



## Curriculum Vitae

- NAME:** **ELLIOT L. BROWN, M.S., PH.D.**  
Chief Metallurgical and Materials Consultant, Iris Technologies, LLC  
911 Marfell Street  
Erie, Colorado 80516
- EDUCATION:** Doctor of Philosophy, Metallurgy and Materials Engineering, 1979  
University of Pittsburgh, Pittsburgh, Pennsylvania  
Dissertation: "The Microstructural Behavior of Austenite Due to Hot Rolling"  
Master of Science, Metallurgy and Materials Engineering, 1973  
University of Pittsburgh, Pittsburgh, Pennsylvania  
Thesis: "Some Effects of Deformation on Precipitation in a Cu-3Ti Alloy with Emphasis on the Cellular Reaction"  
Bachelor of Science, Metallurgical Engineering, 1970  
Polytechnic Institute of Brooklyn, New York  
Thesis: "A Study of the NiAl-Cr Pseudo-Binary System"
- PROFESSIONAL AFFILIATIONS & CERTIFICATIONS:**
- Tau Beta Pi
  - Sigma Xi
  - Certificate of Recognition for Sustained Superior Performance, U.S. Department of Commerce, NBS, 1981
  - Member, The Metallurgical Society/AIME
  - Member, American Society of Materials
  - Member, Materials Research Society
- PUBLICATIONS:**
- E.L. Brown, et al: "The Microstructure of Hot Rolled HSLA Steel Austenite", in Hot Deformation of Austenite, J.B. Balance, ed., TMS-AIME, 1975.
- A.J. DeArdo and E.L. Brown: "Hot Rolling Behavior of Austenite Microalloyed With Vanadium and Nitrogen, J. Metals, (January 1977), pp. 26-29.
- E.L. Brown and A.J. DeArdo: "The Behavior of Austenite During Hot Rolling", in Proc. of 5th Int'l Conf. on the Strength of Metals and Alloys, P. Hansen, et. al. eds., Pergamon Press, (1979), pp. 613-618.
- E.L. Brown and A.J. DeArdo: "The Influence of Hot Rolling on the Microstructure of Austenite", in Hot Working and Forming Processes, Proc. of an Int'l Conf., Univ. of Sheffield, July 1979.
- A.J. DeArdo and E.L. Brown: "On the Origin of Equiaxed Grains that Result from the Hot Rolling of Steel, Met. Trans. A, 12A, (1981), 39.
- T.A. Whipple and E.L. Brown: "Deformation and Fracture of Stainless Steel Castings and Weldments at 4K, E.L. Brown: "Metallography of  $\alpha$ -Ferrite in Austenitic Stainless Steel Castings", in Materials Studies for Magnetic Fusion Applications at Low Temperatures IV, June 1981.

E.L. Brown, L.J. Cuddy, A.J. DeArdo: "AlN Precipitation in C-Mn-Si and Microalloyed Steels", in Processing of Micro-alloyed Austenite, TMS-AIME, August 1981.

T.A. Whipple and E.L. Brown: "Deformation and Fracture of Stainless Steel Castings and Weldments at 4K", Trends in Welding in the USA, ASM Seminar, New Orleans, Oct. 1981.

E.L. Brown, T.A. Whipple, and G. Krauss: "The Metallography of Duplex Stainless Steel Castings" in Duplex Stainless Steels (ASM), (1981).

E.L. Brown, M.F. Burnett, P.T. Purtscher, and G. Krauss: "Intermetallic Phase Formation in 25 Cr-3 Mo-4 Ni Ferritic Stainless Steel", Met. Trans.A, 14A, (1983), 791.

E.L. Brown, T.A. Whipple, and R.L. Tobler: "Fracture Toughness of Duplex Austenitic Stainless Steel Castings at 4K", Met. Trans.A, 14A, (1983), 1179.

E.L. Brown: "A TEM Study of Cast Duplex Stainless Steels with Varying Ferrite Content: As-Cast and Deformed at 4K" in Matl's Studies for Magnetic Fusion Energy Applications at Low Temperatures, VI, (1983), 273.

F.S. Shen, E.L. Brown and G. Krauss: "The Contribution of Physical Metallurgy to Heat Treatment Practice" in Proc. of 3rd Int'l. Conf. on Heat Treatment of Materials, Shanghai, China, (1983).

E.L. Brown and G. Krauss: "Retained Carbide Distribution in Intercritically Austenitized 52100 Steel", Met. Trans. A., 17A, (1986), 31.

D.Z. Yang, E.L. Brown, D.K. Matlock and G. Krauss: "The Formation of Austenite at Low Intercritical Annealing Temperatures in Normalized 0.08C-1.5Mn-.21Si Steel", Met. Trans. A, 10A, (1985), 1523.

D.Z. Yang, E.L. Brown, D.K. Matlock and G. Krauss: "Ferrite Recrystallization and Austenite Formation in Cold-Rolled Intercritically Annealed Steel", Met. Trans. A, 16A, (1985), 1385.

E.L. Brown: "Transmission Electron Microscopy of Deformed, Recovered and Recrystallized Metals and Alloys", in Materials Characterization, Vol. 10, Metals Handbook, 9th Edition, (ASM).

S.P. Abelin, G.S. Huppi, E.L. Brown, D.K. Matlock and G.R. Edwards: "The Microstructure and Properties of Selected High High Strength Ferritic Weld Metals", Microstructural Science, 14, Welding Failure Analysis and Metallography M.R. Louthan, I. LeMay and G.F. VanderVoort, Eds., ASM, (1987), 99.

M. Leap, E.L. Brown, P. Mazza and G. Krauss: "The Evolution of Microstructure and Precipitate Dispersions During Re-heating in a Vanadium Modified 1045 Steel", in Fundamentals of Microalloying Forging Steels, G. Krauss and S.K. Banerji, Eds., TMS-AIME, (1987), p. 91.

E.L. Brown and R.A. Nichting: "Microstructural Evolution in the HAZ of a Submerged Arc Welded Microalloyed Steel", in Advances in Welding Science and Technology, S.A. David, Ed., ASM, 1986.

B. Yarar, E.L. Brown, J.U. Trefney, N. Mitra and G. Pine: "Application of Principles of Process Metallurgy to the Production of Copper-Sheathed Y-Ba-Cu-O Wires", in Proc. of Int'l Conf. on "The First Two Years of High T<sub>c</sub> Superconductivity", (April 1988).

M.C. Mataya, E.L. Brown and M.P. Riendeau: "Effect of Hot Working on Structure and Strength of Type 304L Austenitic Stainless Steel", Met. Trans. A., 21A, (1990), 1969.

E.L. Brown and M. Wormington: "An Investigation of Giant Magnetoresistance (GMR) Spin-Valve Structures Using X-Ray Diffraction and Reflectivity", Advances in X-Ray Analysis, **44**, (2000), Paper D050.

M.J. Leap and E.L. Brown: "The Effects of Composition and Processing on the Development of Grain Coarsening Resistance in Cold Forged and Carburized Steel", Materials Science and Technol., (2002).

M.J. Leap and E.L. Brown: "Crystallography of Duplex AlN-Nb(C,N) Precipitates in 0.2% C Steel", Scripta. Mat., (2002).

M.C. Mataya, E.R. Nilsson, E.L. Brown, and G. Krauss: "Hot Working and Recrystallization of As-Cast 316L", Met. Trans. A.

M.C. Mataya, E.R. Nilsson, E.L. Brown, and G. Krauss: "Hot Working and Recrystallization of As-Cast 317L", Met. Trans. A.

## **BACKGROUND & EXPERIENCE:**

*Metallurgical and Materials Consultant, President of EB Scientific Enterprises, Golden, Colorado.* Physical/mechanical metallurgical studies of the thermomechanical treatment of ferrous and Al alloy systems, studies in support of welding development and deformation processing, tribological studies. Thin film investigations in support of microelectronic and storage media industry. Expertise in microstructural characterization, electron microscopy, x-ray diffraction and failure analysis.

*Ponderosa Associates Ltd., Lafayette, Colorado.* Performed failure analysis with regard to materials-related forensic issues.

*Associate Research Professor, Department of Metallurgical Engineering, Colorado School of Mines, Golden, Colorado.* General areas of research interest included phase transformations and structure-property relationships in materials employing light microscopy, electron microscopy, x-ray and microanalytical techniques. Conducted sponsored research into precipitation behavior, thermomechanical treatment and welding metallurgy of ferrous alloys. Research included the direction of graduate student researchers as well as the development and maintenance of electron microscopy capabilities. Was a staff member of Center for Welding Research and University-Industry Steel Research Center, both in the Department of Metallurgical Engineering. Experience included the teaching of courses in electron microscopy, crystallography and

diffraction methods, dislocation theory and theory of alloying.

*Staff Scientist, Fracture and Deformation Division of the National Bureau of Standards, (now National Institute of Standards and Technology) Boulder, Colorado.* Conducted research into the physical/mechanical metallurgy of microalloyed high strength-low alloy steels and duplex austenitic stainless steel welds and castings. Responsibilities for development and maintenance of metallography facilities.

*Engineer, Core Materials Group at Westinghouse-Bettis Atomic Power Laboratory, West Mifflin, Pennsylvania.* Responsible for development of alloys and processing techniques in support of reactor core designs. Included research and development responsibilities in casting, metallography, powder production, thermomechanical treatment and crystallographic texture measurement of zirconium base alloys.