Rehn, P.M. Baldo, S.D. Roh, D.V. Forbes, J.J. Coleman.
Amorphization mechanisms in $Al_3Ga_{1-x}As$. Microstructure Evolution During Irradiation. Boston, MA, USA: Mater. Res. Soc, 197; 1997.

[124] M. Menezes, I.M. Robertson, H.K. Birnbaum.
Novel technique to improve adhesion between metal-polymer interfaces. Materials Research Society Symposium, vol. 445. Boston, MA, USA: MRS, Warrendale, PA, USA, 269; 1997.

[125] M.E. Menezes, I.M. Robertson, H.K. Birnbaum.
Technique to measure thermodynamic adhesion of copper-polyimide interfaces. Electronic Packaging Materials Science IX. . Boston, MA, USA: Mater. Res. Soc, 257; 1997.

[126] S. Rao Peddada, I.M. Robertson, H.K. Bimbaum.
Growth of Ti thin films on sapphire substrates. J. Mater. Res. 12:1856; 1997.

[127] J.S. Vetrano, S.M. Bruemmer, L.M. Pawlowski, I.M. Robertson.
Influence of the particle size on recrystallization and grain growth in Al-Mg-X alloys. . Mater. Sci. Eng. A 238:1; 1997.

[128] P.J. Ferreira, I.M. Robertson, H.K. Birnbaum.
Hydrogen effects on the interaction between dislocations. Acta Mater. 46:1749; 1998.
http://dx.doi.org/10.1016/S1359-6454(97)00349-2

[129] B.W. Lagow, B.A. Turkot, I.M. Robertson, J.J. Coleman, S.D. Roh, D.V. Forbes, L.E. Rehn, P.M. Baldo.
Ion implantation in $Al_xGa_{1-x}As$: damage structures and amorphization mechanisms. IEEE Journal of Selected Topics in Quantum Electronics 4:606; 1998.
http://dx.doi.org/10.1109/2944.720470

[130] B.A. Turkot, I.M. Robertson, L.E. Rehn, P.M. Baldo, D.V. Forbes, J.J. Coleman.
On the amorphization process in $Al_{0.6}Ga_{0.4}As/GaAs$ heterostructures. J. Appl. Phys. 83:2539; 1998.
http://dx.doi.org/10.1063/1.366630

[131] I.M. Robertson, D. Teter.
Controlled Environment Transmission Electron Microscopy. Miscrosc. Res. Tech. 42:260; 1998.

[132] J.D. Cohen, D. Kwon, C.-C. Chen, H.-C. Jin, E. Hollar, I. Robertson, J.R. Abelson.

Electronic transitions in mixed phase crystalline/amorphous silicon in the low crystalline fraction regime. MRS Symp.-Proc. 557:495; 1999.

[133] K. Daewon, C. Chih-Chiang, J.D. Cohen, J. Hyun-Chul, E. Hollar, I. Robertson, J.R. Abelson.
Electronic transitions associated with small crystalline silicon inclusions within an amorphous silicon host. Phys. Rev. B 60:4442; 1999.
http://dx.doi.org/10.1103/PhysRevB.60.4442

[134] P.J. Ferreira, I.M. Robertson, H.K. Birnbaum.
Hydrogen effects on the character of dislocations in high-purity aluminum. Acta Mater. 47:2991; 1999.
http://dx.doi.org/10.1016/S1359-6454(99)00156-1

[135] E.P. Hollar, I.M. Robertson, I. Jencic.
Orientation and temperature dependence of electron-induced crystallization in Si and Ge. Microstructural Processes in Irradiated Materials, vol. 540. Boston, MA, USA: Mater. Res. Soc, 67; 1999.

[136] I. Jencic, I.M. Robertson, J. Skvarc.
Electron beam induced regrowth of ion implantation damage in Si and Ge. Nucl. Instr. Meth in Phys. Res. B 148:345; 1999.
http://dx.doi.org/10.1016/S0168-583X(98)00781-2

[137] B.W. Lagow, I.M. Robertson, L.E. Rehn, J.J. Coleman.
Microstructure evolution in low-temperature, ion-implanted $Al_xGa_{1-x}As$. MRS Symp.-Proc. 540:3; 1999.

[138] D.B. Lillig, D. Legzdina, I.M. Robertson, H.K. Birnbaum.
Explanation for the environmental sensitivity of Ni_3Al. MRS Symp.-Proc. 552:8; 1999.

[139] M. Menezes, I.M. Robertson, H.K. Birnbaum.
Measurement and improvement of the adhesion of copper to polyimide. J. Mater. Res. 14:4025; 1999.

[140] M.W. Bench, I.M. Robertson, M.A. Kirk, I. Jencic.
Production of amorphous zones in GaAs by the direct impact of energetic heavy ions. J. Appl. Phys. 87:49; 2000.
http://dx.doi.org/10.1063/1.371825

[141] L.M. Dougherty, I.M. Robertson, J.S. Vetrano.
TEM study of dynamic continuous recrystallization in a superplastic Al-4Mg-0.3Sc alloy. Materials Research Society Symposium, vol. 601. Boston, MA, USA: Materials Research Society, Warrendale, PA, USA, 25; 2000.

[142] I. Jencic, I.M. Robertson.

Regrowth of heavy-ion implantation damage by electron beams. Mater. Sci. in Semiconductor Proc. 3:311; 2000.
http://dx.doi.org/10.1016/S1369-8001(00)00049-4

[143] M. Jouiad, B.W. Lagow, I.M. Robertson, D.H. Lassila.
In-situ TEM deformation studies of dislocation generation and motion in high-purity Mo single crystals. Materials Research Society Symposium, vol. 578. Boston, MA, USA: Materials Research Society, Warrendale, PA, USA, 113; 2000.

[144] B.W. Lagow, I.M. Robertson, L.E. Rehn, P.M. Baldo, J.J. Coleman, T.S. Yeoh.
Compositional variation of microstructure in ion-implanted $Al_xGa_{1-x}As$. J. Mater. Res. 15:2043; 2000.

[145] L.M. Dougherty, I.M. Robertson, J.S. Vetrano, S.M. Bruemmer.
A microstructural study of the effect of particle aging on dynamic continuous recrystallization in Al-4Mg-0.3Sc. Mater. Sci. Forum 357-359:93; 2001.

[146] E.P. Hollar, I.M. Robertson, I. Jencic.
Crystallization of isolated amorphous zones in semiconductor materials. Ion Beam Synthesis and Processing of Advanced Materials. Boston, MA, USA: Mater. Res. Soc, 14; 2001.

[147] I. Jencic, E.P. Hollar, I.M. Robertson.
Electron-induced regrowth of isolated amorphous zones in GaAs. Nucl. Instr. Methods in Phys. Res., B 175-177:197; 2001.
http://dx.doi.org/10.1016/S0168-583X(01)00339-1

[148] B.W. Lagow, I.M. Robertson, M. Jouiad, D.H. Lassila, T.C. Lee, H.K. Birnbaum.
Observation of dislocation dynamics in the electron microscope. Mater. Sci. Eng. A, A309-A310:445; 2001.
http://dx.doi.org/10.1016/S0921-5093(00)01699-3

[149] I.M. Robertson.
Controlled environment transmission electron microscopy. Advances in Materials Problem Solving with the Electron Microscopy. Boston, MA, USA: Mater. Res. Soc, 57; 2001.

[150] I.M. Robertson.
The effect of hydrogen on dislocation dynamics. Engineer. Fract. Mech. 68:671; 2001.
http://dx.doi.org/10.1016/S0013-7944(01)00011-X

[151] I.M. Robertson, J. Robach, B. Wirth.
Mechanical properties of irradiated materials. International Conference Nuclear Energy in Central Europe 2001. Portoroz, Slovenia: Nucl. Soc. Slovenia, 3; 2001.

[152] D.F. Teter, I.M. Robertson, H.K. Birnbaum.

The effects of hydrogen on the deformation and fracture of b-titanium. Acta Mater. 49:4313; 2001.
http://dx.doi.org/10.1016/S1359-6454(01)00301-9

[153] I. Jencic, J. Skvarc, E.P. Hollar, I.M. Robertson.
Computer image analysis of shrinkage of isolated amorphous zones in semiconductors induced by electron beam. Nucl. Instr. Methods in Phys. Res., B 186:126; 2002.
http://dx.doi.org/10.1016/S0168-583X(01)00892-8

[154] P. Sofronis, I.M. Robertson.
Transmission electron microscopy observations and micromechanical/continuum models for the effect of hydrogen on the mechanical behaviour of metals. Phil. Mag. A. 82:3405; 2002.
http://dx.doi.org/10.1080/01418610210148823

[155] H. Xiao, I.M. Robertson, H.K. Birnbaum.
Deuterium driven phase transitions in the Ti_3Al intermetallic. Acta Mater. 50:3671; 2002.
http://dx.doi.org/10.1016/S1359-6454(02)00180-5

[156] L. Chun-Ming, L. Chang-Hui, I.M. Robertson, A. Rockett.
Microstructural and microchemical analysis of chalcopyrite $Cu(In,Ga)Se_2$ films. Compound Semiconductor Photovoltaics. Symposium. San Francisco, CA, USA: Mater. Res. Soc, 169; 2003.

[157] L.M. Dougherty, I.M. Robertson, J.S. Vetrano.
Fundamental process responsible for continuous dynamic recrystallization: an in-situ TEM study. Hot Deformation of Aluminum Alloys III. San Diego, CA, USA: TMS - Miner. Metals and Mater. Soc, 27; 2003.

[158] L.M. Dougherty, I.M. Robertson, J.S. Vetrano.
Direct observation of the behavior of grain boundaries during continuous dynamic recrystallization in an Al-4Mg-0.3Sc alloy. Acta Mater. 51:4367; 2003.
http://dx.doi.org/10.1016/S1359-6454(03)00262-3

[159] B.E. Gore, S. Harnish, H. Padilla, B.J. Robinson, A.J. Beaudoin, J.A. Dantzig, I.M. Robertson, H. Weiland.
High temperature properties and processing of AA7050. Hot Deformation of Aluminum Alloys III. San Diego, CA, USA: TMS - Miner. Metals and Mater. Soc, 255; 2003.

[160] I. Jencic, E.P. Hollar, I.M. Robertson.
Crystallization of isolated amorphous zones in semiconductors. Phil. Mag. 83:2557; 2003.
http://dx.doi.org/10.1080/1478643031000119976

[161] H.A. Padilla, S.F. Harnish, B.E. Gore, A.J. Beaudoin, J.A. Dantzig, I.M. Robertson, H. Weiland.

High temperature deformation and hot rolling of AA7055. Metallurgical Modeling for Aluminum Alloys - Proceedings from Materials Solutions Conference 2003. Pittsburgh, PA., United States: ASM International, 1; 2003.

[162] J.S. Robach, I.M. Robertson, B.D. Wirth, A. Arsenlis.
In-situ transmission electron microscopy observations and molecular dynamics simulations of dislocation-defect interactions in ion-irradiated copper. Phil. Mag. 83:955; 2003.
http://dx.doi.org/10.1080/0141861031000065329

[163] I.M. Robertson, J. Robach, B. Wirth, A. Arsenlis.
Dislocation behavior during deformation-combining experiments, simulation and modeling. Multiscale Phenomena in Materials - Experiments and Modeling Related to Mechanical Behavior, vol. 779. San Francisco, CA, USA: Mater. Res. Soc, 15; 2003.

[164] P. Sofronis, I.M. Robertson, Y. Liang, D.F. Teter, N. Aravas.
Recent advances in the study of hydrogen embrittlement at the University of Illinois. International Conference on Hydrogen Effects on Material Behaviour and Corrosion Deformation Interactions. Moran, WY, USA: TMS, 537; 2003.

[165] A.M. Alvarez, I.M. Robertson, H.K. Birnbaum.
Hydrogen embrittlement of a metastable β-titanium alloy. Acta Mater. 52:4161; 2004.
http://dx.doi.org/10.1016/j.actamat.2004.05.030

[166] K. Hattar, J. Gregg, J. Han, T. Saif, I.M. Robertson.
In situ TEM observations of grain growth in nanograined thin films. Materials Research Society Symposium, vol. 854. Boston, MA, United States: Materials Research Society, Warrendale, PA 15086, United States, 101; 2004.

[167] K. Al-Fadhalah, C.N. Tome, A.J. Beaudoin, I.M. Robertson, J.P. Hirth, A. Misra.
Modeling texture evolution during rolling of a Cu-Nb multilayered system. Phil. Mag. 85:1419; 2005.
http://dx.doi.org/10.1080/14786430412331333338

[168] A.J. Beaudoin, J.A. Dantzig, I.M. Robertson, B.E. Gore, S.F. Harnish, H.A. Padilla.
Development of a Two Phase Model for the Hot Deformation of Highly Alloyed Aluminum. United States, 42p; 2005.

[169] B.G. Clark, I.M. Robertson, L.M. Dougherty, D.C. Ahn, P. Sofronis.
High-temperature dislocation-precipitate interactions in Al alloys: an in situ transmission electron microscopy deformation study. J. Mater. Res. 20:1792; 2005.
http://dx.doi.org/10.1557/JMR.2005.0224

[170] D.M. Follstaedt, K. Hattar, J.A. Knapp, I.M. Robertson.

In situ TEM investigation of abnormal grain growth in nanocrystalline nickel. Materials Research Society Symposium vol. 907. Boston, MA, United States: Materials Research Society, Warrendale, PA 15086, United States, 40; 2005.

[171] J.A. Gregg, K. Hattar, C.H. Lei, I.M. Robertson.
Mechanisms of grain growth in free-standing nanograined gold thin films. Materials Research Society Symposium, vol. 907. Boston, MA, United States: Materials Research Society, Warrendale, PA 15086, United States, 57; 2005.

[172] S.F. Harnish, H.A. Padilla, B.E. Gore, J.A. Dantzig, A.J. Beaudoin, I.M. Robertson, H. Weiland.
High-temperature mechanical behavior and hot rolling of AA705X. Metall. and Mater. Trans. A 36 A:357; 2005.

[173] K. Hattar, J. Han, M.T.A. Saif, I.M. Robertson.
In situ transmission electron microscopy observations of toughening mechanisms in ultra-fine grained columnar aluminum thin films. J. Mater. Res. 20:1869; 2005.
http://dx.doi.org/10.1557/JMR.2005.0233

[174] D. Legzdina, I.M. Robertson, H.K. Birnbaum.
Oxidation behavior of a single phase g-TiAl alloy in low-pressure oxygen and hydrogen. Acta Mater. 53:601; 2005.
http://dx.doi.org/10.1016/j.actamat.2004.10.013

[175] C. Lei, C.-M. Li, A. Rockett, I.M. Robertson, W. Shafarman.
Application of advanced microstructural and microchemical microscopy techniques to chalcopyrite solar cells. Materials Research Society Symposium, vol. 865. San Francisco, CA, United States: Materials Research Society, Warrendale, PA 15086, United States, 93; 2005.

[176] C.-M. Li, I.M. Robertson, M.L. Jenkins, J.L. Hutchison, R.C. Doole.
In situ TEM observation of the nucleation and growth of silver oxide nanoparticles. Micron 36:9; 2005.
http://dx.doi.org/10.1016/j.micron.2004.07.001

[177] I.M. Robertson, A. Beaudoin, K. Al-Fadhalah, L. Chun-Ming, J. Robach, B.D. Wirth, A. Arsenlis, D. Ahn, P. Sofronis.
Dislocation-obstacle interactions: Dynamic experiments to continuum modeling. Mater. Sci. Engin A 400-401:245; 2005.
http://dx.doi.org/10.1016/j.msea.2005.04.002

[178] I.M. Robertson, B.D. Wirth, C.M. Li, B. Clark, J.A. Vandersall.
Dislocation-radiation obstacle interactions: developing improved mechanical property constitutive models. Trans. Amer. Nucl. Soc. 93:473; 2005.

[179] M. Zhang, E.A. Olson, R.D. Twesten, J.G. Wen, L.H. Allen, I.M. Robertson, I. Petrov.

In situ transmission electron microscopy studies enabled by microelectromechanical system technology. J. Mater. Res. 20:1802; 2005.
http://dx.doi.org/10.1557/JMR.2005.0225

[180] G.S. Cargill, III, I.M. Robertson.
Design and Accreditation for Materials Programs. J. Mater. Educ. 28:119; 2006.

[181] B.E. Clark, G.Liu, I.M. Robertson.
In-situ TEM Deformation Study Dislocation-Precipitate Interactions in Al Alloys Microscopy and Microanalysis. Chicago; 2006.

[182] M. Dadfarnia, P. Sofronis, I. Robertson, B.P. Somerday, G. Muralidharan, D. Stalheim.
Numerical Simulation of Hydrogen Transport at a Crack Tip in a Pipeline steel. 6th International Pipeline Conference. Calgery, Alberta, Canada. . 2006.

[183] K. Hattar, J.H. Han, D.M. Follstaedt, S.J. Hearne, T.A. Saif, I.M. Robertson.
Deformation and failure processes operating in ultra-fine grain materials. International Conference on Fracture. Greece; 2006.

[184] K. Hattar, J.J. Han, T. Saif, I.M. Robertson, D.M. Follstaedt, S.J. Hearne.
Correlating dislocation behavior with macroscopic mechanical properties directly in the TEM through use of a novel tensile test device. . Microscopy and Microanalysis. Chicago; 2006.

[185] C. Lei, A. Rockett, I.M. Robertson, W.N. Shafarman, M. Beck.
Void formation and surface energies in Cu(InGa)Se_2. J. Appl. Phys. 100:073518; 2006.
http://dx.doi.org/10.1063/1.2357422

[186] C.H. Lei, A.A. Rockett, I.M. Robertson, N. Papathanasiou, S. Siebentritt.
Interface reactions and Kirkendall voids in metal organic vapor-phase epitaxy grown Cu(In,Ga)Se_2 thin films on GaAs. J. Appl. Phys. 100:114915; 2006.
http://dx.doi.org/10.1063/1.2397282

[187] H.A. Padilla, C.D. Smith, A.J. Beaudoin, J. Lambros, I.M. Robertson.
Evolution of microstructure and plastic dissipation in zirconium during high rate deformation. Proceedings of the 2006 SEM Annual Conference and Exposition on Experimental and Applied Mechanics, vol. 2. Saint Louis, MO, United States: Society for Experimental Mechanics Inc., Bethel, CT 06801, United States, 824; 2006.

[188] J.S. Robach, I.M. Robertson, H.J. Lee, B.D. Wirth.
Dynamic observations and atomistic simulations of dislocation-defect interactions in rapidly quenched copper and gold. Acta Mater. 54:1679; 2006.
http://dx.doi.org/10.1016/j.actamat.2005.11.038

[189] P. Sofronis, I.M. Robertson.

Viable mechanisms of hydrogen embrittlement-a review. Uppsala, Sweden: AIP, 64; 2006.
http://dx.doi.org/10.1063/1.2213060

[190] B. Miller, J. Fenske, D. Su, C.-M. Li, L. Dougherty, I.M. Robertson.
Grain boundary responses to local and applied stress: an in situ tem deformation study. MRS Fall meeting Boston: MRS; 2006.

[191] D.D. Graham, L.F. Culnane, M. Sulic, C.M. Jensen, I.M. Robertson.
Ti EELS standards for identification of catalytic species in $NaAlH_4$ hydrogen storage materials. J. Alloys and Compds. 446-447:255; 2007.
http://dx.doi.org/10.1016/j.jallcom.2007.04.246

[192] C. Lei, C.M. Li, A. Rockett, I.M. Robertson.
Grain boundary compositions in Cu(InGa)Se_2. J. Appl. Phys. 101:024909; 2007.
http://dx.doi.org/10.1063/1.2426962

[193] I.M. Robertson, D. Lillig, P.J. Ferreira, H. Xiao.
A brief review of the role of electron microscopy in revealing the atomistic processes of hydrogen embrittlement. International Forum on Hydrogen-Material Interaction. Kyushu University; 2007.

[194] I. M. Robertson, B. D. Wirth, M. Briceno, J. Fenske. Dislocation-radiation obstacle interactions: Developing improved mechanical property constitutive models. Trans. Amer. Nucl. Soc.;96:835. 2007.

[195] M. Dadfarnia, P.Sofronis, I.M. Robertson, B.P. Somerday.
Hydrogen/plasticity interactions at an axial crack in pipeline steel. ASTM 2008.

[196] K. Hattar, M.J. Demkowicz, A.Misra, I.M. Robertson, R.G. Hoagland.
Arrest of He bubble growth in Cu-Nb multilayer nanocomposites. Scripta Materialia 58:541,2008.

[197] H.A. Padilla, II, C.D. Smith, J. Lambros, A.J. Beaudoin, I.M. Robertson.
Effects of Deformation Twinning on Energy Dissipation in High Rate Deformed Zirconium. Metall. and Mater. Trans. A 38 A:2916, 2007.

[198] I.M. Robertson, P. Ferriera, G. Dehm, R. Hull, E. Stach.
Visualizing the behavior of dislocations – seeing is believing. MRS Bulletin, 33, p 122-31, 2008.

[199] K. Hattar, D.M. Follstaedt, J.A. Knapp, I.M. Robertson.
Defect structures created during abnormal grain growth in pulsed-laser deposited nickel. Acta Mater. 56:794, 2008.

[200] Changwook Kim, Wenhua Gu, Martha Briceno, Ian M. Robertson, Hyungsoo Choi, Kyekyoon (Kevin) Kim
Copper Nanowires with a Five-Twinned Structure Grown by Chemical Vapor Deposition, Advanced Materials 20, Pages: 1859-1863, 2008.

[201] Khaled Jabr Hasan Al-Fadhalah, Chun-Ming Li, A.J. Beaudoin, D.A. Korzekwa, I.M. Robertson
Microplastic processes developed in pure Ag with mesoscale annealing twins. *Acta Materialia*, 56, p 5764-74, 2008.

[202] Yoshitaka Matsukawa, Martha Briceno and Ian M. Robertson.
Combining in situ transmission electron microscopy and molecular dynamics computer simulations to reveal the interaction mechanisms of dislocations with stacking-fault tetrahedron in nuclear materials. Microscopy Research and Technique 72 p 284-292, 2009.

[203] B.D. Miller, J.L.W. Warwick and I.M. Robertson
Deformation Twinning in a Nitrogen-Strengthened 21Cr-6Ni-9Mn Austenitic Steel. To be submitted to Acta Materialia.

[203] D. Graham, J. Graetz, J. Reilly and I. M. Robertson, *Electron microscopy of AlH_3: the role of dopant in reversible alane. To be submitted to* J of Phys. Chem C

[204] D.D. Graham, L.-L. Wang, [1] D. D. Johnson, I. M. Robertson
On the reversibility of hydrogen-storage reactions in $Ca(BH_4)_2$:microstructural and chemical characterization via experiment and density functional theory. Submitted to J of Phys. Chem C.

[205] K. Hattar, D. Follstaedt, J.A. Knapp, I.M. Robertson.
Unexpected annealing structure and grain growth mechanisms in nanograined FCC metals. Advanced Materials special issue. To be submitted May 2009.

PATENTS

1. Embedded cluster metal organic microinterface and process for producing the same. Patent awarded 2002.

2. TEM MEMS device Holder and Method of Fabrication
M. Zhang, I. Petrov, J. Wen, E. Stach, L.H. Allen, I. M. Robertson and E.Olson

US patent Application, Provisional Appl. Serial No 60,591,716

BOOKS EDITED

1. Fundamentals of radiation damage
   Eds. I. M. Robertson, R. S. Averback, D. K. Tappin and L. E. Rehn
   Proceedings of the International Summer School on the Fundamentals of Radiation damage, Urbana IL 61801Journal of Nuclear Materials, 216, 1994.

2. Microstructure Evolution During Irradiation Materials Research Society
   Eds.I. M. Robertson, L.E. Rehn, S. J. Zinkle, W. Phythian.
   Symposium Proceedings. 439 1997. Materials Research Society, Pittsburgh, PA, USA.

3. Microstructure Evolution During Irradiation Materials Research SocietySymposium Proceedings. v 439 1997. Materials Research Society,Pittsburgh, PA, USA. 726 Proceedings of the 1996 MRS Fall SymposiumEds.I. M. Robertson, G. S. Was, L. W. Hobbs, and T. D. de la Rubia.

4. Multiscale phenomena in materials- experiments and modeling
   I. M. Robertson, D. H. Lassila, B. Devincre and R. Phillips.
   Symposium Proceedings Materials Research Society, Pittsburgh, PA, USA, **578**.

5. Materials for Hydrogen Storage – 2004
   Michael J. Haben, Ian M. Robertson, Roland Strumpf and Tom Voigt
   Symposium Proceedings Materials Research Society,Pittsburgh PA USA, 837