

Resumé of Hamish L. Fraser

Ohio Regents Eminent Scholar
Professor of Materials Science & Engineering

Department of Materials Science & Engineering
The Ohio State University
2041 College Road
Columbus, OH 43210
(614) 292-2708 (614) 292-7523 (fax)
e-mail: fraser.3@osu.edu

1945 Hillside Drive
Upper Arlington, OH 43221
USA
(614) 486-8670

Birth Date: July 3, 1948

Marital Status: Married, 3 Children

Nationality: USA

Education:

<u>Degrees</u>	<u>Institution</u>	<u>Date</u>	<u>Field</u>
B.Sc.(1st Class Hons)	University of Birmingham, U.K.	1970	Physical Metallurgy
Ph.D.	University of Birmingham, U.K.	1972	Physical Metallurgy

Positions Held:

Research Associate	University of Birmingham (UK)	1972(3 months)
Assistant Professor	University of Illinois	1973-78
Assistant Director	Center for Electron Microscopy, University of Illinois	1973-74
Associate Professor	University of Illinois	1978-1979
1980-84		
Senior Research Scientist	United Technologies Research Center	1979-80
Adjunct Associate Professor	University of Illinois	1979-80
Visiting Scientist	Max-Planck Institut für Metallforschung, Institut für Werkstoffwissenschaften	1988
Professor	University of Illinois	1984-89
Adjunct Professor	University of Illinois	1989-90
Visiting Professor	University of Liverpool (UK)	1986-90
Senior Visitor	University of Cambridge (UK)	1990-92

Present Positions:

Ohio Regents Eminent Scholar & Professor	The Ohio State University	1989-
Professor of Materials Science and Technology (Hon.)	University of Birmingham (UK)	1988-2010

STUDENTS GRADUATED

To date:

43 Ph.D. Degrees

36 M.S. Degrees

On-going Ph.D. Students: 12

Other Scholarly Activities:

North Atlantic Treaty Organization (NATO) (Office National d'Études et de Recherche Aéronautique, Paris). This involved two lectures per day for one week, and subsequent trips (about once per year).

Government of Western Australia -- (Technology Development Authority)

Employed by the Government of Western Australia in the area of *technology development*., his specific duties were to develop a plan for technology development in Western Australia, including details of how *materials engineering* would be enhanced. These plans became cabinet policy. Responsibilities included preparation of presentations made by the Deputy Premier.

Bond University, Surfers Paradise, Australia

Consulting at a one week retreat to establish the College of Science and Technology.

Science and Engineering Research Council (UK); Strategy Working Group/Materials Commission

Served on Strategy Working Group, reporting to Materials Commission of the Science and Engineering Research Council. This group was charged with the responsibility of developing a strategy for materials research in the UK.

External Advisory Committee, Dept. of Materials Science and Metallurgy, University of Cambridge.

Peer Review: Serves as a reviewer for numerous journals and agencies, including the NSF-DMR Equipment and Facilities Panel.

USAF Scientific Advisory Board, Materials Panel. New World Vistas: to develop strategies for the Air Force of the 21st Century. 1995

USAF Scientific Advisory Board, Materials Panel. To review R&D programs in Structures and Materials at Wright Laboratories, WPAFB 1996

Defense Research and Engineering, Pentagon (Tri-Service), Technology Area Review and Assessment, Member of the Materials and Processes Panel, 1998, 1999

National Materials Advisory Board, National Academies, Board Member, 2000-2004.

USAF Scientific Advisory Board, Board Member, 2002-2006

Computational Materials Science Network (CMSN): Scientific Oversight Committee Member 2003-2005

Los Alamos National Laboratory, Matls. Science & Techn. Division Review Comm., Member 2004-07

TMS, Materials Processing & Manufacturing Division: Vice-Chairperson 2004-2005

Awards

Fellow of ASM 1993

Lumley Research Award, College of Engineering, OSU 1995

Fontana Teaching Award, Department of Materials Science & Engineering, OSU 1995

Fellow of the Institute of Materials, 2001

Fellow of TMS 2005

Consulting

Air Force research Laboratory (Wright-Patterson AFB through UES Inc.)

(previously Los Alamos National Laboratory, Ribbon Technology Inc., General Electric Company ,
Pratt & Whitney, Westinghouse Central Research Labs, United Technologies Research Center,
Draper Laboratories, Inc., A.O.Smith Inc, Mitre Corporation)

Other

Member, Ohio Science and Technology Roundtable 1990-94

Member, President's and Provost's Advisory Committee, OSU 1989-

Member, Executive Committee, Center for Materials Research, OSU 1989-99

Head Coach, University of Illinois Rugby Club 1980-87

PUBLICATIONS & INVITED PAPERS

Research has been undertaken in three main areas, namely analytical electron microscopy; materials processing of advanced materials, and integrated computational materials science and engineering. Much of his current interest involves the physical metallurgy of titanium alloys. The following publications and invited papers result from his work.

a) *PUBLICATIONS*

1. Direct Observations of the Annealing of Stacking Fault Tetrahedra in Gold and Voids in NiAl, *Jerkon, Annr.*, 155, 1971, p.410. With M.H. Loretto and R.E. Smallman.
2. Voids in the Intermetallic Compound, NiAl. Conf. on "Voids Formed by Irradiation of Reactor Materials, Eds. Pugh, Loretto and Norris, *BNES*, 1971, p. 177. With M.H. Loretto, R.E. Smallman and R.J. Wasielewski.
3. Direct Observations of the Annealing of Stacking-Fault Tetrahedra in Gold Using High Voltage Electron Microscopy, *Phil. Mag.* 28, 1973, p.1043. With M.H. Loretto and R.E. Smallman.
4. Oxidation-Induced Defects in NiAl, *Phil. Mag.* 28, 1973, p.639. With M.H. Loretto and R.E. Smallman.
5. The Plastic Deformation of NiAl Single Crystals Between 300K and 1050K; Part I: Experimental Evidence on the Role of Kinking and Uniform Deformation in Crystals Compressed Along $\langle 001 \rangle$, *Phil Mag.* 28, 1973, p.651. With M.H. Loretto and R.E. Smallman.
6. The Plastic Deformation of NiAl Single Crystals Between 300K and 1050K; Part II: The Mechanism of Kinking and Uniform Deformation, *Phil. Mag.* 28, 1973, p.667. With M.H. Loretto and R.E. Smallman.
7. The Origin of Dislocation with $b = \langle 110 \rangle$ in Single Crystals of β -NiAl Compressed Along $\langle 001 \rangle$ at Elevated Temperatures, *Scripta Metallurgica*, 8, 1974, p. 1049. With N.J. Zaluzec.
8. A Study of Kinking in Zinc and NiAl Single Crystals, "High Voltage Electron Microscopy", Academic Press, London, Eds. P.R. Swann, C.J. Humphreys, M.J. Goringe and R.E. Smallman, 1974, 273. With E.G. Tapetado, M.H. Loretto and R.E. Smallman.
9. A Note on the Increase in Usable Foil Thickness in Scanning Transmission Electron Microscopy, *Phil Mag.* 31, 1975, p.255. With I.P. Jones.
10. On the Feasibility of Quantitative Microchemical Analysis of Thin Metal Foils, 33rd Ann. Proc. Electron Microscopy Soc. Amer., Las Vegas, Nevada, 1975, Ed. C.W. Bailey, p. 106. With N.J. Zaluzec.
11. Annealing of Point Defects in Quenched NiAl, *Phil. Mag.* 32, 1975, p. 873. With M.H. Loretto, R.E. Smallman and R.J. Wasielewski.
12. Carbides in Alloys of Vanadium, Proc. 4th Int. Conf. On the Strength of Metals and Alloys, Nancy, France, 2, 727, 1976. With C. Fleur and C.A. Wert.
13. Computer Simulation of Defect Images Using Scanning Transmission Electron Microscopy, Invited paper for ITTRI/SEM, 1976, Toronto, pp.329-36, Ed. O. Johari, 1976. With I.P. Jones and M.H. Loretto.
14. A modified Specimen Stage for X-ray Analysis in TEM, *J. Phys. E.* 9, 1976, pp. 1051-52. With N.J. Zaluzec.
15. Microchemical Analysis of Thin Metal Foils, Proc. 34th Annual Meeting of EMSA, Miami Beach, ed.G.W.Bailey, Claitor's Publ. Baton Rouge, LA, 1976, p. 420. With N.J. Zaluzec.
16. Imaging and Elemental Analysis of Defect Structures in STEM, *Electron Microscopy*, 1, (Proc. 6th Europ. Cong. on Electron Microscopy, Jerusalem, 1976, Ed. D. Brandon, p. 180.
17. X-ray Absorption Effects in Thin Metals Foils, Proc. Workshop on Analytical Electron Microscopy, Cornell Univ., Ithaca, NY, MSC Report #2763, 1976, pp. 118-120. With N.J. Zaluzec.

18. Examples of Microdiffraction Using the Stationary Diffraction Pattern Technique in STEM, Proc. of AEM Workshop, Cornell Univ., MSC Report #2763, 1976, pp. 217-221. With N.J. Zaluzec.
19. Carbides in Alloys of V, 4th. Int. Conf. on Strength of Metals and Alloys, 1976, 2, 727. With C.F. Fluhr and C.A. Wert.
20. Limiting Factors in Specimen Thickness in Conventional and Scanning Electron Microscopy, Phil. Mag., 35, 1977, pp. 159-76. With M.H. Loretto and I.P. Jones.
21. Comments on "Energy Dispersive X-ray Measurements of Thin Metal Foils," Scripta Met., 11, 1977, pp. 257-59. With N.J. Zaluzec.
22. Threshold Voltage for Damage in Si under Electron Bombardment, Scripta Met., 11, 1977, pp. 47-49.
23. Solid-phase Crystallization of Si Films in Contact with Al Layers, JAP, 48, 1977, p. 2897. With I.D. Ward, C.A. Evans, R. Blattner, and J.M. Harris.
24. Recent Advances in Analytical Electron Microscopy, Proc. 14th Ann. Electron Microscopy Colloquium, May 1977, Ames Lab., Iowa State Univ., Amer. Ed. F. Labs, p. 135.
25. Contamination and Absorption Effects in X-ray Microchemical Analysis of Thin Metal Films, Proc. 8th Int. Conference on X-ray Optics and Microanalysis, Ed. R. Ogilvie and D. Wittry, Boston, MA, 1977, p. 112. With N.J. Zaluzec.
26. Microstructural Observations of Metal Powders Using Analytical Electron Microscopy, Proc. Int. Conf. on Rapid Solidification Processing, Principles and Technologies, Eds. R. Mehrabian, B.H. Kear and M. Cohen, Reston, VA, 1977, p. 270. With R.D. Field.
27. Microstructural Observations of Metal Powders Using Analytical Electron Microscopy, Met. Trans. A, 9A, 1978, p. 131. With R.D. Field.
28. Elemental Analysis of Second Phase Carbides Using Electron Energy Loss Spectroscopy, 11th. Ann Scanning Electron Microscopy Symp., 1, 1978, p. 627.
29. Elemental Analysis in a V-Ti-C Alloy Using Electron Energy Loss Spectroscopy, Proc. 9th Int. Cong. on Electron Microscopy, Toronto, 1978, ed. J.M. Sturgess, p. 552.
30. An Analytical Electron Microscopy Study of the High Temperature Carbide Formed in a V-5Ti-C Alloy, Met. Trans., 11A, 693, 1980. With S.M. Bruemmer, C.P. Fluhr, D.V. Beggs, and C.A. Wert.
31. Analytical Transmission Electron Microscopy on the 10nm Scale, Micron, 11, 1980, p. 267
32. Analytical Transmission Electron Microscopy in Materials Science, Proc. 5th International Symposium on "High Purity Materials in Science and Technology," Dresden, 1980, II, p. 238.
33. Microstructural Analysis of Rapidly Solidified Superalloy Powders, Proc. 2nd Int. Conf. on Rapid Solidification Processing, Principles and Technologies, Reston, VA, March 1980. With R.D. Field and E.H. Aigeltinger.
34. Microstructure of Rapidly Solidified Powders, Superalloys 1980, Proc. Int. Conf. on Superalloys, Seven Springs, PA, 1980, ASM, ed. J.K. Tien, et al., p. 439. With R.D. Field and A.R. Cox.
35. STEM Analysis of Grain-Boundaries in Cemented Carbides, Journal of the American Ceramic Society, 63 (3-4), pp. 194-196, 1980. With N.K. Sharma, I.D. Ward, and W.S. Williams.
36. Surface Melting of an Alloy under Steady State Conditions, Proc. AIME Conf. on Lasers in Metallurgy (Chicago, IL, 1981) publ. TMS-AIME, K. Mukherjee and J. Mazumder, eds., 131, 1981. With J.A. Sekhar and R. Mehrabian.
37. The Effect of Specimen Thickness on X-ray Profiles in STEM, Phil. Mag., 43, 1587, 1981. With M.E. Twigg and M.H. Loretto.
38. Quantitative Energy-Disperse X-ray Analysis of Thin Foils with Pure Elemental Standards, Analytical Electron Microscopy - 1981 (R.H. Geiss, eds., San Francisco Press), 61, 1981. With J.M. Brown and M.H. Loretto.
39. Analytical Transmission Electron Microscopy in Minerals Processing, Process Minerology in Extractive Metallurgy, Mineral exploitation, and Energy Resources, publ. TMS-AIME, 267, 1981. With K.C. Hsieh and M.E. Twigg.
40. On the Validity of Monte Carlo Calculations for the Interpretation of X-ray Profiles in STEM, Analytical Electron Microscopy - 1981 (R.H. Geiss, eds., San Francisco Press), 99, 1981. With M.E. Twigg.
41. The Effect of Surface Layers on Thin Foil Standards on the Accuracy of Quantitative EDS Claitor's Publ. Div., Baton Rouge, LA, p. 484, 1982. With J.M. Brown.

42. Spatial Resolution of Stem and EDS in an Al-Ge Alloy, *ibid.*, p. 490, 1982. With M.E. Twigg and J.P. McCarthy.
43. Structure Determination of Ni₃Mo Using Convergent Beam Electron Diffraction, SEM-82, p. 686, 1982. With M.J. Kaufman.
44. A Comparison of Two Models for the Characteristic Fluorescence Correction in Thin Foil Analysis, *Microbeam Analysis - 1982*, ed., K.F.J. Heinrich, San Francisco Press, San Francisco, CA, p.37, 1982. With M.E. Twigg.
45. A Determination of Symmetry Changes in Ordered Alloys by Convergent Beam Electron Diffraction, *ibid.*, p.54, 1982.
46. Specimen Preparation Limitations in Quantitative Thin Foil Microanalysis, *ibid.*, p. 93. With J.P. McCarthy.
47. An Example of the Use of Combined Techniques of Analytical TEM for Phase Identification, *ibid.*, p. 393, 1982. With D.G. Konitzer.
48. Microstructural Characterization of Rapidly Solidified Materials, Proc. 3rd Conference on Rapid Solidification Processing; Principles and Technologies, NBS, Gaithersburg, MD, Dec. 1982, p.56. With J.B.VanderSande.
49. A Technique for the Observation of Rapid Solidification and Annealing of Powders in a Transmission Electron Microscopy, *Scripta Met.*, 17, 141, 1983. With M.J. Kaufman
50. Analysis of In-Situ Rapid Solidification of Submicron Al-Ge Eutectic Powders Using Transmission Electron Microscopy, *Met. Trans. A*, 14A, 623, 1983. With M.J. Kaufman.
51. Metastable Phase Formation in Rapidly Solidified Submicron Powders of Al-30.3at.% Ge Eutectic Alloy, *Materials Science and Engineering*, 57, 117, 1983. With M.J. Kaufman.
52. Formation and Thermal Stability of an Oxide Dispersion in a Rapidly Solidified Ti-Er Alloy, *Scripta Met.*, 17, 963, 1983. With D.G. Konitzer and B.C. Muddle.
53. Microstructure of Rapidly Solidified Aluminum Alloys, *Proceedings: Materials Research Society, Annual Meeting, Symposium F, Boston, MA, Nov. 14-17, 1983*, p.317. With J.W. Zindel, J.T. Stanley and R.D. Field.
54. Dynamic Compaction of Al Alloys, *Proceedings: Materials Research Society, Annual Meeting, Symposium F, Boston, MA, Nov. 14-17, 1983*, p.163. With J.W. Sears and B.C. Muddle.
55. A Study of a Cellular Phase Transformation in the Ternary Ni-Al-Mo Alloy System, *Met. Trans.*, 14A, 1561, 1983. With M.J. Kaufman, M.H. Loretto and J.A. Eades.
56. A Comparison of the Microstructures of As-Cast and Laser Surface Melted Ti-8Al-4Y, *Met. Trans.*, 14A, 1979, 1983. With D.G. Konitzer and B.C. Muddle.
57. Applications of Convergent Beam Electron Diffraction to Ni-base Superalloys, *J. Microsc. Spectrosc. Elec.*, 8, 1983, p.431
58. A Comparison of Two Models for the Characteristic X-ray Fluorescence Correction in Thin Foil Analysis, *J. Microsc.*, 1984, 133, 61. With M.E. Twigg.
59. A Microanalytical Study of Secondary Precipitation in RSR 143 Using Atom Probe Field Ion Microscopy and Analytical Transmission Electron Microscopy, "Superalloys 1984", ed. M. Gell, C.S. Kortovich, R.H. Bricknell, W.B. Kent and J.F. Radavich, *Met. Soc. AIME*, 1984, p.633. With M.E. Twigg, A.I. Melmed, R. Klein and M.J. Kaufman.
60. Rapidly Solidified Prealloyed Powders by Laser Spin Atomization, *Met. Trans.*, 15B, 1984, 149. With K.W. Walters, E.C. Heiser and D.G. Konitzer.
61. The Annealing of Vacancy Defects in β -NiAl I: Vacancy Loop Growth in As-Grown Single Crystals, *Phil. Mag.*, 50, 89, 1984. With A. Parthasarathi.
62. The Annealing of Vacancy Defects in β -NiAl II: The Role of Surface Oxidation on Vacancy Loop Growth in Slowly Cooled Crystals, *Phil. Mag.*, 50, 101, 1984. With A. Parthasarathi.
63. Refined Dispersions of Rare Earth Oxides in Ti-Al Alloys Produced by Rapid Solidification, *Proceedings of the Fifth International Conf. on Titanium, Munich, 1984*, 1, p.405. With D.G. Konitzer, B.C. Muddle, and R.Kirchheim.
64. The Production of Ultrafine Dispersions of Rare Earth Oxides in Ti Alloys Using Rapid Solidification, *Proceedings of the Fifth International Conference on Rapidly Quenched Metals, 1984*, 1, 953. With D.G. Konitzer, B.C. Muddle and R. Kirchheim.

65. Oxide Dispersions in Rapidly Solidified Ti Alloys, in "Rapidly Solidified Metastable Materials", ed. B.H. Kear and W.C. Giessen, Mat. Res. Soc. Symp. Proc., 28, 1984, Elsevier Sci. Publ. Co., p. 381. With D.G. Konitzer and R. Kirchheim.
66. Rapid Solidification and Dynamic Compaction of Ni-base Superalloy Powders, "Superalloys 1984", ed. M. Gell, C.S. Kortovich, R.H. Bricknell, W.B. Kent and J.F. Radavich, Met. Soc. AIME, 1984, p.487. With R.D. Field, S.J. Hales and W.O. Powers.
67. Microstructural Comparison of Rapidly Solidified Al-Base Powders Produced by Laser Surface Melting, Melt-Spinning and Atomization, Proceedings: International Powder Metallurgy Conference, Toronto, Ontario, June 17-22, 1984, p.455. With J.W. Zindel, J.T. Stanley and R.D. Field.
68. Microstructure of Some Rapidly Solidified Al-Base Alloys, Proceedings: Fifth International Conf. on Rapidly Quenched Metals, Wurzburg, W. Germany, Sept. 3-7 1984, p.941. With M.J. Kaufman, J.T. Stanley, D.C. Van Aken and R.D. Field.
69. Microstructural Analysis of Rapid Solidification and Undercooling in the Al-Ge System, Mat. Res. Soc. Symp. Proc., 28, 1984, Elsevier Sci. Publ. Co., p. 335. With M.J. Kaufman.
70. Precipitates in a Rapidly Solidified Al-Mn Alloy Possessing Icosahedral Symmetry, Mat. Sci. & Eng., 68, L17, 1984-85. With R.D. Field.
71. The Importance of Undercooling in the Formation of Non-Equilibrium Structures in the Al-Ge Alloy System, Int. Journal of Rapid Solidification, 1, 27, 1984-85. With M.J. Kaufman.
72. Driving Force for Discontinuous Coarsening in a Ni-Al-Mo Base Superalloy, Met. Trans A, 16A, 11. With A.W.Funkenbusch, T.A.Stephenson, and G. McCarthy.
73. Characterization of Metastable Crystalline Phases in the Al-Ge Alloy System, Acta Met., 33, 191, 1985. With M.J. Kaufman.
74. The Detection of Local Strains in Strained Layer Superlattices, Inst. Phys. Conf. Ser. No. 76, Section 7, Microsc. Semicond. Mater. Conf., Oxford 1985, p. 307. With D.M. Maher, C.J. Humphreys, C.J.D. Hetherington, R.V. Knoell and J.C. Bean.
75. The Microstructure of Rapidly Solidified Hyper-Eutectic Al-Be Alloys, Acta Met., 33, 963, 1985. With D.C. Van Aken.
76. The Production and Thermal Stability of A Refined Dispersion of Er_2O_3 in Ti_3Al Using Rapid Solidification Processing, Mat. Res. Soc. Symp. Proc., 39, p.437, 1985. With D.G. Konitzer.
77. Convergent Beam Electron Diffraction and Imaging of Strained Layer Superlattices, EMAG '85, Inst. Phys. Conf. Ser. No. 78, Chapter 2, Newcastle Upon Tyne, p. 49. With D.M. Maher, C.J. Humphreys, R.V. Knoell, J.B.Woodhouse and J.C. Bean.
78. Convergent-Beam Diffraction in the Characterization of Crystalline Phases, MRS Publ. "Materials Problem Solving with the Transmission Electron Microscope", 1986, p.143. With J.A Eades and M.J.Kaufman.
79. The Use of Convergent Beam Electron Diffraction to Determine Local Lattice Distortions in Ni-base Superalloys, Phil. Mag., 54 (1), p.79, 1986. With M.J. Kaufman and D.D. Pearson.
80. Dynamic Compaction of Al Alloys, in "Rapidly Solidified Al Alloys", ASTM STP 890, 1986, p.304. With J.W. Sears and D.J. Miller.
81. Rapid Solidification and Subsequent Analysis of Some Hypereutectic Al-base Alloys, in "Rapidly Solidified Al Alloys", ASTM STP 890, 1986, p.186. With J.W. Zindel, J.T. Stanley and R.D. Field.
82. The Nature of Dispersed Phases in Ti-0.7at%Er Prepared by Rapid Solidification Processing, Acta Met., 34(7), p.1269, 1986. With D.G. Konitzer, J.T. Stanley, and M.H. Loretto.
83. An Analytical Electron Microscopy Study of the Recently Reported " Ti_2Al Phase" in γ -TiAl Alloys, Scripta Met., 20, p. 103, 1986. With M.J. Kaufman, D.G. Konitzer, and R.D. Shull.
84. Constitution of an Al-37-5Ge Splat Quenched Foil: Implications on Nucleation Kinetics, Scripta Met., 20, p.125, 1986. With M.J. Kaufman and M. Ellner.
85. Site Occupancy in Solid Solutions of Nb in the Intermetallic Compounds TiAl and Ti_3Al , Scripta Met., 20, p. 265, 1986. With D.G. Konitzer and I.P. Jones.
86. The Interstitial Phase in Rapidly Solidified Alloys Based on the Al-Fe System, Scripta Met., 20, p. 415, 1986. With J.W.Zindel and R.D.Field.
87. Undercooling and Microstructural Evolution in Glass Forming Alloys, Hume-Rothery Memorial Symposium, (1986: New Orleans, LA), Undercooled Alloy Phases, Ed. E.W. Collings and C.C. Koch, TMS-AIME, Warrendale, PA, 1986, p.249. With M.J. Kaufman.

88. Nucleation in the Presence of a Metastable Liquid Miscibility Gap in the Aluminum Beryllium System, Hume-Rothery Memorial Symposium, 1986: New Orleans, LA), Undercooled Alloy Phases, Ed. E.W. Collings and C.C. Koch, TMS-AIME, Warrendale, PA, 1986, p.413. With D.C. Van Aken.
89. Microstructures and Properties of Rapidly Solidified Al-Fe-(Mo/Ce) Alloys, in "Aluminum Alloys: Their Physical and Mechanical Properties", E.A. Starke, Jr. and J.H. Sanders, Jr. Eds., Chameleon Press, Ltd., London, 1986, p. 279. With J.W. Zindel, R.D. Field, P. Kurath.
90. Mechanical Properties of Rapidly Solidified Al-4Be Alloys, in "Aluminum Alloys: Their Physical and Mechanical Properties", E.A. Starke, Jr. and J.H. Sanders, Jr. Eds., Chameleon Press, Ltd., London, 1986, p. 295. With D.C. Van Aken, P. Kurath.
91. The Formation of Microstructures in Rapidly Solidified Hypereutectic Al Alloys Containing Ni or Co, in "Aluminum Alloys: Their Physical and Mechanical Properties", E.A. Starke, Jr. and J.H. Sanders, Jr. Eds., Chameleon Press, Ltd., London, 1986, p.307. With J.T. Stanley, R.D. Field.
92. Rapid Solidification of Al Alloys, in "Aluminum Alloys: Their Physical and Mechanical Properties", E.A. Starke, Jr. and J.H. Sanders, Jr. Eds., Chameleon Press, Ltd., London, 1986, p.1321.
93. Laser Surface Melting of Ti Alloys Containing Er or La, in "Titanium: Rapid Solidification Technology", F.H. Froes and D. Eylon Eds., TMS-AIME, Warrendale, PA, 1986, p. 165. With S.A. Court, J.T. Stanley, D.G. Konitzer, M.H. Loretto.
94. Rapid Solidification Studies in Eutectoid Forming Ti Alloys, in "Titanium: Rapid Solidification Technology", F.H. Froes and D. Eylon Eds., TMS-AIME, Warrendale, PA, 1986, p. 211. With L.S. Chumbley M.A. Ohls.
95. Dislocations in Nb-Containing Ti₃Al, in "Titanium: Rapid Solidification Technology", F.H. Froes and D. Eylon Eds., TMS-AIME, Warrendale, PA, 1986, p. 249. With S.A. Court, S.A. Skewes, M.H. Loretto.
96. Rapidly Solidified Ti Alloy Powders, in "Titanium: Rapid Solidification Technology", F.H. Froes and D. Eylon Eds., TMS-AIME, Warrendale, PA, 1986, p. 77. With J.P.A. Lofvander, S.A. Court, R. Wheeler, J.W. Sears, D.A. Watson.
97. Structure and Magnetism of Quasicrystalline and Crystalline Al_{1-x}Mn_x Alloys, Phys. Rev. B, 1986, 34, 2960. With S.E. Youngquist, P.F. Miceli, D.G. Wiesler and H. Zabel.
98. Detection and Measurement of Local Distortions in a Semiconductor Layered Structure by Convergent-Beam Electron Diffraction, Appl. Phys. Lett., 50, 1987, p. 574. With D.M. Maher, C.J. Humphreys, R.V. Knoell and J.C. Bean.
99. Convergent Beam Electron Diffraction at Medium Voltages, Analytical Electron Microscopy - 1987, ed. D.C. Joy, San Francisco Press, p. 173. With V.K. Vasudevan.
100. Heteroepitaxial Strains and Interface Structure of Ge-Si Alloy Layers on Si (100), Inst. Phys. Conf. Ser. No. 87:section 2, 1987, p. 165. With E.P. Kvam, D.J. Eaglesham, C.J. Humphreys, D.M. Maher and J.C. Bean.
101. Metastable Phase Production and Transformation in Al-Ge Alloy Films by Rapid Crystallization and Annealing Treatment, Acta. Met., 35, 1987, p.1181. With M.J. Kaufman, and J.E. Cunningham, Jr..
102. The Thermal Stability of a Refined Dispersion of Erbium Particles in Rapidly Solidified Ti-Er and Ti-Al-Er Alloys, in "Processing of Structural Metals by Rapid Solidification", ed. F.H. Froes and S.J. Savage, ASM, Metals Park, 1987, p. 231. With J.P.A. Lofvander, S.A. Court, R. Kirchheim, D.G. Konitzer.
103. Microstructure and Properties of Rapidly Solidified Magnesium Lithium Alloys, in "Processing of Structural Metals by Rapid Solidification", ed. F.H. Froes and S.J. Savage, ASM, Metals Park, 1987, p. 429. With F.C. Gensburg.
104. Microstructure and Properties of Rapidly Solidified Material Consolidated by Dynamic Compaction and Hot Isostatic Pressing, in "Processing of Structural Metals by Rapid Solidification", ed. F.H. Froes and S.J. Savage, ASM, Metals Park, 1987, p. 133. With D.J. Miller and J.W. Sears.
105. The Production of Rapidly Solidified Ti Alloy Powders, in "Processing of Structural Metals by Rapid Solidification", ed. F.H. Froes and S.J. Savage, ASM, Metals Park, 1987, p. 223. With J.W. Sears, J.P.A. Lofvander, R. Wheeler, D.J. Miller and S.A. Court.

106. Thermal Stability of Rare-Earth Oxides in Ti When Annealed Above the α/β Transus, *Scripta Met.*, 21, 1987, p.859. With J.P.A. Löfvander, S.A. Court, R.Kirchheim and H.L. Fraser.
107. Dislocations in As-Cast and Deformed Samples of Ti₃Al and Ti-25Al-4Nb, *Scripta Met.*, 21, 1987, p.997. With S.A. Court and M.H. Loretto.
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1. "A Comparison of scanning Transmission Electron Microscopy and High Voltage Electron Microscopy", Argonne National Laboratories, May 1974
2. "Glide and Climb of Dislocations in NiAl", Rockwell International Science Center, Thousand Oaks, CA, February 1975.
3. "Hydride Precipitation in Refractory Metals", Carnegie-Mellon University, September 1975.
4. "Analytical Electron Microscopy", Stanford University, June 1976.
5. "Computer Simulation of Defect Images Using the Scanning Transmission Electron Microscopy," ITTRI/SEM, June 1976, Toronto.
6. "Imaging and Elemental Analysis of Defect Structures in STEM," 6th European Congress on Electron Microscopy, Jerusalem, Israel, September 1976.
7. "Analytical Electron Microscopy", Westinghouse Research Laboratories, Pittsburgh, PA, December 1976.
8. "Analytical Electron Microscopy," AIME Winter Meeting in Atlanta, Georgia, March 1977.
9. "Recent Advance in Analytical Electron Microscopy," 14th Annual Electron Microscopy Colloquim, Ames Lab , Iowa State University, May 1977.
10. "Microstructural Observations of Metal Powders Using Analytical Electron Microscopy," International Conference on "Rapid Solidification Processing Principles and Technologies," Reston, VA, November 1977.
11. "Analytical Electron Microscopy," Carnegie-Mellon University, April 1978.
12. "STEM and Its Application to Materials Science", Batelle Pacific Northwest Laboratories, June 1978.
13. "Analytical Electron Microscopy in Materials Science", Watson Research Center, IBM, Yorktown Heights, NY, September 1978.
14. "Applications of STEM to Materials Science", General Electric Corporate Research and Development Center, Schenectady, NY, September 1978.
15. "Analytical Electron Microscopy in Materials Science ", United Technologies Research Center, East Hartford, CT, November 1978.
16. "Analytical Transmission Electron Microscopy on the 10nm Scale." The 6th Australian Conference on Electron Microscopy, Monash University, Clayton, Vic., Australia, February 1980.
17. "Microstructural Analysis of Rapidly Solidified Superalloy Powder," second conference on Rapid Solidification Processing, Principles and Technologies, Reston, VA, March 1980.
18. "Applications of STEM to Materials Science," Connecticut Section of AIME, Wallingford, CT, April 1980.
19. "Analytical Transmission Electron Microscopy in Material Science," *Plenary Lecture*, 5th International Symposium on "High Purity Materials in Science and Technology," Dresden, DDR, May 1980.
20. "Analytical Transmission Electron Microscopy in Mineral Processing," Ann. Meeting of AIME, Chicago, 1981.
21. "Analytical Electron Microscopy in RSP," DARPA Materials Research Council Meeting on Rapid Solidification Technology, La Jolla, CA, 1981.
22. "Rapid Solidification Processing", Sangamon Valley Chapter of ASM, Decatur, IL, Nov. 1981.
23. "Quantitative Microchemical Analysis in AEM With and Without the Use of Standards," SEM/82, Anaheim, CA, April 1982.
24. "Microstructural Observations of Rapid Solidified Materials", NASA Lewis Research Center, Cleveland, OH, May 1982.
25. "Specimen Preparation Limitations in Quantitative Thin Foil Microanalysis," EMSA/MAS Meeting, Washington, DC, August 1982.

26. "Substitution for Chromium in Ni-base Superalloys using RSP", COSAM Workshop, NASA Lewis Research Center, Cleveland, OH, October 1982.
27. "Microstructural Characterization of Rapidly Solidified Materials," 3rd Conf. on RSP: Principles and Technologies, NBS, Gaithersburg, MD, December 1982. With J.B. Vander Sande.
28. "The Application of Convergent Beam Electron Diffraction to the Studies of Ni-base Alloys," Joint French-Belgian Electron Microscopy Societies Annual Meeting, Liege, Belgium, May 1983.
29. " Rapid Solidification Processing", General Motors Research Laboratories, Troy, MI, October 1983.
30. "Energy Dispersive X-ray Spectroscopy in Thin Foils," Workshop on AEM, Monash University, Clayton, Vic., Australia, May 1984.
31. "Rapid Solidification of Aerospace Materials", Aeronautical Research Laboratories, Melbourne, Australia, May 1984.
32. "Rapid Solidification Processing", Office National d'Etude et de Recherches Aerospatiale, Paris, France, NATO consultant mission, May 1984.
33. Four Seminars at ONERA, Paris, On RSP of Ti alloys, Al alloys, Ni-base Superalloys and Materials Processing Techniques, May 1984.
34. "Rapidly Solidified Ti Alloys", Max Planck Institut für Metallforschung, Institut für Werkstoffwissenschaften, Stuttgart, FRG, May 1984.
35. "Microstructures and Morphologies of Rapidly Solidified Particulate," AIME Ann. Meeting, New York City, Feb. 1985.
36. "Identification of Metastable Phases Using Convergent Beam Electron Diffraction," Electron Microscopy Society of America, Ann. Meeting, Louisville, KY, August 1985.
37. "Intermediate Voltage Electron Microscopy," Electron Microscopy Society of America, Ann. Meeting, Louisville, KY, August 1985
38. "Rapid Solidification and Processing of Powders," Int. Conf. on Al Alloys, June 1986, Charlottesville, VA.
39. "Microstructural Characterization of RSP Materials," 4th Conference on Rapid Solidification Processing: Principles and Technologies, December 1986, Santa Barbara, CA.
40. "Rapid Solidification Processing of Ti Alloys", ALCOA Research Center, Feb. 1987.
41. "Rapid Solidification of Ti-Aluminides", Dept. of Metallurgy, University of Wisconsin (Madison), April 1987.
42. "Convergent Beam Electron Diffraction at Intermediate Voltages", Microbeam Analysis Soc. Ann. Meeting, Hawaii, July, 1987.
43. "The Physical Metallurgy of Ti-Aluminides", ALCOA Centenary Symposium, August 1987.
44. "Lattice Strain and Lattice Parameter Measurements in the Transmission Electron Microscope", ASM-AIME Fall Meeting, Cincinnati, OH, October 1987
45. "Relationship between Processing, Microstructure and Properties of Ti₃Al", Los Alamos National Lab., Jan. 1988
46. "Applications of Convergent Beam Electron Diffraction in Materials Science", Max-Planck Institut für Metallforschung, Institut für Werkstoffwissenschaften, Stuttgart, BRD, March, 1988
47. "Rapid Solidification of Al and Mg Alloys", Max-Planck Institut für Metallforschung, Institut für Werkstoffwissenschaften, Stuttgart, BRD, February, 1988. 18th., March (3rd. and 9th.), 1988
48. "Processing and Properties of Ti-Aluminides", Max-Planck Institut für Metallforschung, Institut für Werkstoffwissenschaften, Stuttgart, BRD, March, 1988.
49. "Rapid Solidification Processing of Al, Mg and Ti Alloys", Centre de Recherche et Developpement de Voreppe, Cegedur Pechiney, Pechiney Aluminium, Voreppe, France, April, 1988.
50. "Phase Transformations in Ti Alloys", 6th. World Conference on Ti Alloys, Cannes, France, July 1988. With N.Paton.

51. "The Relevance of Local Lattice Parameter Measurements using CBED", EMSA/MAS Annual Meeting, Milwaukee, WI, August 1988
52. "Rapid Solidification", 9th. European Congress on Electron Microscopy, York, England, Sept. 1988
53. "Deformation Mechanisms in Ti₃Al and TiAl", 1988 Titanium Aluminides Meeting, AFWAL/Wright-Patterson AFB, Stratford, CT (Textron-Lycoming) November, 1988
54. "Deformation of Titanium Aluminides: A Question of Bonding", University of Liverpool, Liverpool, UK, November, 1988
55. "Deformation of Titanium Aluminides and the Influence of Covalent Bonding", University of Birmingham, Birmingham, UK, November, 1988
56. "Deformation of Titanium Aluminides: A Question of Bonding", Max-Planck Institut für Metallforschung, Institut für Werkstoffwissenschaften, Stuttgart, BRD, presented in December, 1988.
57. "Processing and Deformation Mechanisms of Nb Aluminides", High Temperature Materials Workshop, AFWAL, Materials Laboratory, Dayton, OH, December, 1988
58. "Processing and Deformation Behavior of Ti Aluminides", Department of Materials Science & Engineering, University of Cincinnati, Cincinnati, OH, Feb. 1989
59. "Deformation Mechanisms and Ductility of Ti Aluminides", Department of Chemical Engineering & Materials Sciences, University of Minnesota, Minneapolis, MN, Feb. 1989
60. "Characterisation of Metastable Microstructures", Indo-US Workshop on Metastable Microstructures, to be held in Goa, India, March 1989
61. "Microdiffraction Studies in Materials Science Applications", Los Alamos National Laboratory, Los Alamos, NM, March 1989
62. "Deformation Mechanisms in Ti Aluminides", Defence Metallurgical Research Laboratories, Hyderabad, India, to be presented in April 1989
63. "Deformation of Titanium Aluminides: A Question of Bonding", University of Florida, Gainesville, FL, April, 1989
64. "The Influence of Covalent Bonding on the Deformation Mechanisms and Ductilities of Ti-Aluminides", ASM Pacific Northwest Materials Conference, Seattle, WA, May 1989
65. "Deformation Mechanisms in the Intermetallic Compounds Ti₃Al and TiAl", University of Washington, Seattle, WA, May 1989
66. "Deformation Mechanisms and Ductility of Ti-Aluminides", The Ohio State University, Columbus, OH, May, 1989
67. "The Limits of Strain and Lattice Parameter Measurements by CBED", 47th. Ann. Meeting of EMSA, San Antonio, August 1989
68. "Determination of Covalency and Its Effect on the Deformation Mechanisms in Intermetallic Compounds", 47th. Ann. Meeting of EMSA, San Antonio, August 1989
69. "The Influence of Covalent Bonding on the Deformation Mechanisms and Ductilities of Ti-Aluminides", University of Cincinnati, Cincinnati, OH, September 1989
70. "Deformation Mechanisms in High temperature Intermetallic Compounds", Case Western Reserve University, Cleveland OH, September 1989
71. "Deformation Mechanisms in the Intermetallic Compounds TiAl and Ti₃Al", University of Liverpool, UK, November 1989
72. "The Influence of Covalent Bonding on the Deformation Mechanisms and Ductilities of Ti-Aluminides", University of Birmingham, UK, November 1989
73. "Deformation Mechanisms in the Ti Aluminides", Alcan Banbury Laboratories, Banbury, UK, December 1989
74. "The Influence of Covalent Bonding on the Deformation Mechanisms of Ti-Aluminides", Department of Physics, The Ohio State University, Columbus OH, February 1990

75. "The Influence of Covalent Bonding on the Deformation Mechanisms and Ductilities of Ti-Aluminides", Detroit Chapter of TMS, February 1990
76. "Deformation Mechanisms in Ti Aluminides", Symposium at ONERA, Paris, June 1990
77. "Factors Influencing the Deformation of Al₃Ti", Symposium at ONERA, Paris, June 1990
78. "The Influence of Covalent Bonding on the Deformation Mechanisms and Ductilities of Ti-Aluminides", Mitsubishi Materials Corp. Research Lab., Saitama, Japan, December 1990
79. "The Influence of Covalent Bonding on the Deformation Mechanisms and Ductilities of Ti-Aluminides", Columbus Chapter of ASM, January 1991
80. "The Influence of Covalent Bonding on the Deformation Mechanisms of Ti-Aluminides", Argonne National Lab., January 1991
81. "Characterization of Microcomposites and Nanophase Materials", ASM-AIME Spring Meeting, New Orleans, LA, February 1991
82. "Recent Advances in High Temperature Materials", Ohio Academy of Sciences, Columbus, OH, April 1991
83. "Applications of Convergent Beam Electron Diffraction in Materials Science", EMSORV/EMSA Meeting, Cincinnati, OH, May 1991
84. "Processing, Microstructure, Properties and Performance of Ti, Fe and Nb Aluminide Intermetallic Compounds", Euromat-91, Cambridge, UK, July 1991
85. "Charge Densities and Their Effect on Ductility Ti-Aluminides", TMS Fall Meeting, Cincinnati, OH, October 1991
86. "Ductility in Intermetallics: Deformation Mechanisms in Ti and Nb Aluminides", Department of Materials Science and Engineering, University of Cambridge, November 1991
87. "Ductility in Intermetallics: Deformation Mechanisms in Ti and Nb Aluminides", Department of Materials Engineering, Purdue University, November 1991
88. "Interface Studies in Intermetallic Matrix Composites", MRS Fall Meeting, Boston, MA, December 1991
89. "Microstructure and Fracture in Intermetallic Compounds", Gordon Conference, August 1992
90. "Structural Aspects of Intermetallic Compounds", IRC Conference on Advanced Materials, Birmingham, UK, September, 1992
91. "Transformation of Ti₃Al to TiAl in Ti-rich Ti-Al Alloys", PacRim Conference on Phase Transformations, Kona, HA, December 1992
92. "Ductility in Intermetallics: Deformation Mechanisms in Ti and Nb Aluminides", US-Korea Symposium on Advanced Materials, Seoul, Korea, December, 1992
93. "On the Experimental Determination of Low Order Structure Factors in Intermetallic TiAl by Energy Filtered Convergent Beam Electron Diffraction", (Invited), 1993, Proc. 51st Annual meeting of the Microscopy Society of America (MSA), Eds.: G. W. Bailey and C. L. Rieder, p.662. With S. Swaminathan, I. P. Jones, N. J. Zaluzec, and D. M. Maher
94. "Measurement of Low Order Structure Factors in the Intermetallic Compound TiAl using the Quantitative CBED method", (Invited), 1993, Edrs.: J. T. Armstrong, and J. R. Porter, Proceedings of 27th Annual Microbeam Analysis Society (MAS) meeting, p. s218. With S. Swaminathan, I. P. Jones, N. J. Zaluzec, and D. M. Maher
95. "Deformation Mechanisms in Ti and Nb Aluminides", Department of Materials Science and Engineering, North Carolina State University, Raleigh, NC, April 1993
96. "Development of a Co-Continuous ceramic Composite", ONR/ARPA Annual Meeting on Advanced Composites, Woods Hole, MA, June 1993
97. "Microstructure and Properties of an Al₂O₃ Co-Continuous Composite", ONR/ARPA Annual Meeting on Advanced Composites, Woods Hole, MA, June 1994
98. "Processing and Microstructural Development of Co-Continuous Ceramic Composites", University of Birmingham, Birmingham, UK. Dec. 1994
99. "Microstructure and Properties of Nb Aluminides", Cornell University, March 1995

100. "A Novel Intermetallic Compound and an Innovative Ceramic-based Composite", University of Göttingen, Göttingen, Germany, March 1995
101. "Microstructure and Properties of a New Set of Intermetallic Compounds based on the Nb Aluminides", Joint European Laboratory, Ispra, Italy, March 1995
102. "Materials Technology in the USA", University of Birmingham, April 1995
103. "Development of Nb-Based B2 Alloys for High Temperature Applications," TMS Fall Meeting, Cleveland, OH, October 1995
104. "Processing and Microstructure/Property Relationships in NbAlTi Intermetallic Compounds," TMS Fall Meeting, Cleveland, OH, October 1995
105. "Processing and Properties of Co-Continuous Ceramic Composites," TMS Fall Meeting, Cleveland, OH, October 1995
106. "Factors Affecting Ductility in Nb-based Aluminides", International Symposium on Advanced Materials and Technology for the 21st Century, 117th meeting of the Japan Institute of Metals, Honolulu, December 1995
107. "Ductile Nb Aluminide Intermetallic Compounds for High Temperature Applications", Annual Meeting of the German Physical Society, Regensburg, March 1996
108. "Novel Nb Aluminides for Elevated Temperature Applications", Lehigh University, April 1996.
109. "Development of a New Series of Nb Aluminides for Elevated Temperature Applications", Symposium on Processing & Design Issues in High Temperature Materials, Davos, Switzerland, May 1996
110. "Determination of accurate low order structure factors in TiAl and (and Si) using energy filtered CBED" Fifteenth Pfefferkorn conference on Electron Image and Signal Processing, May 18-22, 1996, Silver Bay, New York.
111. "Debye-Waller Factors and Sublattice ordering in TiAl", International Union of Crystallography, XVII Congress and General Assembly, August 1996, Seattle, WA.
112. "The Effect of Solute Elements on the Crystallization of Amorphous Alloys based on TiAl", in Symposium "Kinetically Determined Particle Shapes and the Dynamics of Solid:Solid Interfaces", ASM Fall Meeting, Cincinnati, OH, October 1996
113. "Factors Affecting Ductility in Ordered Nb Aluminides Intermetallic Compounds", TMS Fall Meeting, Cincinnati, OH, October 1996
114. "The Ordering State of Intermetallics: The Ordering Tie-Line", TMS/ASM Fall Meeting, October 1996, Cincinnati, OH.
115. "Characterization of the Micro-Mechanisms of Transmission of Strain Across Inter- and Intrapphase Interfaces in Lamellar TiAl", TMS/ASM Fall Meeting, October 1996, Cincinnati, OH.
116. "Deformation Behavior of Ordered Nb-Ti-Al Alloys", TMS/ASM Fall Meeting, October 1996, Cincinnati, OH.
117. "Development of Nb Aluminides for Structural Applications", Dayton Area Graduate Studies Institute, September, 1996
118. "Recent Developments in Nb Aluminides for Structural Applications", Cincinnati Chapter of ASM, October 1996, Cincinnati, OH.
119. "Development of Nb Aluminides for Structural Applications", Case Western Reserve University, October 1996, Cleveland, OH.
120. "Recent Developments in High Temperature Intermetallic Compounds, Metallic Multilayers, and Ceramic Composites", Technische Hochschule Darmstadt, October 1996, Darmstadt, Germany.
121. "The Ordered State of Alloyed Intermetallics: The Ordering Tie-Line", MRS Fall Meeting, December 1996, Boston, MA.
122. "Relationship Between Interface and Dislocation Structure and the Mechanical Properties of Metals and Intermetallics", MRS Fall Meeting, December 1996, Boston, MA.
123. "Structural Stabilities in Metallic Multilayers", Sandia National Laboratory, Livermore CA, December, 1996.

124. "Serendipity and Planning in Research", Presidential Address to the University of Birmingham Metallurgical Society, Birmingham, UK, March 1997.
125. "Development of Nb Aluminides and Structural Stabilities in Metallic Multilayers", General Electric, Corporate Research and development Laboratories, May 1997.
126. "Novel Nb Aluminides for Elevated Temperature Applications", Thermec 1997, July 1997
127. "Issues Involving Ductility, Toughness and Structural Stabilities in Intermetallics and Multilayered High Temperature Materials", Conference on Computer Aided Design of High Temperature Materials, Santa Fe, July 1997.
128. "Interface Properties and Phase Stabilities in Metallic Multilayers", TMS Fall Meeting, Indianapolis, September 1997.
129. "Structural Stabilities in Intermetallic Compounds and Multilayered Materials", Purdue University, October, 1997
130. "Structural Stabilities in Multilayered Materials", Göttingen, October 1997
131. "Ductility, Toughness and Structural Stabilities in Intermetallics and Multilayered Materials", Cambridge University, Cambridge, UK, November 1997
132. "Processing and Properties of Advanced Nb-based Intermetallics", PFAMVI, Singapore, November 1997.
133. "Strengthening and Toughening Issues in Nb-Ti Based Intermetallics", TMS Annual Meeting, San Antonio, February, 1998.
134. "The Interchange between Experimental and Computational Efforts in the Accelerated Maturation of Materials", Mardi Gras Conference, Baton Rouge, LA, February 1998.
135. "Microstructure and Mechanical Behavior of Nb Aluminides", 3rd. International Workshop on Ordered Intermetallic Alloys and Composites, HangZhou, PRC, April 1998.
136. "Ordering, Deformation Mechanisms, and Oxidation of B2 Nb-based Aluminides", Kyoto Workshop on High-Temperature Intermetallics, Kyoto, Japan, May 1998.
137. "Understanding Alloying Additions to TiAl", Workshop on TiAl, COST 513, Neuchâtel, Switzerland, June 1998.
138. "Co-Continuous Ceramic Composites", Robert Bosch Company, Stuttgart, Germany, July 1998.
139. "The Ordered State of Materials", Rosemont TMS, Oct. 1998.
140. "Development of B2 Niobium Aluminides and Structural Stability and Deformation of Metallic and Intermetallic Multilayered Materials", Schenectady ASM/TMS Local Chapter, November, 1998.
141. "Overview of CAMM", KAPL, November, 1998.
142. "Dislocation Interactions and Deformation Mechanisms in Two-Phase Alloys based on TiAl", TMS Annual Meeting, San Diego, February 1999.
143. "Physical Metallurgy of Ti Alloys", Ladish Corporation, May 1999.
144. "Deformation Mechanisms in TiAl and Development of B2 Niobium Aluminides", Oak Ridge National Laboratory, May, 1999.
145. "Ordered States and Phase Transitions in Intermetallics and Thin Metallic Films", IAC-2, Davos, August, 1999.
146. "The Role of Interfaces in the Deformation of Titanium Aluminides", International Workshop on Grain Boundaries, Birmingham, September, 1999.
147. "Accelerated Maturation of P/M Light Materials", TMS Fall Meeting, Cincinnati, November, 1999.
148. "Advanced Intermetallics and Refractory Alloys", BARC, Mumbai, India Nov. 1999
149. "HREM Characterization of Slip Transmission in Lamellar TiAl", TMS Annual Meeting, February, 2000.
150. "Use Of Elemental Powder Blends in the Formation of Complex Alloys using LENS™, TMS Annual Meeting, February, 2000.
151. "Phase Transitions in Metallic Multilayers", TMS Annual Meeting, February, 2000.

152. "Predicting the Behavior of Ti Alloys and Metallic Multilayered Materials", Department of Mechanical Engineering, Hong Kong University, May, 2000.
153. "Revolutionary Manufacturing & Design: Metallic Materials", 2015 Future Threat Technologies Symposium, Central Intelligence Agency, Langley, VA, August 4th, 2000
154. "A Combinatorial Approach to Developing Property/Microstructure Relationships in Titanium Alloys", TMS Annual Meeting, February, 2002
155. "The Accelerated Maturation of Micro- and Nano-Scaled Metallic Materials", Department of Materials Science and Engineering, University of Michigan, Ann Arbor, MI, April, 2002.
156. "Mechanical Property Model Development for Wrought Titanium Alloys", Aeromat Conference, Orlando, FL, June 2002
157. "The Accelerated Maturation of Metallic Materials", CSIRO, Clayton, VIC, Australia, August, 2002
158. "Nano Materials in Gas Turbine Engines", Nano Materials for Aerospace, Corpus Christi, Texas, January 27-30, 2003
159. "Integration of Modeling and Characterization", USAF Workshop on Integrated Modeling and Microstructure, Freiburg, Germany, May, 2003
160. "Phase Stabilities in Nanoscale Metallic Multilayers", Einer Vorlesung zu Ehre des Besonderegeburtstages von Herren Dr. Prof. Reiner Kirchheim, University of Göttingen. July 4th, 2003
161. "The Accelerated Maturation of Micro- and Nano-Scaled Metallic Materials", Department of Materials Science and Engineering, Georgia Institute of Technology, Atlanta, GA, October, 2003
162. "FIB Applications", Institut für Materialphysik, Göttingen University, Germany, February, 2004
163. "Three-dimensional Characterization of Microstructures", USAF Workshop on Integrated Modeling and Microstructure, Freiburg, Germany, May, 2004
164. "Application of FIB-Tomography to the Study of Microstructures in Titanium Alloys", Microscopy and Microanalysis, Savannah, GA August 2004
165. "3-D Materials Characterization using Dual-Beam FIB/SEM Techniques", Microscopy and Microanalysis, Savannah, GA August 2004
166. "The Accelerated Maturation of Micro- and Nano-Scaled Metallic Materials", Institute for Metal Research, Shenyang, China, July, 2004
167. "Engineering the Alpha₂ Phase Morphology in TiAl Based Alloys", IRC International Workshop on Ti Aluminides, University of Birmingham, UK, July, 2004
168. "Prediction of Microstructure/Property Relationships in Ti Alloys", ASM MS&T, Pittsburgh, PA, October 2004
169. "Predicting Microstructure/Property Relationships in Ti Alloys", GE Global Research Center, Bangalore, India, December, 2004
170. "Luddites' Approach to Predicting Mechanical Properties of Lobster", USAF Workshop on Integrated Modeling and Microstructure, Freiburg, Germany, May, 2005
171. "Center for the Accelerated Maturation of Materials", FEI Company, Acht, Eindhoven, Netherlands, June, 2005
172. "A Combinatorial Approach to the Elemental Optimization of a Beta Titanium Alloy Using Directed Lased Deposition", Aeromat Conference, Orlando, FL, June 2005
173. "Exploiting a New Generation of Electron Microscopy", Seminar, Melbourne, Australia, July, 2005
174. "Three-Dimensional Reconstruction of Alpha Laths in α/β Titanium Alloys by Serial Sectioning with a Dual Beam FIB", MS&T 2005, Pittsburgh, PA, October 2005
175. "Design Tools for structural Metallic Materials", Frontiers in Materials Design, Chennai, India, November 14-18th, 2005

176. "Developing Computational Tools for Predicting Properties of Ti Alloys", International Conference on Advanced Materials Design and Development, Goa, India, 14-16th December, 2005
177. "The Importance of Observing in Two Dimensions but Realizing in Three Dimensions", In celebration of the awarding of the Ernst Abbe Award to John Russ, Eastern Analytical Symposium of the New York Microscopical Society, November, 2006
178. "The Accelerated Maturation of Micro- and Nano-Scaled Metallic Materials", INMETRO, Rio de Janeiro, Brazil, January 2006
179. "Integration of Materials Characterization with Modeling and Simulation for the Development of Computational Tools for the Design of Materials", National Synchrotron Laboratory, Campinas, Brazil, January, 2006
180. "Design Tools for Predicting Microstructure/Property Relationships in Ti Alloys", TMS Annual Meeting, San Antonio, TX, 15th March, 2006
181. "New Research Tools for the Prediction of Microstructure/Property Relationships in Ti Alloys", Institut für Materialphysik, Göttingen University, Germany, May, 2006
182. "Modeling the Mechanical Behavior of Titanium Alloys and predicting the Phase Stability in Metallic Nano-scaled Multilayers", Institute for Metal Research, Shenyang, China, May, 2006
183. "Modeling the Interrelationship between Microstructure and Properties of Titanium Alloys" International Conference on Aerospace Materials, Beijing. June 2006
184. "Stimulating Interest in Materials Science and Engineering in Secondary and Tertiary Education", " International Conference on Aerospace Materials, Beijing. June 2006
185. "Modeling the Interrelationships between Microstructure and Property in Ti Alloys", Department of Materials Science and Engineering, University of North Texas, Denton, TX, October, 2006
186. "Predicting the Interrelationship between Microstructure and Properties in Ti Alloys and Phase Stabilities in Nano-scaled Metallic Multilayers", University of Queensland, Brisbane, Australia. October 5th, 2006
187. "Rapid Solidification Studies, Old and New", Materials far from Equilibrium, BARC, Mumbai, India, December 15-16th, 2006
188. "New Research Tools for the Prediction of Microstructure/Property Relationships in Ti Alloys", ARC Centre of Excellence in the Design of Light Alloys, Monash University, Clayton, VIC, August 2006
189. "A Comparison of Quantification of Microstructural Features in α/β -Ti Alloys using Stereology-based and Direct 3-D Characterization Techniques", Materials Research Society Annual Meeting, December, 2006
190. "The Use of a Dual-Beam FIB Instrument in Failure Analysis", MS&T 2006, Cincinnati, OH, October, 2006.
191. "Characterization of Complex Microstructures for Computer Simulation", TMS Annual Meeting 2007, Orlando, FL, 27th February, 2007
192. "Progress in Materials Modeling and Some Future Needs" TMS Annual Meeting 2007, Orlando, FL, 27th February, 2007
193. "Predicting the Relationship between Mechanical Properties and Microstructure of Ti Alloys and Phase Stabilities in Metallic Multilayers", Department of Materials Science and Engineering, Iowa State University, Ames, IA, March, 2007
194. "Laser Deposition as a Combinatorial Method for Materials Development", Optomec User Group, UNT, 3rd April, 2007
195. "Predicting the Relationship between Mechanical Properties and Microstructure of Ti Alloys", Department of Materials Science and Engineering, University of Alabama, Tuscaloosa, April, 2007
196. "The Application of Bayesian Neural Network Modeling for the Prediction of Tensile and

- Fatigue Properties in α/β Ti Alloys”, 11th World Conference on Titanium, Kyoto, Japan. June 3-7, 2007
197. “Use of Dark-field STEM Imaging to Reveal Phase Separation in a β -Stabilized Titanium Alloy”, Microscopy and Microanalysis, Fort Lauderdale, FL August 2007
 198. “Integrated Characterization and Modeling of Ti Alloys”, Department of Materials Science and Engineering, University of North Texas, 11th September, 2007
 199. “Laser Deposited Functionally Graded Unitized Implants”, TMS MS&T 2007, Detroit, MI, 17th September, 2007
 200. “Nanotechnology Education”, A Hearing by the Subcommittee on Research and Science Education, House Committee on Science and Technology, Washington, DC, 2nd October, 2007
 201. “Future Directions for Development of Electron Microscopy”, FEI Technology Conference, Portland, OR, 13th November, 2007
 202. “Accelerated Maturation of Materials: Integrating Computation and Characterization”, ExxonMobil Research and Engineering Company, Annandale, NJ. November 27th, 2007
 203. “Development of New Ti Aluminides through Powder Processing: a Collaborative Activity between the CoE and CAMM”, ARC Light Metals Workshop, Sydney. December 4-5th, 2007
 204. “Applications of Aberration-Corrected Electron Microscopy”, Titan Club, Eindhoven, The Netherlands, 28th January, 2008
 205. “Advances in Analytical Electron Microscopy”, Australian Electron Microscopy Society Annual Meeting, Perth, Australia, 19th February, 2008
 206. “The Direct 3-Dimensional Characterization and Digitization of Complex Microstructures in Ti-Based Alloys across Length Scales”, TMS Annual Meeting, New Orleans, 10th March, 2008
 207. “Novel Heat-Treatments for the Production of Refined Microstructures in α/β Ti Alloys”, TMS Annual Meeting, New Orleans, 10th March, 2008
 208. “Probing the Early Stages of Phase Separation and Second Phase Nucleation in Complex Beta Titanium Alloys”, TMS Annual Meeting, New Orleans, 11th March, 2008
 209. “On the Nucleation of Alpha-Ti in Alpha/Beta-Ti and Beta-Ti Alloys”, TMS Annual Meeting, New Orleans, 12th March, 2008
 210. “Specimen Preparation for Aberration-Corrected Electron Microscopy”, Workshop on the *Limits to Characterization and Modeling of Atomic Scale Processes and Defects*, Bernkastel, Germany, May 6th, 2008
 211. “Advances in Characterization of Bio-materials”, Sri Ramachandra University, Chennai, India, 18th June, 2008
 212. “Direct Three-Dimensional Microstructural Characterization and Reconstruction Across Varying Length Scales in α/β Titanium Alloys by Serial Sectioning Using a FEI DualBeam(TM) (FIB/SEM) and Robo-Met.3D”, Microscopy & Microanalysis 2008 Meeting, Albuquerque, NM, August 4th, 2008
 213. “Quantitative measurements of elemental intermixing in nanoscaled multilayers and other stories”, Brazilian MRS Meeting, Guaruja, Brazil, 2nd October, 2008
 214. “Laser Deposited Functionally Graded Orthopedic Implants”, TMS MS&T 2008, Pittsburgh, PA, 7th October, 2008
 215. “On the Nucleation of α -Ti in α/β -Ti and β -Ti Alloys”, TMS Annual Meeting 2009 San Francisco. February 16th-19th, 2009
 216. “Maximizing the Spatial resolution of Compositional Analysis”, WISAT 2009, Mumbai, India, 23-25th February, 2009
 217. “Applications using the Dual-Beam FIB”, WISAT 2009, Mumbai, India, 23-25th February, 2009
 218. “High Resolution STEM and High Angle Annular Dark-Field Imaging”, WISAT 2009, Mumbai, India, 23-25th February, 2009
 219. “Ultra-High Resolution Characterization of Hybrid Interfaces in Nanoscaled Inorganic/Inorganic and Inorganic/Organic Heterostructures”, Georgia Institute of Technology, 25th March, 2009

220. "The Use of Spatially-resolved and Monochromated EELS to Study Interfaces", Worldwide Titan Club Meeting, Eindhoven, The Netherlands, 8th April, 2009
221. "Limitations of Aberration-Corrected Electron Microscopy for the Study of Interfaces", USAF EOARD Bernkastel Workshop. May 2009
222. "Progress Towards Predicting the Interrelationships between Microstructure and Properties in Ti Alloys", Indian Institute of Materials Lecture and Defence Metallurgical Research Laboratory, Hyderabad, India. September 23rd, 2009
223. "Limits to High Spatial Resolution of EDS and EELS in an Aberration-Corrected (S)TEM", Frontiers of Electron Microscopy, Microanalysis and Spectroscopy, FEMMS2009, Huis ten Bosch, Nagasaki, Japan. September 27th-October 2nd, 2009
224. "Phase Stabilities in Metallic Multilayers", MS&T'09, Pittsburgh, PA. October 28th, 2009
225. "Factors Affecting Elemental Quantification at the Atomic Scale using EDS and EELS", MS&T'09, Pittsburgh, PA. October 28th, 2009
226. "Development of Neural Networks for the Assessment of the Interrelationships between Microstructure and Properties of Ti Alloys", ExxonMobil Research and Engineering Company, Annandale, NJ. November 12th, 2009
227. "Experimental and Computational Tools for the Digital Representation and Prediction of Microstructure and its Incorporation in the Designer's Knowledge Base", GE Aviation, Evendale, OH. December 3rd, 2009
228. "Integration of Microstructural Characterization and Neural Networks for the Prediction of Microstructure and Properties in Titanium Alloys", Annual Workshop of the ARC Light Metals Design Centre, Geelong, Australia. December 9-10th, 2009
229. "University Activities in Additive Manufacturing", EWI Additive Manufacturing Consortium Meeting, Columbus, OH. February 11th, 2010
230. "Ti Alloys by Design for Lighter, Stronger and Tougher Alloys - Modeling, Simulation and Validation", Boeing Workshop, Seattle, WA. February 18th 2010
231. "Pushing to the Limits of Spatially Resolved Compositional Determinations in Aberration-Corrected Scanning Transmission Electron Microscopy", EMSI-2010, Mumbai, India. March 8-10th, 2010
232. "Towards Modeling the Mechanical Properties of Ti Alloys", NIMS, Tsukuba, Japan. March 15th, 2010