Curriculum Vitae

William Hudson Hofmeister
3023 New Natchez Trace
Nashville, TN 37215
hof@utsi.edu
hofs@comcast.net
615-292-2248 (home) 615-429-9545 (cell)
931-393-7466 (UTSI)
931-454-2271 (FAX)

January 3, 2006

Education:

Ph.D. Materials Science, Vanderbilt University, May 1987
Dissertation: Undercooling of High Melting Temperature Pure Metals in a Containerless, Microgravity Environment, Advisor: R.J. Bayuzick

M.S. Materials Science, Vanderbilt University, May 1984
Thesis: Solidification Studies of Nb-Ge Alloys in Drop Tube Experiments
Advisor: R.J. Bayuzick

B.A. Chemistry major, Mathematics minor, Vanderbilt University, January 1973

Employment:

2005- present: Research Professor of Materials Science and Engineering and Director of the Center for Laser Applications, University of Tennessee Space Institute

1997-2005: Research Associate Professor of Materials Science and Engineering, Department of Chemical Engineering, Vanderbilt University

1991-1997: Research Associate Professor, Department of Materials Science and Engineering, Vanderbilt University

1987-1991: Research Assistant Professor, Department of Materials Science and Engineering, Vanderbilt University

1982-1987: Graduate Research Assistant, Vanderbilt University

1979-1981: Senior Materials Engineer, Pratt-Whitney Aircraft Government Products Division, West Palm Beach, FL

1978-1979: Materials Engineer, Pratt-Whitney Aircraft Government Products Division, West Palm Beach, FL

1973-1978: Engineer, Magnetic Separation Systems. Nashville, TN

Articles in Refereed Journals:

"Field emission triode amplifier utilizing aligned carbon nanotubes," Y.M. Wong, W.P. Kang, J.L. Davidson, B.K. Choi, W. Hofmeister and J.H. Huang; Diamond and Related Materials, November-December 2005, vol. 14, issues 11-12, pp. 2069-2073.

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Other Publications:

"Quantative Observation of Surface Flow and Solidification on Autogenous GTA Weld Pools," D. DeLapp, G. Cook, A. Strauss, and W. Hofmeister

"Transistor Characteristics of Thermal CVD Carbon Nanotubes Field Emission Triode", Y. M. Wong, W. P. Kang, J. L. Davidson, W. Hofmeister, S. Wei, and J. H. Huang, Technical Digest of the 17th International Vacuum Nanoelectronics Conference, Cambridge, MA, USA, 11-16 July, 2004, pp. 282-283.

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"Review on Long Drop Towers and Drop Tubes," R.J. Bayuzick, W.H. Hofmeister, M.B. Robinson; Proceedings of the Hume Rothery Memorial Symposium on Undercooled Alloy Phases, TMS-AIME Annual Meeting, New Orleans, LA, 1986 (eds. E.W. Collings and C.C. Koch, AIME, New York, 1986) pp. 207-229.

"Undercooling of Niobium-Germanium Alloys in a 100 Meter Drop Tube," W.H. Hofmeister, N.D. Evans, M.B. Robinson, R.J. Bayuzick, Proceedings of the Fifth International Conference on Rapidly Quenched Metals, Wurtzburg, West Germany, September, 1984, Elsevier Science Publishing Co., New York, 1985, pp. 59-62.

"A Review of Long Drop Tubes as a Supplement/Alternative to Space Experiments," R.J. Bayuzick, N.D. Evans, W.H. Hofmeister, K.R. Johnson, M.B. Robinson; Advances in Space Research, 1984, vol. 4, no. 5, pp.85-90.

Solidification Studies of Nb-Ge Alloys in Drop Tube Experiments, W.H. Hofmeister; Master's Thesis, May 1984, Vanderbilt University.

Invited Presentations:

"The Physics of Direct Metal Deposition Processes," W. Hofmeister; Advanced Manufacturing and Automated Fastening Conference, September 20-23, 2004, St. Louis, MO.

"Issues in the Commercialization of the Laser Engineered Net Shaping (LENS®) Process," William Hofmeister and Michelle Griffith; Symposium on High Risk Technologies in Metallurgy with Commercial Potential, TMS Annual Meeting, Charlotte, NC, March 14-18, 2004.

"Thermal Imaging of Solidification and Strip Casting," William Hofmeister, Seminar to the Materials Preparation Center, Ames Laboratory, Ames Iowa, August 22, 2002.

"Melt Pool Imaging For Control Of LENS™ Processing," William Hofmeister, Michelle Griffith, Mark Ensz, and John Smugeresky, 2002 International Conference on Metal Powder Deposition for Rapid Manufacturing, San Antonio, TX, April 8-10, 2002.

"Thermal Imaging of Solidification," William Hofmeister, in Symposium on Imaging of Dynamic Processes, TMS Annual Meeting, Seattle, WA, February 19-20, 2002.

"Rapid Prototyping by Direct Metal Deposition," William Hofmeister, lecture to the Department of Mechanical Engineering at University of Canterbury, Christchurch, NZ, July 5, 2001.

"Thermal Imaging and Control of Laser Powder Deposition Processing," W.H. Hofmeister, Rapid Manufacturing Seminar on Laser and Powder Based Technologies. Metal Powder Industries Federation, Providence, RI, October 23-24, 2000.

"Thermal Imaging of LENS Processing" W. Hofmeister, Thermal Spray Workshop, NIST, Gaithersburg, MD. November, 1998.

"Ultra High Speed Thermal Imaging for Solidification Kinetics, Droplet Impacts and Rapid Manufacturing," W. Hofmeister, Naval Research Laboratory, October, 1998.

"State of the Art Materials Research using TEMPUS and Its Prospective Contributions to Industrial Applications," W. Hofmeister and R.J. Bayuzick, IN SPACE '98, Tokyo, Japan, September, 1998.

"Containerless Processing of Metallic Melts in Space," W. Hofmeister, R.J. Bayuzick, in session on "Advancing Technology Through Space Experiments," International Conference on Powder Metallurgy and Particulate Materials, Las Vegas, NV, June 1998.

"Ultra High Speed Thermal Imaging for Solidification Kinetics," W. Hofmeister, B.T. Bassler, and R.J. Bayuzick, Seminar for Sandia National Laboratory Advanced Materials Processing Laboratory, Albuquerque, NM, May, 1998.

"Solidification Kinetics," W. Hofmeister, Seminar to Physics Department, Washington University at St. Louis, May, 1997.

"Measurement of High Speed Solidification Velocity in Metallic Melts," W.H. Hofmeister, B.T. Bassler, and R. J. Bayuzick; Joint TMS-JIM Conference, Honolulu, Hawaii, December 1995.

"NASA-Sponsored Containerless Processing Experiments," W.H. Hofmeister; Workshop on Containerless Processing in Microgravity, Pasadena, CA, January, 1990.

Presentations:

"Thermal Imaging of Electron Beam Freeform Fabrication," W.H. Hofmeister, R.A. Hafley, and K. M. Taminger; AeroMat 2004, June 7-10, 2004, Seattle, WA.

"Transistor Characteristics of Thermal CVD Carbon Nanotubes Field Emission Triode", Y. M. Wong, W. P. Kang J. L. Davidson, W. Hofmeister, S. Wei, and J. H. Huang, presented at 17th International Vacuum Nanoelectronics Conference, Cambridge, MA, USA, 11-16 July, 2004.

"The growth aspects of nanocrystalline diamond films and their effects on electron emissions", K. Subramanian, W. P. Kang, J. L. Davidson, and W. H. Hofmeister, presented at 17th International Vacuum Nanoelectronics Conference, Cambridge, MA, USA, 11-16 July, 2004.

"The effects of process parameters on size, density, structure, and field emission properties of Pd-catalyzed carbon nanotubes synthesized by thermal chemical vapor deposition," S. Wei, W. P. Kang, W. H. Hofmeister, J.L. Davidson, Y. M. Wong, and J. H. Huang", presented at 17th International Vacuum Nanoelectronics Conference, Cambridge, MA, USA, 11-16 July, 2004.

"Diamond Vacuum Field Emission Devices", W. P. Kang, J. L. Davidson, Y. M. Wong, R. Takalkar , K. Holmes, W. Hofmeister, presented at the 9th International Conference on Diamond Science and Technology, Tokyo, Japan, March 26-29, 2004

"Carbon Nanotubes Field Emission Devices Grown by Thermal CVD with Palladium as Catalysts", Y.M. Wong, S. Wei, W.P. Kang, J.L. Davidson, W. Hofmeister, J.H. Huang, Y. Cui, presented at the 9th International Conference on Diamond Science and Technology, Tokyo, Japan, March 26-29, 2004

"Thermal CVD grown carbon nanotubes field emission triode", Y. M. Wong, W. P. Kang, J. L. Davidson, W. Hofmeister, S. Wei, and J. H. Huang, presented at Diamond 2004, Riva Del Garda, Trentino, Italy, 12-17 September, 2004.

"The effect of growth rate control on the morphology of nanocrystalline diamond", K. Subramanian, W.P. Kang, J.L. Davidson, and W.H. Hofmeister, presented at Diamond 2004, Riva Del Garda, Trentino, Italy, 12-17 September, 2004.

"Micropatterned Diamond/Carbon Field Emission Diode and Triode",J. L. Davidson, W. P. Kang, Y. M. Wong, R. Takalkar, and W. Hofmeister, presented at ECS 2004 Joint International Meeting, Hawaii, USA, 3-8 October, 2004.

"Optimum Stability in Rapidly Solidified Nickel-Based Alloys," Paul R. Algoso, William H. Hofmeister, Robert J. Bayuzick, Solidification Processes and Microstructures: A Symposium in Honor of Prof. W. Kurz, TMS Annual Meeting, Charlotte, NC, March 14-18, 2004.

"Determination of nucleation kinetic parameters of metallic melts using electrostatic levitation techniques," M. J. Wert, W. H. Hofmeister, R. J. Bayuzick, J. Rogers, T. Rathz, G. Fountain, R. Hyers, TMS Annual Meeting, San Diego, CA, March 2003.

"Solidification Velocity of Undercooled Nickel-based Alloys," P.R. Algoso, W.H. Hofmeister, R.J. Bayuzick, TMS Annual Meeting, San Diego, CA, March 2003.

"Residual Gas Effects on Solidification Velocity in Electromagnetic Levitation," P.R. Algoso, W.H. Hofmeister and R.J. Bayuzick, Poster presentation at Gordon Research Conferences: Gravitational Effects in Physico-Chemical Systems, New London, CT, July 27 - August 1, 2003.

"Residual Gas Effects on Solidification Velocity in Electromagnetic Levitation," P.R. Algoso, W.H. Hofmeister and R.J. Bayuzick, Presentation at ASM Materials Solutions 2003: Progress in Solidification and Crystal Growth Technology in the Last Century, Pittsburgh, PA, Oct 13 - 15, 2003.

"Statistical modeling of nucleation kinetics," W. Hofmeister, Workshop on aging and long-term reliability of microelectronics materials and devices, October 9-10, 2003, Vanderbilt University, Nashville, TN.

"Using Thermal Imaging to Model LENS Powder Deposition," William Hofmeister and John Smugeresky, 2002 International Conference on Process Modeling in Powder Metallurgy and Particulate Materials, Metal Powder Industries Federation, Newport Beach, CA, October 28-29, 2002.

"Nucleation and solidification kinetics in low earth orbit," W. Hofmeister, M. Wert, A. Altgilbers, R. Bayuzick, Paper number 2001-5048, AIAA conference proceedings, ISS Utilization Conference, Cocoa Beach, FL, October 14-18, 2001.

"Site Occupancy Determination by ALCHEMI of Nb and Cr in gamma-TiAl and their Effects on the Alpha to Gamma Massive Phase Transformation," T.M. Miller, L. Wang, W.H. Hofmeister, J.E. Wittig, I.M. Anderson, MRS Symposium, Boston, MA, November, 1999.

"Understanding Thermal Behavior in LENS Processing of Structural Materials," Michelle Griffith, Lane Harwell, M. Eric Schlienger, John Smugeresky, William Hofmeister; Solid Freeform Fabrication Symposium, TMS Annual Meeting, San Diego, CA, March, 1999.

"High-Speed Thermal Imaging for LENS Process Development and Control," W.H. Hofmeister, Melissa J. Wert, John E. Smugeresky, M.L. Griffith, Mark Ensz, Lane Harwell, Don Greene, Dan MacCallum, Gerry Knorovsky, LENS CRADA meeting, Ft. Worth, TX February, 1999.

"Laser near-net shaping for rapid manufacturing - potential for mesoscale structures," W. Hofmeister, U.S. Army Research Office Workshop on Rapid Manufacturing, Nashville, TN, December, 1998.

"Ultra High Speed Imaging of Thermal Gradients during LENS Processing," Melissa J. Wert, W.H. Hofmeister, R.J. Bayuzick, M.L. Griffith, John E. Smugeresky, Solid Freeform and Additive Fabrication Symposium, MRS, Boston, MA, December, 1998.

"Nucleation Experiments on TEMPUS in Low Earth Orbit," W. Hofmeister, C.W. Morton, M.B. Robinson, R.J. Bayuzick, TEMPUS symposium, TMS, Rosemont, IL, October, 1998.

"Effects of Fluid Flow on Nucleation," W. Hofmeister, R.J. Bayuzick, M.B. Robinson, MSL-1R L+1 Science Review, Huntsville, AL, August, 1998.

"Containerless Processing of Oxide Superconductors," W. Hofmeister, J. Olive, R. J. Bayuzick, M. Vlasse, Microgravity Materials Science Conference, Huntsville, AL, July, 1998.

"Effects of Fluid Flow on Nucleation," W. Hofmeister, C. M. Morton, R.J. Bayuzick, M.B. Robinson, Microgravity Materials Science Conference, Huntsville, AL, July, 1998.

"An Investigation into the local Solidification Rate of the GTA Weld Pool," David R. DeLapp, Daniel A. Hartman, William H. Hofmeister, George E. Cook, Alvin M. Strauss, Fifth International Conference on Trends in Welding Research, Calloway Gardens GA, June 1998.

"Effects of Fluid Flow on Nucleation," W. Hofmeister, R.J. Bayuzick, M.B. Robinson, International Workshop on Nucleation and Thermophysical Properties of Undercooled Melts, Bad Honnef, Germany, March, 1998.

"Observation of Thermal Profiles during Impact and Solidification of Nickel Drops,"W.H. Hofmeister, R.J. Bayuzick, G. Trapaga, D.M. Matson, and M.C. Flemings; TMS Annual Meeting, San Antonio, TX, February, 1998.

"Nucleation in Metallic Melts," W. Hofmeister, Chemical Engineering Department Seminar, Vanderbilt University, January, 1998.

"Space Flight Experiments on TEMPUS," W. Hofmeister, Materials Science Seminar, Vanderbilt University, January, 1997.

"Spacelab Experiments on TEMPUS; Trick or Treat ?" W. Hofmeister, Mechanical Engineering Department Seminar, October 31, 1996.

"Optical Pyrometry on TEMPUS: A Critical Assessment of Noncontact Temperature Measurement in Low Earth Orbit," W. Hofmeister, R.J. Bayuzick and S. Krishnan, SPIE Conference, Denver, CO, July, 1996.

"Nucleation Kinetic Experiments on TEMPUS," W. Hofmeister, M.B. Robinson, R.J. Bayuzick, Berlin Physical Society Meeting, Regensburg, Germany, March, 1996.

"TEMPUS Scientific Objectives," W. Hofmeister, MSL-1 International Working Group meeting, Huntsville, AL, March, 1996.

"A Statistical Approach to Understanding Nucleation Phenomena," C.W. Morton, W.H. Hofmeister, R.J. Bayuzick, and M.B. Robinson; NATO Advanced Workshop on Undercooling, Il'Ciocco, Italy, June, 1993.

"Bulk Undercooling and Rapid Quench Processing of Refractory Alloys," W.H. Hofmeister and R.J. Bayuzick, MRS Annual Meeting, Boston, MA, December 3, 1993.

"Formation of Tetragonal $YBa_2Cu_3O_{7-\delta}$ from an Undercooled Melt," J.R. Olive, W.H. Hofmeister, R.J. Bayuzick, G. Carro, J.P. McHugh, R.H. Hopkins, M. Vlasse, R. Weber, P. Nordine, M. McElfresh; Poster presentation at Gordon Conference on Gravitational Effects in Materials and Processes, July, 1993.

"A Statistical Approach to Understanding Nucleation Phenomena," C.W. Morton, W.H. Hofmeister, R.J. Bayuzick, and M.B. Robinson; Poster presentation at Gordon Conference on Gravitational Effects in Materials and Processes, July, 1993.

"Formation of Tetragonal $YBa_2Cu_3O_{7-\delta}$ from an Undercooled Melt," J.R. Olive, W.H. Hofmeister, R.J. Bayuzick, G. Carro, J.P. McHugh, R.H. Hopkins, M. Vlasse, R. Weber, P. Nordine, M. McElfresh; Poster presentation at Materials Research Society, Boston, MA, December 1, 1993.

"Analysis of the Constraints in Statistical Analysis of Nucleation Data in Ground Based Experiments," W.H. Hofmeister, C.W. Morton, R.J. Bayuzick, M.B. Robinson, T.J. Rathz; World Space Congress, Washington, D.C., September, 1992.

"Comparison of Undercooling of Niobium in Drop Tube Experiments," W.H.

Hofmeister, R.J. Bayuzick, M.B. Robinson, B.Vinet, L. Cortella, J. Comera, and J.J. Favier; VIIIth European Symposium on Materials and Fluid Sciences in Microgravity, Brussels, April, 1992. Poster presentation.

"Containerless Processing of Oxide Superconductors," J. Olive, W.H. Hofmeister, R.J. Bayuzick, J.P. McHugh, R. Hopkins, G. Carro, M. Vlasse; VIIIth European Symposium on Materials and Fluid Sciences in Microgravity, Brussels, April, 1992. Poster presentation.

"Nucleation in Undercooled Metallic Melts," W.H. Hofmeister, R.J. Bayuzick, and M.B. Robinson; XXVIII COSPAR, The Hague, Netherlands, July, 1990.

"Low Gravity Materials Processing," W.H. Hofmeister, R.N. Grugel, and R.J. Bayuzick; ASM Materials Week, Indianapolis, IN, October, 1989.

"Experiments in Long Drop Tubes," W.H. Hofmeister, R.J. Bayuzick, and M.B. Robinson; Keynote Speaker, Third International Colloquium on Drops and Bubbles, Monterey, CA, September 18-21, 1988.

"Non-Contact Temperature Measurement of a Falling Drop," W.H. Hofmeister, R.J. Bayuzick, and M.B. Robinson; Tenth Symposium on Thermophysical Properties, NBS, Gaithersburg, MD, June 20-23, 1988.

"Containerless Processing of Spherically Shaped Alloys by Coupling Ground-Based Levitation Methods," W.H. Hofmeister and J.W. Williamson; AIAA 26th Aerospace Sciences Meeting, Reno, Nevada, January 11-14, 1988.

"Activities of the Vanderbilt Center for the Space Processing of Engineering Materials," W.H. Hofmeister and R.J. Bayuzick; SDIO/IST Third Pathways to Space Experimentation Workshop, Orlando, FL, June, 1987.

"Undercooling of Bulk High Temperature Metals in the 100 Meter Drop Tube," W.H. Hofmeister, M.B. Robinson and R.J. Bayuzick; Materials Research Society Fall Meeting, Boston, MA, December 1-6, 1986.

"Microstructures of Highly Undercooled Niobium-Germanium Alloys," W.H .Hofmeister, N.D . Evans, R.J .Bayuzick, and M.B. Robinson, Fall Meeting of TMS-AIME, Toronto, Ontario, October, 1985.

Book editing:

Containerless Processing: Techniques and Applications, published by The Minerals, Metals and Materials Society, Warrendale, PA, 1993, with R. Shifman.

Gravity Dependent Phenomena in Fluids and Materials Science, published by Pergamon Press, Elsevier Science, 1993, with M.E. Glicksman and H.U. Walter.

Solidification 1998, published by The Minerals, Metals and Materials Society, Warrendale, PA, 1998, with numerous other editors.

Solidification 1999, published by The Minerals, Metals and Materials Society, Warrendale, PA, 1999, with numerous other editors.

Patents:

"Method and Apparatus for Making Rapidly Solidified Metallic Particulate," U.S. Patent number 5,032,172, granted July 16, 1991. Co-holders: R.J. Bayuzick, R.A. Overfelt, D. Dillard, M.B. Robinson, M. Wells.

"Direct Laser Additive Fabrication System with Image Feedback Control," US Patent number 6,459,951, granted October 1, 2002. Co-holders: Michelle L Griffith, Gerald A Knorovsky, Danny O MacCallum, M. Eric Schlienger, John E Smugeresky.

"Direct Fabrication of Micro/Macro Scale Ceramics in Vacuum," US Patent number 6,555,180 granted April 29, 2003. Co-holders: Bridgett Rodgers and David Gustafson.

"Method and system for thick film deposition of ceramic materials," VU0027 (PCT/US01/12952, No. 09/958,705)

"Methods of Direct Growth of Carbon Nanotubes on Catalytic Copper Surfaces," VU 0208 (PCT filed)

"Polymer matrixes having nanoscale channels and uses thereof," PCT filed, VU0267, Provisional Application No. 60/448,578.

Organizations:

The Minerals, Metals, and Materials Society (TMS)
- Journal of Metals editorial committee 1998-2001
- Solidification Committee - Chairman 1995

American Society for Metals (ASM)
- member Action in Education Team 1998-2001

American Powder Metallurgical Institute
- member Program Committee
- member Industry Vision and Technology Roadmap Committee

Committee on Space Research, (COSPAR) (past member)
- Vice-chairman for materials processing , Commission G, 1991-1992.

Advisor for ASM/TMS Student Chapter - Chapter of Excellence 1994

Sigma Xi engineering honor society

Advisor for Vanderbilt Sailing Club 1987 - 1990.

Faculty Advisor for Kappa Sigma Fraternity, 1995-2004

Alpha Sigma Mu, honorary materials science student organization.

Graduate Student Council 1983-1986, president 1984-1986.

Vanderbilt Community Affairs Board 1984-1986.

American Electroplaters Society 1978-1981, President, Miami branch, 1980-1981.

Conference organization:

Co-chairman with H. Walter and M.E. Glicksman for "Gravitation Effects in Fluids and Materials Science" joint COSPAR/IAF symposium held at the World Space Congress, August 30 - September 4, 1992, Washington, D.C.

Organizer for "Containerless Processing - Techniques and Applications" symposium held at the annual TMS meeting February 21-25, 1993, Denver, Colorado.

Member of Program Committee for 1993-1998, 2000-2004 Conference & Exhibition on Powder Metallurgy and Particulate Materials.

Organizer for "Advancing Technology through Space Experiments," special symposium at 1998 International Conference & Exhibition on Powder Metallurgy and Particulate Materials, Las Vegas, Nevada.

Co-Organizer of "Rapid Solidification: Modeling and Experiments" symposium at the TMS Annual Meeting, San Antonio, Texas,1998

Co-Organizer of "TEMPUS - Space processing of Metallic Melts" symposium at the TMS Fall Meeting, Chicago, Illinois, 1998.

Reviewer for:

Metallurgical Transactions
Materials Research Society
Materials Science and Engineering A
Journal of Materials Science
Journal of Applied Physics
Applied Physics Letters
Journal of Non-Crystalline Materials
American Powder Metallurgical Institute
Scripta Materialia

Student Advising:

Co-advisor with Professor Bayuzick for the following students:

Paul Algoso, M.S. 1999, Ph.D. 2004
Alex Altgilbers, M.S. 1998, Ph.D. 2002
Melissa Wert, Ph.D. 2002
David Gustafson, M.S. 2000
James Olive, M.S. 1993, Ph.D. 1998
Brian T. Bassler, M.S. 1992, Ph.D. 1997
Craig Morton, M.S. 1992, Ph.D. 1997
Collin Anderson, M.S. 1987, Ph.D. 1991
Gerardo Bertero, M.S. 1989
Jeff Moore, M.S. 1990

Co-advisor with Professor Wittig for the following students:

Timothy Miller, M.S., 2000
Milo Kral, Ph.D. 1996
David Sims, M.S. 1996

Courses Taught:

MSE 343: Seminar in Materials Science
ES 101: Introduction to Materials – Freshman Seminar
ES 130: Introduction to Computing for Engineers
MSE 150: Introduction to Materials Science and Engineering
MSE 232: Strength of Materials

Community Service:

Commodore of Harbor Island Yacht Club, 1992.
Director of Sailing Camp at Harbor Island Yacht Club, 1989-2000. Sailing camp is a four week program with approximately 120 students.
Recipient of Caldwell Service Award 1993 for lifetime service to HIYC.
Coach for YMCA and West Nashville Athletic League basketball teams.
Organizer of Vanderbilt "Hands on Science Fair" a program to bring elementary school students to Vanderbilt for science experiments related to their current curriculum.
"Best of Fair" Judge for Middle Tennessee Science Fair

Current Consulting:

RTS Wright Industries (Nashville, TN) - Materials engineering.
Hoegannes, Inc. (Gallatin, TN) - Various production problems dealing with powder production.
Waller, Lansden, Dortch and Davis (Nashville, TN) – Expert Witness.
World Testing, Inc. (Mt. Juliet, TN) – failure analysis.
GEO Specialty Chemicals (Smyrna, TN) – low temperature alloy development