

CURRICULUM VITAE

NAME: John David EMBURY

DATE OF BIRTH: July 12, 1939

POSITION: University Professor, Department of Materials Science and Engineering,
McMaster University

DEGREES:

<u>Degree</u>	<u>Course</u>	<u>University</u>	<u>Year</u>
B.Sc.	Metallurgy	University of Manchester	1960
Ph.D.	Metallurgy	Cambridge University	1963

EXPERIENCE:

Dates

1963!1965	Research Scientist	U.S. Steel Research Centre
1965!1966	Senior Research Associate	University of Newcastle
1966!1968	Assistant Professor	Dept. of Materials Science and Engineering, McMaster University
1968!1972	Associate Professor	Dept. of Materials Science and Engineering, McMaster University
1971 (May-Sept.)	Visiting Senior Research Fellow	Battelle Memorial Institute, Columbus, OH
1972- <u>present</u>	Professor	Dept. of Materials Science and Engineering, McMaster University
1972!1973	Visiting Scientist (Sabbatical leave from McMaster)	Central Institute for Industrial Research, Oslo, Norway
1975!1978	Chairman	Dept. of Materials Science and Engineering, McMaster University
1976 (June)	N.R.C. Visiting Scientist	France
1976 (August)	Visiting Professor, CIDA program	UFRGS, Brazil
1978 (July)	Visiting Professor, CIDA program	Military Engineering Institute, Rio de Janeiro, Brazil

EXPERIENCE: (continued)

1980!1981	Sabbatical leave	Sept.!Dec. 1980 at Aluminum Pechiney, Voreppe, France Feb.!July 1981 at Cambridge Univ., U.K. (Fellow of Clare Hall)
1981!1984	Chairman	Dept. of Materials Science and Engineering, McMaster University
1987!present	Group Leader	Metals and Ceramics Program Area, Ontario Centre of Excellence for Materials Research
1987!1988	NSERC Sr. IND. Fellowship	CANMET, Ottawa, Physical Met. Res. Labs
1992	Matthias Fellow	Los Alamos National Laboratory, C.M.S.
2001-2002	Acting Director	Brockhouse Institute for Materials Research, McMaster University
10/2003-4/2004	Visiting Professor	Department of Materials, Catholic University, Louvain, Belgium
<u>??</u>	Professor Emeritus	Dept. of Materials Science and Engineering, McMaster University

PROFESSIONAL ACTIVITIES:

1974!77	Member of Ferrous Metallurgy Committee of AIME
1977	Member of Editorial Board of the 4th International Fracture Conference
1974!77	Key Reader for Metallurgical Transition
1982!88	Member of Hume Rothery Gold Medal Committee
1980!87	Assistant Editor of Scripta Metallurgica
1980!87	Assistant Editor of Scripta Metallurgica
1980!87	Assistant Editor of Acta Metallurgica
1988-present	Member of Editorial Board of Metals & Materials
1989-present	Member Editorial Board of International Metallurgical Reviews
1986!89	Member of NSERC Committee Chemical and Metallurgical Engineering
1982-present	Member of various National Academy of Engineering Committees and N.S.F. Review Teams
1985-present	Member of Summer Research Group on Materials Science to Los Alamos National Laboratory
1986-present	Program Area Leader for Metals and Ceramics in the Ontario Centres of Materials Research

HONOURS AND AWARDS:

- 1978 Garafalo Memorial Lecturer at Northwest University
- 1979 Best paper award by Canadian Institute of Mining and Metallurgy
- 1979 Chairman of Physical Metallurgy Gordon Conference
- 1979 Dofasco Award for Outstanding Contributions to Materials Engineering
- 1982 Best Paper award by Canadian Institute of Mining and Metallurgy
- 1984 Canadian Metal Physics Medal
- 1988 D.C.K. McDonald Lecturer at Canadian Metal Physics Conference
- 1989 Distinguished Lecturer at the Argentinean Institute of Metals Annual Conference, May, 1989.
- 1990 Elected to Editorial Board of Philosophical Magazine
- 1990 Invited to give Distinguished Lecturer Address to Argentinean Institute of Metals, May 3rd, 1990.
- 1990 Awarded the B. Matthias Fellowship for the year 1992 at Los Alamos National Laboratory, University of California (previous recipients include: A. Granato, D. Turnbull, and D. Pines).
- 1991 Elected to Royal Society of Canada.
- 1991 A Keynote Speaker at the Symposium on "Modelling of Plasticity and Fracture at TMS Conference, New Orleans, February, 1991.
- 1991 Invited Lecturer at the Alcoa Symposium on Computational Materials Science, Pittsburgh, October, 1991 to give an address on "Deformation Process and Pattern Formation".
- 1991 Elected as Distinguished Lecturer for CIM to give a series of lectures throughout Canada.
- 1992 Elected as Distinguished Foreign Fellow, Indian Institute of Materials Science.
- 1992 Elected Fellow of American Institute of Mining and Metallurgy (limited to 100 Fellows).
- 1993 Keynote Speaker at EUROMAT Materials Conference in Paris.
- 1993 Elected to a Fellowship of Indian Institute of Materials Science.
- 1995 Elected Membre d'Honneur, French Society of Materials.
- 1995 1995 Keynote Speaker at World Aluminum Conference, Grenoble, France.
- 2001 Van Horn Lecturer at Case Western Reserve University, Cleveland, OH.
- 2002 Keynote Speaker, I.C.S.M.A. Conference
- 2002 Elected to National Academy of Engineers, U.S.A.
- 2003 Invited to give ASM Campbell Lecture in 2005
- 2003 Invited Seminar Series, Universit[†] Louvain, Neuve, Belgium
- 2003 Invited by Norwegian Government to review Technological University
- 2004 Elected to Advisory Committee, I.N.P.G. Grenoble
- 2004 Invited as Distinguished Visiting Professor to N.T.N.U., Norway.
- 2004 Keynote Speaker, C.O.M., Hamilton, ON
- 2004 Invited Speaker, Gordon Research Conference, July 25-30.

EDITORSHIP OF BOOKS AND JOURNALS:

- 1) A.K. Sachdev and J.D. Embury, "Formability and Metallurgical Structures", published by Metallurgical Society, 1987, p. 392 pages.
- 2) J.D. Embury and G.R. Purdy, "Advances in Phase Transitions", Proceedings of the Symposium to Honour Dr. J.S. Kirkaldy published by Pergamon Press (1988).
- 3) J.D. Embury and A.W. Thompson, "Modelling of Material Behaviour and Design", published by the Metallurgical Society 1989 (270 pages).
- 4) J.D. Embury, "High Temperature Oxidation and Sulphidation Processes", published by Pergamon Press, 1990 (351 pages).
- 5) D.S. Wilkinson and J.D. Embury, "Advances in Crystal Plasticity", Pergamon Press, 1993.

Currently Associate Editor of Journal of Materials Science and Engineering, of Philosophical Magazine and of International Materials Reviews.

CONTRIBUTIONS TO ENGINEERING:

In addition to the research activities summarized in the publications and presentations, the applicant has spent considerable effort in promoting cooperative work with industry. He is program area leader for the Metals and Ceramics area of the Ontario Centre for Materials Research, and has coordinated the development of a consortium for research on Metal Matrix Composites involving 6 universities and 5 industries. He is a member of the advisory group on Materials Research to the Los Alamos National Laboratory currently involved in defining research objectives for the National Laboratories in the U.S.A. and has strong interactions in France for the development of Materials Education.

In educational activities, he has been involved in the planning of a new program on Engineering and Society at McMaster, and in a wide variety of courses and workshops to bring about collaboration between universities and industry. He is currently in charge of a committee to streamline the engineering curriculum at McMaster University.

PUBLICATIONS: (Note: * indicates paper in refereed conference proceedings)

1. J.D. Embury, C.M. Sargent and R.B. Nicholson, "The Influence of Quench Deformation on Vacancy Distribution", *Acta Met.*, 10, 1014 (1962).
2. J.D. Embury and R.B. Nicholson, "Precipitation in Al!Mg", *J. Inst. Metals*, 91, 119 (1962).
3. J.D. Embury and R.B. Nicholson, "Dislocation Sources in an Aluminum Alloy", *Proc. of 5th Int. Congress for Electron Microscopy*, published by Academic Press (1962).
4. R.B. Nicholson and J.D. Embury, "Dislocation Sources in an Aluminum Alloy", *Acta Met.*, 11, 347 (1963).
5. J.D. Embury and R.B. Nicholson, "The Influence of Vacancies on Precipitate Nucleation", *Australian J. of Metals*, 8, 76 (1963).
6. P.R. Swann and J.D. Embury, "Microstructural Aspects of Stress Corrosion Failure", Chapter 8, High Strength Materials, edited by Zackay, Wiley (1964).
7. J.D. Embury and R.M. Fisher, "Precipitation in Au!Ni", *Proc. of European Conf. on Electron Microscopy*, Prague (1964).
8. J.D. Embury and R.B. Nicholson, "Nucleation in the System Al!Mg!Zn", *Acta Met.*, 13, 403 (1965).
9. J.D. Embury and W.R. Duff, "An Electron Microscopy Study of Nucleation in Electrodeposited Films", *Acta Electrochemica* (1965).
10. J.D. Embury and R.M. Fisher, "The Structure and Properties of Drawn Pearlite", *Acta Met.*, 14, 47 (1966).
11. J.D. Embury, A.S. Keh and R.M. Fisher, "Substructural Strengthening in Materials Subject to Large Plastic Strains", *Trans. AIME*, 236, 1252 (1966).
12. J.D. Embury, N.J. Petch, A.E. Wraith and E.S. Wright, "Fracture Behaviour of Mild Steel Laminates", *Trans. AIME*, 239, 144 (1967).
- 13.* D.F. Watt, J.D. Embury and R.K. Ham, "Structural Changes and Cyclic Strain Hardening in Copper", *Proc. of Conf. on High Strength Materials*, held in Tokyo, September 1967. Published in *Trans. Japan Institute Metals*, 9, 854 (1968).
14. D.F. Watt, J.D. Embury and R.K. Ham, "The Relation Between Surface and Interior Structure in Low Amplitude Fatigue", *Phil. Mag.*, 17, 199 (1968).

PUBLICATIONS: (Note: * indicates paper in refereed conference proceedings) (continued)

15. A.E. Almond and J.D. Embury, "Instrumental Impact Testing of Low Carbon Steels", *Metal Science Journal*, 2, 194 (1968).
16. J. Perrow, W.W. Smeltzer and J.D. Embury, "The Role of Structural Defects in the Growth of Nickel Oxide Films", *Acta Met.*, 16, 120 (1968).
17. J.D. Embury, "The Role of Substructure", Chapter 6 of *The Strength of Crystals*, edited by Kelly and Nicholson, published by Elsevier Press, 1971.
18. A.E. Almond, D.H. Timbres and J.D. Embury, "Fracture in Quench Aged Low carbon Steels", *Can.Met. Quart.*, 8, 51 (1969).
- 19.* A.E. Almond, J.D. Embury and D.H. Timbres, "The Influence of Second Phase Particles on Fracture", *Proc. of 2nd Int. Conf. on Fracture*, Chapman and Hall, p. 253 (1969).
20. A.E. Almond, J.D. Embury and D.H. Timbres, "Fracture in Laminated Materials", A.S.T.M. Publication No. 452, *Interfaces in Composites*, p. 107 (1969).
21. D. Shinozaki and J.D. Embury, "The Cyclic Hardening of Copper Single Crystals", *Metal Science Journal*, 3, 147 (1969).
22. D.J. Lloyd and J.D. Embury, "The Role of Internal Stress in High Temperature Deformation", *Metal Science Journal*, 4, 6 (1970).
- 23.* L.R. Cornwell, J.D. Embury and G.R. Purdy, "The Mechanical Properties of Ni!Al Alloys of Varying Composition", *Proc. of 3rd Bolton Landing Conference* (1969).
24. L.. Cornwell, J.D. Embury and G.R. Purdy, "The Deformation of Particles of Ni₃Al", *Physica Status Solidi*, 35, K.1 (1969).
25. J.D. Embury and D.J. Lloyd, "On the Bailey!Orowan Equation for Steady State Creep", *Scripta Met.*, 3, 821 (1969).
26. J. Uvira, J.D. Embury and D.B. Clay, "Controlled Rolling and Cooling of a Eutectoid Carbon Steel", *Metals Engineering Quarterly*, 10, No. 1, p. 35 (1970).
27. M.H. Schankula, D.J. Lloyd and J.D. Embury, "The Accumulation of Dislocations During the Deformation of Polycrystals", *Acta. Met.*, 18, 1293 (1970).
28. L.R. Cornwell, J.D. Embury and G.R. Purdy, "The Deformation of Single Crystals of the Ni!Ni₃Al System", *Acta. Met.*, 18, 1271 (1970).
29. D.J. Lloyd, P.J. Worthington and J.D. Embury, "Dislocation Dynamics in the System Cu!Sn", *Phil. Mag.*, 22, 1147 (1970).

PUBLICATIONS: (Note: * indicates paper in refereed conference proceedings) (continued)

30. E.A. Almond, J.T. King and J.D. Embury, "Interpretation of S.E.M. Fracture Surface Detail Using a Sectioning Technique", *Metallography*, 3, 114 (1970).
31. G.T. Hahn, A.R. Rosenfield and J.D. Embury, "Fracture of Steels Containing Pearlite", *Met. Trans.*, 3, 2797 (1972).
32. J.L. Uvira, D.B. Clay, P.J. Worthington and J.D. Embury, "Structure and Properties of Warm Rolled Steels", *Can. Met. Quart.* (1971).
33. E.A. Almond, D.H. Timbres and J.D. Embury, "Intergranular Fracture in Iron", *Phil. Mag.*, 23, 971 (1971).
- 34.* J.D. Embury and D. Osborne, "Fractographic Techniques in the Scanning Electron Microscope", *Proc. 5th Int. Symposium on Applications of Electron Microscopy to Materials Science, Berkeley* (1971).
- 35.* J.D. Boyd and J.D. Embury, "The Nature and Stability of Dislocation Arrangements in b.c.c. Metals", *Proc. 5th Int. Symposium on Applications of Electron Microscopy to Materials Science, Berkeley* (1971).
36. M.J. Brown and J.D. Embury, "The Cyclic Deformation of Two Phase Iron Carbon Alloys", *Acta Met.*, 20, 627 (1972).
37. M.J. Brown and J.D. Embury, "The Stability of Plastic Flow During Fatigue", *Acta Met.*, 20, 627 (1972).
38. J.D. Daw, P.S. Nicholson and J.D. Embury, "Inhomogeneous Dehydroxylation of Talc", *J. Amer. Cer. Soc.*, 55, 149 (1972).
39. D. Osborne and J.D. Embury, "The Effect of Warm Working on the Fracture Toughness of Bainites", *Met. Trans.*, 4, 2051 (1973).
40. J.D. Embury, B.A. Wilcox and A.H. Clauer, "The Influence of Thermal/mechanical Treatment on the Creep of Aluminum Alloys", *J. Inst. Metals*, 100, 153 (1972).
41. T. Homma, N.N. Khoi, W.W. Smeltzer and J.D. Embury, "The Influence of Surface Preparation on the Structures of Nickel Oxide", *Oxidation of Metals*, 3, 463 (1971).
42. J.D. Embury and E. Nes, "The Fracture Behaviour of a Medium Strength Al/Zn/Mg Alloy", *Z. Metallkunde*, 11, 805 (1973).
43. E. Nes and J.D. Embury, "The Influence of the Cast Structure on the Recrystallization Behaviour of an Al/Zn/Mg Alloy", *Scandinavian Journal of Metallurgy*, 3, 69 (1974).

PUBLICATIONS: (Note: * indicates paper in refereed conference proceedings) (continued)

44. J.D. Embury and E. Nes, "On the Tensile Fracture of Aluminum Alloys", *Metallkunde*, 1, 45 (1973).
- 45.* L.M. Brown and J.D. Embury, "A Model of Ductile Fracture in Two-Phase Materials", *Proc. of 3rd Int. Conference on the Strength of Metals and Alloys*, Cambridge (1973)
- 46.* G. Moan, C.M. Sargent and J.D. Embury, "Reverse Flow in Two-Phase Materials", *Proc. 3rd Int. Conference on the Strength of Metals and Alloys*, Cambridge (1973)
47. D.J. Green, P.S. Nicholson and J.D. Embury, "Fracture Toughness of Partially Stabilized Zirconia", in *Fracture Mechanics of Ceramics*, Vol. 2, p. 541; ed. Bradt, Plenum Press (1973).
48. D.J. Green, P.S. Nicholson and J.D. Embury, "Fracture of CaO-ZrO₂", *J. Am. Cer. Soc.*, 56, 619 (1973).
- 49.* N. Ibrahim, C.M. Sargent and P.S. Nicholson, "Kinetics of Fatigue Softening", *Proc. of 3rd Int. Conference on the Strength of Metals and Alloys*, Cambridge (1973)
50. E. Nes and J.D. Embury, "Phase Transformations during Recrystallization in Aluminum Alloys", *Z. Metallkunde* (1975).
51. J.D. Embury, and K. Cooper, "Some Aspects of Fracture Behaviour of H.S.L.A. Steels", *Can. Met. Quart.*, 14, 690 (1975).
52. H. Herø, J.D. Evensen and J.D. Embury, "Delamination in Control Rolled H.S.L.A. Steels", *Can. Met. Quart.*, 14, 117 (1975).
53. J.D. Evensen, N. Ryum and J.D. Embury, "The Intergranular Fracture of Al-Mg-Si Alloys", *Materials Science and Engineering*, 18, 221 (1975).
54. N. Ibrahim and J.D. Embury, "The Bauschinger Effect in Single Phase b.c.c. Materials", *Materials Science and Engineering*, 18, 147 (1975).
55. R.G. Hoagland, J.D. Embury and D. Green, "The Role of Microcracking in Fracture Resistance", *Scripta Met.*, 9, 907 (1975).
- 56.* J.D. Embury, J.D. Evensen and A. Filipovic, "Mechanical Properties of High Strength Low Alloy Steels", *Battelle Conference on Alloy Design*, Sept., Seattle, WA (1975).
57. W.W. Smeltzer, J.D. Embury and N.N. Khoi, "Growth and Structure of Nickel Oxide on Nickel Crystal Faces", *J. Electrochemical Soc.* No. 11, 122 (1975).

PUBLICATIONS: (Note: * indicates paper in refereed conference proceedings) (continued)

- 58.* J.D. Embury, "Some Basic Aspects of the Fracture of Aluminum Alloys", Proc. of A.G.A.R.D./CP185, NATO Conf. Proc. Alloy Design for Fatigue and Fracture Resistance, pp. 1119 (1976).
59. J.D. Embury and C.M. Sargent, "Transmission and Scanning Electron Microscopy: A Review", in Experimental Methods in Catalytic Research, edited by Anderson and Dawson, Academic Press (1976).
60. J.D. Boyd, J.D. Embury and C.M. Sargent, "On the Analysis of Dislocation Substructures in Deformed and Recovered Niobium Single Crystals", Scripta Met., 10, 901 (1976).
61. J.D. Embury and G.H. LeRoy, "Failure Maps Applied to Metal Deformation Processes", Fracture, 1, ICF4, Waterloo (1977).
62. N. Chung, R. Hoagland, J.D. Evensen, C.M. Sargent and J.D. Embury, "A Note on the Occurrence of Catastrophic Shear Failure in Al Alloys", Acta Met., 25, 377 (1977).
63. J.D. Embury, J.D. Evensen and A. Filipovic, "The Mechanical Properties of High-Strength, Low-Alloy Steels", in Fundamental Aspects of Structural Alloy Design, edited by Jafee and Wilcox, Plenum Publishing Corp. (1977).
- 64.* G. Glover, J.L. Duncan and J.D. Embury, "Failure Maps for Sheet Metal", Metals Technology, 153 (March 1977).
65. D.J. Green, P.S. Nicholson and J.D. Embury, "Crack Shape Study in Brittle Non-bonded Particular Composites", Proceedings of the 4th International Conference on Fracture, Waterloo, vol. 3, p. 941 (1977).
66. A. Filipovic, H. Herø and J.D. Embury, "Mechanical Behaviour of Some HSLA Steels", Scand. J. of Met., 6, 289 (1977).
67. K. Holm, J.D. Embury and G.R. Purdy, "The Structure and Properties of Microduplex Zr/Nb Alloys", Acta Met., 25, 1191 (1977).
68. D.J. Lloyd, H. Sang, J.D. Embury, P. Wycliffe and G.H. LeRoy, "On the Description of Deformation at Large Imposed Plastic Strains", Mat. Sci. and Eng., 36, 35 (1978).
69. J. Daw, P.S. Nicholson and J.D. Embury, "Inhomogeneous Dehydration of Talc", J. Am. Cer. Soc., 55, 149-151 (1972).
70. J. Morrison, C.M. Sargent and J.D. Embury, "The Shape of Creep Curves", Scripta Metallurgica, 12, 513 (1978).

PUBLICATIONS: (Note: * indicates paper in refereed conference proceedings) (continued)

71. J. Lereim and J.D. Embury, "A Simple Method for the Determination of J. Integral Values", *Engineering Fracture Mechanics*, 1, 161 (1979).
- 72.* J.D. Evensen, J. Lereim and J.D. Embury, "Fracture Processes in Structural HSLA Steels", Chapter 3 of the A.S.M. publication entitled 'Impact Testing of materials', published by ASM (1979).
- 73.* G.H. LeRoy and J.D. Embury, "The Utilization of Failure Maps to Compare the Fracture Modes Occurring in Aluminum Alloys", published in Proceedings of the ASM Symposium entitled Formability Analysis Modelling and Experiments (1979).
74. D. Uko, R. Sowerby and J.D. Embury, "The Bauschinger Effect on Structural Steels and Its Application in Pipe!making Operations", Parts I and II, published in *Metals Technology* (1979).
75. G. Moan and J.D. Embury, "A Study of the Bauschinger Effect in Al!Cu Alloys", *Acta Met.*, 27, 903 (1979).
76. D.J. Green, P.S. Nicholson and J.D. Embury, "Fracture of a Brittle Particulate Composite", *J. Mat. Sci. and Eng.*, 14, 1413 (1979).
77. K. Campbell, I. Dover, K. Ramachandran and J.D. Embury, "Influence of Heat Treatment on the Formability of Al!Mg!Si Alloys", *Metals Form*, 229 (1979).
- 78.* J. Gerbase, J.D. Embury and R. Hobbs, "Models of the Mechanical Behaviour of Dual Phase Steels", published in Proceedings of the AIME Conference on Dual Phase Steels held in New Orleans, February (1979).
79. R.G. Hoagland and J.D. Embury, "A Treatment of Inelastic Deformation Around a Crack Tip due to Microcracking", *J. of Amer. Ceramic Soc.*, 63, 404 (1980).
- 80.* J.D. Embury, "A Review of Formability in Aluminum Alloys", Proceedings of the 1st Argentinian Conference on Aluminum Technology, published by A.S.M. (1980).
81. G.H. LeRoy, J.D. Embury, G. Edwards and M.F. Ashby, "A Model for Ductile Fracture," *Acta Metallurgica*, 29, 1509 (1981).
82. P.A. Wycliffe, G.R. Purdy and J.D. Embury, "Growth of Austenite in the Intercritical Annealing of Fe!C!Mn Dual Phase Steels", *Can. Met. Quart.*, 20, 339 (1981).
83. N. Chandrasekaran, A. Brownrigg, J.L. Duncan, J.D. Embury and R. Sowerby, "Free Surface Strains and Stresses During Upsetting of Cylinders", *Scripta Met.*, 16, 697!701 (1982).
84. J.D. Embury and J.L. Duncan, "Formability Maps", *Ann. Rev. Mat. Sci.*, 11, 505 (1981).

PUBLICATIONS: (Note: * indicates paper in refereed conference proceedings) (continued)

85. R. Iricibar, G. LeRoy and J.D. Embury, "Relationship of Strain Hardening and Damage in Ductile Fracture", *Metal Science*, 15, 337 (1980).
86. N. Ryum and J.D. Embury, "Recrystallization Behaviour of Al/Mg Alloys", *Scan. J. Met.*, 11, 51 (1982).
- 87.* P.A. Wycliffe, G.R. Purdy and J.D. Embury, "Austenite Grain Growth During Intercritical Annealing of Ternary and Quaternary Dual Phase Steels", in *Fundamentals of Dual Phase Steels*, edited by Kot and Bramfit, p. 59, published by AIME (1982).
88. H. Chandra, J.D. Embury and U.F. Kocks, "On the Formation of High Angle Grain Boundary", *Scripta Met.*, 16, 493 (1982).
- 89.* D.C. Houghton, G.C. Weatherly and J.D. Embury, "The Microchemistry of Carbonitrides in the Heat Affected Zone of HSLA Steels", *Proc. of Liverpool Conference of Metallography of HSLA Steels*, published by Metals Society, U.K. (1982).
90. C.K. Chow and J.D. Embury, "Deformation Twinning in Iron Alloys Containing Dispersed Particles", *Can. Met. Quart.*, 19, 229 (1980).
91. J.D. Embury and J.L. Duncan, "Formability of Dual Phase Steels", in *Fundamentals of Dual Phase Steels*, edited by Kot and Bramfit, p. 33, published by AIME (1982).
92. A. Brownrigg, O. Richmond, D. Teirlinck, M.F. Ashby and J.D. Embury, "The Representation of the Influence of Hydrostatic Pressure on Ductile Fracture", *Acta Met.*, 31, 1141!1150 (1983).
- 93.* D.C. Houghton, G.C. Weatherly and J.D. Embury, "Characterization of Carbonitrides in Ti Bearing HSLA Steels", published in the *Proceedings of the AIME Conference on Microalloyed Steels in Pittsburgh*, (1981).
- 94.* J.D. Embury, "Ductile Fracture", Keynote paper in *Proceedings of Int. Conf. on Strength of Metals and Alloys*, Melbourne, Australia, published by Pergamon Press (1982).
95. G. Ocampo, T. Castillo, V.S. Raghunathan and J.D. Embury, "Metallography Techniques for the Study of Continuously Cast Microalloyed Steels", *Metallography*, 16, 287!297 (1983).
96. A. Brownrigg, W.A. Spitzig, O. Richmond, D. Teirlinck and J.D. Embury, "The Influence of Hydrostatic Pressure on the Flow Stress and Ductility of a Spheroidal 1045 Steel", *Acta Met.*, 31, 1141!1150 (1983).
97. H. Chandra!Holm and J.D. Embury, "The Development of Substructure in Aluminum and Aluminum Alloys", Chapter 14, *Yield Flow and Fracture of Polycrystals*, ed. by T.N. Baker, Applied Science Publishers, 275!310 (1983).

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98. G. Ocampo, T. Castillo, V.S. Raghunathan and J.D. Embury, "Metallographic Techniques for the Study of Continuously Cast Microalloyed Steels", *Metallography* 16:287!297 (1983).
99. M.F. Ashby and J.D. Embury, S.H. Cooksley and D. Teirlinck, "Fracture Maps with Pressure as a Variable" *Scripta Metallurgica*, Vol. 19, pp. 385!390 (1985).
100. D. Teirlinck, M.F. Ashby and J.D. Embury, "Damage Accumulation During Ductile Rupture and the Development of Failure Maps", *Advances in Fracture Research, Proceedings of the International Conference on Fracture (ICF6)*, pp. 105!125, New Delhi, India, December 4!10 (1984).
101. L.G. Luo, A.I. Quarrington and J.D. Embury, "On the Determination of a Direct Method for R. Curves", *Eng. Fracture Mechanics*, 21, 463!472 (1983).
102. A. Korbel, W. Bochniak, L. Blaz and J.D. Embury, "Instability and Dynamic Recrystallization in Cu Crystals", *Met. Sci. J.*, 18, 216 (1984).
103. A. Korbel, V.S. Raghunathan, D. Teirlinck, W. Spitzig, O. Richmond and J.D. Embury, "A Structural Study of the Influence of Pressure on Shear Band Formation", *Acta Met.*, 32, 511!519 (1984).
104. T.R. Ramachandran, D.C. Houghton and J.D. Embury, "Analytical Electron Microscopy of Al Alloys", *Bull. Mat. Sci.*, 6, 513!535 (1984).
105. M.F. Ashby and J.D. Embury, "The Influence of Dislocation Density of the Ductile Brittle Transition in b.c.c. Metals", *Scripta Met.*, 19, 557 (1985).
106. M.F. Ashby, J.D. Embury, S.H. Cooksley and D. Teirlinck, "Fracture Maps with Pressure as a Variable", *Scripta Met.*, 19, 585 (1985).
107. J.D. Embury, "Structural Aspects of the Bauschinger Effect", *Materials Forum* 10(1):27!32 (1985).
108. J.!L. Verger!Gaugry, G. Ocampo and J.D. Embury, "Microanalysis of TiNb Carbonitrides in HSLA Steels" *Metallography* 18:381!33 (1985).
109. L.G. Luo, A.I. Quarrington and J.D. Embury, "On the Development of a Direct Method of Determining the Microcrack Resistance Curve", *Engineering Fracture Mechanics*, 21(3): 465-472 (1985).
110. J.D. Embury, "Plastic Flow in Dispersion Hardened Materials", *Met. Trans. A*, Vol. 16A:2191!2200 (1985).

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1. J.D. Embury and A.W. Thompson, Modelling of Material Behaviour and Design, published by TMS, 1990.
2. J.D. Embury, "High Temperature Oxidation and Sulphidation Processes", Pergamon Press, 1990.
3. J.D. Embury and D.S. Wilkinson, "Advances in Crystal Plasticity", published by Pergamon Press, 1993.

TEACHING EXPERIENCE:

Courses in basic materials science at first and second year level Mechanics of Materials, including concrete and wood for Civil engineers, Phase Transformation Materials Selections and Design for Mechanical and Manufacturing engineers. Dislocation Theory at both undergraduate and graduate levels, Basic Elasticity and Plasticity at the graduate level, Metal Forming, Fracture Mechanics at the graduate level.

In addition, I have taught general courses on Science for non-science students, a course in Technology and Its Impact on Society for the Arts and Science Program and a course on Technology and Society for all final year engineers.

I have also taught a number of specialized short courses in Canada, Europe, the U.S.A. and South America on mechanical behaviour of materials and metal forming.

COMMITTEE EXPERIENCE:

I have had experience in curriculum development, long range planning for the university, served on Senate, and organized the Utilisation of Educational Resources Committee in Engineering. I have served on the NSERC Committee for Metallurgical and Chemical Engineering and have been a program area leader in the Ontario Centre for Materials Research,

PROFESSIONAL EXPERIENCE:

I have served as a consultant for a wide range of companies including Stelco, Alcan, Alcoa, Ontario Hydro, Pechiney, Norsk Hydro, Comalco and B.H.P.

In addition to my normal duties, I have been active in engineering education in countries such as India, Brazil, and Argentina. I currently have major research collaborations with the Los Alamos National Laboratory in the U.S.A., and the University of Grenoble in France.

OUTSIDE INTERESTS:

Outdoor pursuits and environmental protection (member of Greenpeace and the Sierra Club), backpacking and mountaineering trips, reading, classical music and cooking.