

CURRICULUM VITAE OF DAVID R. POIRIER

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Personal Information: Born May 15, 1938 in Somerville, Massachusetts. Married to Nancy Fargo (nee), parent of eleven and grandparent of sixteen.

Education: Sc.D. Metallurgy, Massachusetts Institute of Technology, June 1966
S.M. Metallurgy, Massachusetts Institute of Technology, June 1963
B.S. Chemical Engineering, Northeastern University, June 1961

Employment:

- 1978 - Present The University of Arizona, Tucson, Arizona; Professor of Materials Science and Engineering, 1983-; Associate Professor of Metallurgical Engineering, 1978-83; Acting Head of Metallurgical Engineering, 1980-81; Acting Assistant Dean for College of Mines, 1981-83. Research emphasizes solidification processes. Teach courses in transport phenomena, materials processing, physical metallurgy, materials science, and solidification, and published a textbook entitled *Transport Phenomena in Materials Processing* (1994).
- 1997 - Summer Tohoku University, Sendai, Japan. Visiting Professor in the Institute of Advanced Materials Processing for four months. Research on solidification and behavior of inclusions in steel and presented a course on fundamentals of solidification.
- 1984 - Summer National Aeronautics and Space Administration, Lewis Research Center, Cleveland, Ohio. NASA-ASEE Fellow for four weeks with the Materials Division; worked on planning macrosegregation research for NASA's program on Microgravity Sciences and Applications.
- 1982, 83 - Summers National Bureau of Standards, Gaithersburg, Maryland. The Metallurgical Processing Group and Chemical Metallurgy Group in the Center for Materials Science.
- 1975 - 78 Massachusetts Institute of Technology, Cambridge, Massachusetts. One year sabbatical from University of Bridgeport with the Casting and Solidification Research Group; 1976-1978 as Visiting Scientist (part-time). Responsibilities included supervision of contract research, proposal preparation, and publication of reports and technical papers.
- 1976 - 78 University of Bridgeport, Bridgeport, Connecticut. Associate Professor in Manufacturing Engineering. Taught undergraduate courses in manufacturing processes (casting and welding, metal cutting and metal forming), physical metallurgy, science of materials, solid mechanics, thermodynamics, and heat transfer and a graduate course in conduction heat transfer.
- 1969 - 75 University of Bridgeport, Bridgeport, Connecticut. Chairman of the Department of Manufacturing Engineering and Associate Professor of Metallurgical Engineering. Key participant in establishing a Cooperative Program in the College of Engineering. The Department initiated the M.S. in Management Engineering in 1970. Duties included administration of the department, teaching and supervision of theses' research. Completed *Transport Phenomena in Metallurgy*; while in print from 1974 until 1993 this

text was used by many universities in the U.S., Canada, Mexico, People's Republic of China, Taiwan, Japan, Britain, Greece, Argentina and Venezuela.

- 1966 - 69 University of Wisconsin, Madison, Wisconsin. Assistant Professor of Metallurgical Engineering. Teaching and supervision of graduate students' research.
- 1961 - 66 Massachusetts Institute of Technology, Cambridge, Massachusetts; Staff Member, Division of Sponsored Research (one year) and Research Assistant. Research on the effects of melting, solidification structure, and deformation processing on the mechanical properties of high strength steel.
- 1956 - 61 Massachusetts Institute of Technology, Cambridge, Massachusetts; Northeastern University Cooperative Student. Produced and did research on premium quality aluminum and magnesium castings used for prototype inertial guidance systems.

Honors and Awards

- 2007 Bruce Chalmers Award, presented by TMS-AIME in 2006.
- Fellow of ASM International, 2004.
- Peter G. Winchell Memorial Lecturer, Purdue University, September 8, 2003.
- Award for Excellence at the Student Interface, presented by the Dean of Engineering and Mines, The University of Arizona, May 2001.
- Award for Excellence at the Student Interface, presented by the Dean of Engineering and Mines, The University of Arizona, May 2000.
- NASA Technology Utilization Program Award, presented for a report on macrosegregation, 1984.
- Tau Beta Pi, Arizona Alpha Chapter, elected April, 1983.
- John Chipman Award, presented by the Iron and Steel Society of AIME, February, 1980, for a paper on macrosegregation.
- Howard F. Taylor Scholarship, 1965.
- Foundry Educational Foundation -- Wheelabrator Fellowship, 1964.

Intramural Service

- University Advisory Committee for Promotion and Tenure, 2009, 2010, 2011.
- MSE Tuition Differential Committee , 2008,09,10,11.
- MSE Committee for Performance/Review of Department Head, 2008.
- MSE Committee for Faculty Annual Reviews, 2005-06, 2006-07, 2007-08, 2008-09.
- MSE Promotion and Tenure Committee, 2005-06.
- Academic Advisor for MSE Seniors, 1989-2011; Juniors, 2008-09, 2009-10; transfer students, 2009-10, 2010-11.
- Engineering Management Committee, The University of Arizona, 2005-06, 2006-07, 2007-08.
- Post Tenure Review Committee for the College of Engineering, The University of Arizona, 2003-04, 2004-05.
- Undergraduate Scholarship Committee for MSE Department, 2000-01, 2002-03, 2003-04.
- Undergraduate Curriculum Committee, 2002-03, 2003-04, 2004-05, 2005-06, 2006-07, 2007-08, 2008-09.
- Prepared report for ABET Interim Visit in 2001 and ABET coordinator for MSE Dept. in 2001.
- Search Committee for Faculty for the MSE Department, 2000-01, 2004-05, 2005-06.
- Graduate Council, one year assignment for CoEM, 2000-2001.
- Sunset Review Committee on Center for Electronic Packaging Research, College of Engineering and Mines, 2000.
- Sunset Review Committee on Center for Material Modeling and Computational Mechanics, College of Engineering and Mines, 1999.
- Performance Appraisal of Laboratory Coordinator for MSE Department, 1999- 2011.
- Represent MSE Department and University on Materials Corridor Partnership Initiative, 1998-2001.
- MSE Department Committee for Teaching Load Guidelines, 1999.
- MSE Department Committee for Promotion to Full Professor, 1998, 2001.

- MSE Department Faculty Performance Review Committee, 1998, 2001, 2003- 08.
- Department Committee (Dept. of Mining and Geological Engineering) for Promotion to Full Professor, 1997.
- MSE Department Head Review Committee, 1996-97.
- Mini Lectures for ENGR 102, 1996,-97.
- Faculty Mentor, Honors Center, 1994-98.
- Search Committee for Head of Department of Aerospace and Mechanical Engineering, 1993-94.
- Faculty Committee on Employment Opportunities for MSE Students, 1992-93.
- Faculty Advisor, MSE Club ("umbrella" club for TMS, ACS and MRS), 1992-2004. Now Materials Advantage, 2004- 2011.
- MSE Department Head Review Committee, 1991-92.
- Examination Representative for Graduate Council and Committee on Graduate Study (University activity), 1991-95.
- Career Development Committee for Junior Faculty, MSE Department, 1990-1996.
- Graduate Curriculum Committee for MSE Department, 1988-89.
- Faculty Evaluation Committee for MSE Department, 1986-89 (Chairman).
- Search Committee for MSE Faculty, 1984-85 (Chairman), 1986-87.
- Materials Science and Engineering, University Committee, Chairman, 1983-84 and 1984-85.
- Acting Assistant Dean, College of Mines, 1981-83.
- Acting Head of Metallurgical Engineering, 1980-81.
- Chairman of Search Committee for Head of Metallurgical Engineering, 1980-81.
- Search Committee for Dean of College of Mines and Director of Bureau of Geology and Mineral Technology, 1981-84.
- Executive Committee for College of Mines, 1980-84.
- Scholarship and Awards Committee for College of Mines, 1980-84 (Chairman).
- Cooperative Student-Trainee Program, College of Mines, 1979-83.
- Seminar Series on the Behavior and Processing of Materials, Department of Metallurgical Engineering, Fall 1981, organizer and arrangements.

Service to Professional Societies and Organizations

Member of The Metals, Minerals and Materials Society (TMS), ASM International, American Foundry Society(AFS), and Association for Iron and Steel technology (AIST).

The Minerals, Metals and Materials (TMS) Society of AIME: Accreditation Board for Engineering and Technology: TMS Program Evaluator, 1990-98. Assigned as TMS Observer, 1990; Evaluator, 1992, 1993, 1994; EAC Alternate, 1995, 1996. Board of Review for Metallurgical Transactions 1969-72, 1980-91; Co-chairman of "Solidification II" at 115th Annual Meeting; Nominating Committee for Board of Review for Metall. Trans., 1988-90; Nominating Committee for Bruce Chalmers Award, 1992-95, Chairman 1994-95; TMS Nonferrous Metals Committee, 1993-1995; Chairman of session on "Solidification and Electronic Materials" at 124th Annual Meeting; Chairman of session and poster judge in Symposium on Solidification Science at 117th Meeting of the Japan Institute of Metals; Organizing Committee and Session Co-Chairman of Merton C. Flemings Symposium, TMS Special Meeting, 2000. Session Chair and Organizer for the Symposium on "Simulation of Aluminum Shape Casting," TMS Annual Meeting, 2006. AIME Henry DeWitt Smith Scholarship Committee, 2008-10.

ASM International: elected Fellow in 2004; 2002 Nominating Committee (this committee nominates the Board of Trustees and Vice President of ASM Intl.); Vice-Chairman for Phoenix Arizona Chapter, 2002-2003; Chairman for Phoenix Arizona Chapter, 2003-2004. Executive Committee for Phoenix Chapter, 2000- present; Board of Review for Metallurgical Transactions 1969-72, 1980-91. American Society for Metals: Student Affairs Committee of the New Haven Chapter 1970-74, and 1974-75 (Chairman); ASM International, Session Chairman for Innovative Materials Processing in Space, World Materials Congress, Chicago, Sept. 27, 1988.

US Department of Labor, materials engineering-occupation expert for the O*NET database, 2009.

University of New Mexico, outside evaluator for promotion case to full professor, 2005.

Reviewer of Research Proposals since 1979 for NSF, National Research Council, NASA, DOE, AFS, and Idaho Board of Education.

Manuscript reviews since 1967 for Metallurgical and Materials Transactions (formerly Metallurgical Transactions), Materials Science and Engineering, Acta Materialia, Scripta Metallurgica, Scripta Materialia, J. of Steel Castings Research, AFS Transactions, Numerical Heat Transfer, Canadian Metallurgical Quarterly, International Materials Review, Trans. ASME (J. Heat Transfer), The Royal Society, The International Video Journal of Engineering Research, International Journal of Heat and Mass Transfer, Transactions of the Iron and Steel Society, Journal of Heat Transfer, Canadian Journal of Physics, Journal of Applied Crystallography, Journal of Non-Crystalline Solids, Philosophical Magazine A, Materials Research Bulletin, publication of Society for Experimental Mechanics, Applied Thermal Engineering, International Journal of Cast Metals, Modelling and Simulation in Materials Science and Engineering, Materials Science and Engineering A, J. Physics D: Applied Physics, articles for ASM Metal Handbooks, and numerous conferences and symposia.

Ohio Aerospace Institute, Materials/Microstructure/Processing/Property/Modeling Team (MMPPM), 1999.

National Institute of Standards and Technology, Consortium on Casting of Aerospace Alloys, Representative for The University of Arizona, 1994-98.

The American Foundry Society (formerly The American Foundrymen's Society): member 1968-1974 , 2000- , and corresponding member to the Heat Transfer Committee 1968-74.

Steel Founders' Society of America: Editorial Board of the Journal of Steel Castings Research, 1982-89.

Engineering Foundation: Organizing Committee and Session Co-chairman for the 1983 Conference on Modeling of Castings and Welding Processes, Henniker, N.H., July 31 - August 5, 1983. Session Co-chairman for the 1993 Conference on Modeling of Casting, Welding and Advanced Solidification Processes, Palm Coast, FL, March 21-26, 1993.

National Science Foundation/Department of Energy: Participant in NSF Workshop on Interaction of Thermal and Materials Sciences in Materials Processing, 1985, and in NSF-DOE Workshops on Basic Research Needs for Environmentally Responsive Technologies of the Future, 1996. Review Panel (proposals), 2005.

DOE, Office of Industrial Technologies: Contributor to Beyond 2000: A Vision for the Metal Casting Industry, 1996. Arizona DOE-Industries of the Future, Arizona Department of Commerce, Energy Office: served on the Aluminum Steering Committee, 2003-04, and presenter at the Future Kick-Off Conference, 2005.

The Foundry Educational Foundation: Key Professor at University of Bridgeport from 1973-76.

Inter-Organization Programme for the Sound Management of Chemicals (IOMC), 1996. Assisted W.H. Dresher in preparation of "A Scientific Definition of Metallic Alloys and Mixtures." IOMC coordinates the technical activities of the World Health Organization; the International Labor Organization; the United Nations Environmental Programme; the UN Food and Agriculture Organization; and the UN Industrial Development Organization.

Materials Corridor Partnership Initiative (MCPI): Participated in workshops in El Paso (1998), Chihuahua(1999) and Tijuana(2001) and representative of the University of Arizona to establish the Materials Corridor Council (MMC), 2000-. The MCPI was spearheaded by the UTEP and was a binational collaboration to promote economic development of the US-Mexico border region.

Society of Manufacturing Engineers, Student Chapter Advisor at University of Bridgeport, 1972-75.

Sandia National Laboratories, Melting and Liquid Metal Processing Workshop, June 14 & 15, 1988; Porous Metals Workshop, 1996; Workshop for Advanced Processing of Superalloys and Aerospace Titanium Alloys, 1997.

Session Chairman for the Tenth International Conference on Finite Elements in Fluids sponsored by U of AZ, INME (UK), ICCME (Spain), IACM, US Assoc. CM, Tucson, AZ, Jan. 5-8, 1998.

Society of Women Engineers, Science Fair Project Help Program, 1996.

NASA Metals & Alloys Review Panel (proposals), 2004.

Benjamin Franklin Medal, letter of support for M.C. Flemings, Laureate, 2005.

Salt River Project, participant, Introductory Meeting of the Sustainable Research Park, Phoenix, May 16, 2005.

Industrial Consulting

- 2005 Salt River Project, Phoenix, Arizona. Metallographic analysis of failure by arcing in high voltage underground cable.
- 2002 North Star Steel Texas, Beaumont, Texas. Analyzed a problem of welding wire rod and a peculiar microstructure in a new product-line for the company.
- 2002 A and B Foundry, Franklin, Ohio. Heat transfer analysis of novel way of chilling aluminum alloy castings.
- 2000 EMC Engineers, Inc., Golden, CO. Engaged to recommend ways to save energy in a foundry that casts copper-base alloys.
- 1994-96 Tucson Foundry and Manufacturing, Inc., Tucson, AZ. Consultant on heat transfer and gating and risering of large bronze and copper castings.
- 1994 Gordon H. Geiger, Consultant, Minneapolis, MN. Computer simulations of various heating and cooling schedules related to new facilities for processing steel bars.
- 1994 International Center for Numerical Methods in Engineering, Polytechnic University of Catalonia, Barcelona, Spain. Advised a group of numerical modelling experts on dendritic solidification and casting simulations.
- 1993 Alcoa Technical Center, Alcoa Center, PA. Course on Principles of Solidification (six days).
- 1992-93 Mission Research Corporation, Santa Barbara, CA. Consultant to team for developing a manufacturing process to braze sintered carbides to an investment casting.
- 1992 AMAX Research and Development Center, Golden, CO. Consultant on solidification processing.
- 1989-91 General Electric Co., Aircraft Engines Div., Lynn, MA. Consultant on solidification and computer modeling of materials processing.
- 1987-91 North Star Steel Texas, Beaumont, TX. Engineering consultant on quality assurance and processing in steelmaking. Also presented a short course on Solidification Processing.
- 1979-85 General Electric Co., Military and Data Systems Operations, Huntsville, AL. Served as solidification expert on contract research for NASA to model transport processes and macrosegregation in solidifying alloys.
- 1984 The Deister Concentrator Co., Inc., Fort Wayne, IN. Fluid flow calculations for the design of bubble column flotation units used in minerals processing.
- 1983-84 National Semiconductor Corp., Santa Clara, CA. Project was an application of rapid solidification technology to a fabrication problem in electronics packaging.
- 1974-78 Risdon Manufacturing Co., Naugatuck, CT. Metallurgical consultant for developing specifications for purchasing a wide variety of strip alloys (aluminum, steel, brasses, stainless steel, nickel-base), heat treating, tooling, mechanics of forming and setting-up an "in-house" metallurgical laboratory.
- 1973-75 R. J. Reilly, Jr., Co., Inc., Danbury, CT. Directed a team of students for the University of Bridgeport to provide engineering and testing services; work was in welding, powder coatings, structures, and painting. One member of the team was eventually hired by the client.
- 1974 Consolidated Controls Corp., Bethel, CT. Heat transfer in devices and electronic control cabinets for submarine applications.

- 1973 National Forge Co., Erie, PA. Melting and solidification of large steel castings (25-150 tons).
- 1970 Remington Electric Shaver Co., Bridgeport, CT. Heat treating, quenching, forming and grinding problems of high carbon steel.
- 1967-69 Tenaxol, Inc., Milwaukee, WI. An evaluation of the quenching characteristics of polyalkylene glycol-water solutions for aluminum alloys. Parameters examined were cooling rates, tensile properties, and quench distortion.
- 1967 Bendix Foundries Division, Teterboro, NJ. An evaluation of an existing investment casting process; recommendations were made regarding wax injection control for patterns, gating and assembly procedures of the trees, ceramic shell drying, dewaxing, and metal pouring.
- 1966 Lindberg Hevi-Duty, Watertown, WI. Excessive solid slag deposits in large (25,000 pounds) capacity channel-type induction furnaces used for melting irons were studied. Recommendations were made whereby such deposits could be eliminated.

Legal Consulting (Metallurgical Expert)

2009 major damage in dwelling caused by pin-hole corrosion in copper pipe; 2003 expert for plaintiff in Las Vegas, NV involving rigging for hoisting heavy panels in construction; 2000-2001 expert for defense in Los Angeles, CA patent about welding overlay on tubes; 1998 expert for defense in Phoenix, AZ involving cable attachment on an exercise machine; 1998 expert for insurance company on fitting that caused flooding in a building in Phoenix, AZ; 1996 expert for plaintiff in Tucson, AZ involving a weld on an exercise machine; expert for defense in Tucson, AZ involving the suspension of a porch swing; 1995 expert for defense attorney in Phoenix who represented a steel company in Pennsylvania on an industrial suit; 1994 expert for plaintiff in Tucson, AZ involving personal injury and defective casting on a motorcycle; 1992 expert for defense in Tucson, AZ involving personal injury and the suspension of a porch swing; expert for plaintiff's attorney in Tucson, AZ involving personal injury and the use of a tool; 1991 expert for plaintiff's attorney in Phoenix, AZ involving the fracture of a weld in a trailer hitch; 1989 expert for plaintiff's attorney in Phoenix, AZ involving the examination of steel springs and copper wires exposed to a fire; 1988 expert for plaintiff's attorney in Tucson, AZ in a case involving an eye injury allegedly from a tool; 1987 expert for defense attorney in Phoenix, AZ in a case involving vehicle/tow trailer accident and bodily injury; 1987 expert for plaintiff's attorney in Tucson, AZ involving bodily injury from a die-casting used on a lever for seat adjustment; 1980 expert for U.S. Department of Justice (Tucson office) in a criminal case; testimony was in heat transfer in steel; 1975 expert for plaintiff's attorney in Portland, Maine in a case involving bodily injury from broken rear axle. My report showed that the vehicle manufacturer was not at fault so case was not brought to trial; 1974 expert for plaintiff's attorney in New Haven, CT in case involving death due to a brake failure in a truck; testimony was in residual stresses in a brake component due to a method of heat treatment.

List of Publications

Journals, Books, Proceedings

D.R. Poirier: "Activity of Carbon in Liquid Iron-Carbon-Chromium Solutions," *Trans. TMS-AIME*, vol. 242, 1968, pp. 349-350.

D.R. Poirier: "Activity of Carbon in Austenite," *Trans. TMS-AIME*, vol. 242, 1968, pp. 685 --690.

R.A. Roberts, R.P. Date, C.R. Loper and D. R. Poirier: "The Effect of Solidification Time on the Properties of Copper-Base Alloys," *AFS Trans.*, vol. 76, 1968, pp. 573-583.

R.A. Roberts, C.R. Loper and D.R. Poirier: "Riser Design and Feeding Distance of Manganese Bronze Castings," *AFS Trans.*, vol. 77, 1969, pp. 387-397.

M.C. Flemings, D.R. Poirier, R.V. Barone and H.D. Brody: "Microsegregation in Iron Base Alloys," *J. of the Iron and Steel Inst.*, April, 1970, pp. 371-381.

G.H. Geiger and D.R. Poirier: *Transport Phenomena in Metallurgy*, Addison-Wesley, Reading, MA, 1973, 616 pages.

D.R. Poirier and A.P. Kieras: "The Anisotropic Cutting Behavior of Free-Machining Steels," Annual Winter Meeting of ASME, New York, Nov. 1974, Paper No. 74-WA/Prod-12, and published in *Trans. ASME-J. Eng. Ind.*, vol. 97, series B, no. 3, August 1975, pp. 1094-1104.

D.R. Poirier and N.V. Gandhi: "Optimization of Riser Designs with Insulating Sleeves to Achieve Minimum Cost," *AFS Trans.*, vol. 84, 1976, pp. 577-584.

D.R. Poirier: "Foundry Practice," Ch. 31 in *Handbook of Stainless Steels*, D. Peckner and I.M. Bernstein (eds.), McGraw-Hill, NY, 1977.

S. Kou, D.R. Poirier and M.C. Flemings: "Macrosegregation in ESR Ingots," *Electric Furnace Proceedings*, vol. 35, Iron and Steel Society of AIME, 1977, pp. 221-228. (For this paper, we earned the John Chipman Award by the Iron and Steel Society of AIME, February 1980).

S. Kou, D.R. Poirier and M.C. Flemings: "Macrosegregation in Rotated Remelted Ingots," *Metall. Trans. B*, vol. 9B, 1978, pp. 711-719.

T. Fujii, D.R. Poirier and M.C. Flemings: "Macrosegregation in a Multicomponent Low Alloy Steel," *Metall. Trans. B*, vol. 10B, 1979, pp. 331-339.

D.N. Petrakis, M.C. Flemings and D.R. Poirier: "Some Effects of Forced Convection on Macrosegregation," in H.D. Brody and D. Apelian (eds.), *Modeling of Casting and Welding Processes*, Conference on the Modeling of Casting and Welding Processes, Rindge, NH, August 1979, The Metallurgical Society of AIME, Warrendale, PA, 1981, pp. 285-312.

D.R. Poirier, M.C. Flemings, R. Mehrabian and H.J. Klein: "Modeling Macrosegregation in Electroslag Remelted Ingots," in J.J. Burke, R. Mehrabian and V. Weiss (eds.), *Advances in Metal Processing*, Plenum Press, NY, 1981, pp. 277-317.

D.W. Gusching and D.R. Poirier: "Inclusions and Melt-Crucible Reactions in VIM Nickel-Base Alloys," *Proceedings of the 30th Annual Meeting of the Investment Casting Institute*, Lincolnshire, Illinois, October 4-6, 1982, pp. 12:01-12:13.

D.R. Poirier: "The University of Arizona" in *Opportunities for a Career in Mining and Metallurgy* (N.J. Themelis, ed.), Mining and Metallurgical Society of America, NY, 1983, pp. 41-45.

- T. Fujii, D.R. Poirier and M.C. Flemings: "Coarsening of SiO₂ Particles in Copper and MnS Inclusions in Steel," *Metall. Trans. A*, vol. 13A, 1982, pp. 2143-2153.
- J. Meyers, G.H. Geiger and D.R. Poirier: "Structure and Properties of Thermite Welds in Rails," *Welding Journal - Welding Research Supplement*, August 1982, pp. 258-268s.
- A.L. Maples and D.R. Poirier: "An Analysis of Convection in the Two-Phase Zone of Solidifying Alloys," in T.N. Veziroglu (ed.), *Thermal Sciences*, Hemisphere Publishing, Washington, DC, 1984.
- D.R. Poirier: "Convection of Interdendritic Liquid in Unidirectionally Solidified Alloys," *Proceedings of the U.S.-Japan Cooperative Science Program Seminar on Solidification Processing*, June 26-29, 1983, Dedham, MA, pp. 61-96.
- A.L. Maples and D.R. Poirier: "Convection in the Two-Phase Zone of Solidifying Alloys," *Metall. Trans. B*, vol. 15B, 1984, pp. 163-172.
- D.R. Poirier, M.C. Flemings, R. Mehrabian and H.J. Klein: "Modelling Macrosegregation in Electroslag Remelted Ingots," in *Electroslag Remelting*, B.I. Medovar (ed.), Kiev, Naukova Dumka, 1984, pp. 155-178 (in Russian).
- S. Kou, D.R. Poirier and M.C. Flemings: "Macrosegregation in Rotated Remelted Ingots," in *Electroslag Remelting*, B.I. Medovar (ed.), Kiev, Naukova Dumka, 1984, pp. 198-216 (in Russian).
- L.C. Schroeder and D.R. Poirier: "The Mechanical Properties of Thermite Welds in Premium Alloy Rails," *Mat. Sci. and Eng.*, vol. 63, 1984, pp. 1-21.
- L.C. Schroeder and D.R. Poirier: "Improving the Structure and Properties of Thermite Weld Metal," *Mat. Sci. and Eng.*, vol. 63, 1984, pp. 22-33.
- L.C. Schroeder and D.R. Poirier: "Thermite Rail Welds: The Process, Mechanical and Metallurgical Properties, and Possible Improvements," *Proceedings of Railroad Rail Welding*, Railway Systems and Management Association, Northfield, NJ, 1985, pp. 21-59.
- R. Nasser-Rafi, R. Deshmukh and D.R. Poirier: "Flow of Interdendritic Liquid and Permeability in Pb-20 Wt.Pct. Sn Alloys," *Metall. Trans. A*, vol. 15A, 1985, pp. 2263-2271.
- D.R. Poirier, M.M. Andrews and A.L. Maples: "Modeling Macrosegregation and Porosity in Steel Castings," in J. Svoboda (ed.), *Proceedings of the 1st International Steel Foundry Congress*, Nov. 11-13, 1985, Chicago, Steel Founders' Society of America, Des Plaines, IL, pp. 307-322.
- L.J. Demer, J.-S. Chen, D.N. Buechler, M.A. Damento, D.R. Poirier and T.C. Cetas: "Ferromagnetic Thermoseed Materials for Tumor Hyperthermia," *Proceedings of the 8th Annual Meeting of IEEE Engineering in Medicine and Biology Society*, Fort Worth, TX, November 7-10, 1986, vol. 3, pp. 1448-1453.
- D.R. Poirier: "Permeability for Flow of Interdendritic Liquid in Columnar-Dendritic Alloys," *Metall. Trans. B*, vol. 18B, 1987, pp. 245-255.
- S. Ganesan and D.R. Poirier: "Densities of Aluminum-Rich Aluminum-Copper Alloys during Solidification," *Metall. Trans. A*, vol. 18A, 1987, pp. 721-723.
- S. Ganesan, R. Speiser and D.R. Poirier: "Viscosities of Aluminum-Rich Al-Cu Liquid Alloys," *Metall. Trans. B*, vol. 18B, 1987, pp. 421-424.
- D.R. Poirier and R. Speiser: "Surface Tension of Aluminum-Rich Al-Cu Liquid Alloys," *Metall. Trans. A*, vol. 18A, 1987, pp. 1156-1160.

- R. Speiser, D.R. Poirier and K. Yeum: "Surface Tension of Binary Liquid Alloys", *Scripta Metall.*, vol. 21, 1987, pp. 687-692.
- D.R. Poirier and K. Yeum: "Modelling Interdendritic Porosity," in *Solidification Processing 1987*, The Institute of Metals, London, 1988, pp. 26-28.
- D.R. Poirier, K. Yeum and A.L. Maples: "A Thermodynamic Prediction for Microporosity Formation in Aluminum-Rich Al-Cu Alloys," *Metall. Trans. A*, vol. 18A, 1987, pp. 1979-1987.
- K. Yeum and D.R. Poirier: "Computer Model for Reaction Kinetics of VIM of Nickel-Base Alloys," *Proceedings of the 35th Annual Meeting of the Investment Casting Institute*, Washington, DC, October 5-7, 1987, pp. 13:1-13:25.
- D.R. Poirier and K. Yeum: "Predicting Microporosity in Nickel-Base DS Castings," *Proceedings of the 35th Annual Meeting of the Investment Casting Institute*, Washington, DC, October 5-7, 1987, pp. 11:1-11:33.
- K. Yeum and D.R. Poirier: "Predicting Microporosity in Aluminum Alloys," *Light Metals 1988*, L.G. Boxall (editor), The Metallurgical Society, Warrendale, PA, 1988, pp. 469-476.
- J.-S. Chen, D.R. Poirier, M.A. Damento, L.J. Demer, F. Biancaniello and T.C. Cetas: "Development of Ni-4 wt.pct. Si Thermosteeds for Hyperthermia Cancer Treatment," *J. of Biomedical Materials Res.*, vol. 22, 1988, pp. 303-319.
- D.R. Poirier: "Densities of Pb-Sn Alloys during Solidification," *Metall. Trans. A*, vol. 19A, 1988, pp. 2349-2354.
- K.S. Yeum and D.R. Poirier: "Modelling Directional Solidification of a Dendritic Alloy," *Cast Metals*, vol. 1, 1988, pp. 161-170.
- D.R. Poirier and P. Nandapurkar: "Enthalpies of a Binary Alloy during Solidification," *Metall. Trans. A*, vol. 19A, 1988, pp. 3057-3061.
- P. Nandapurkar and D.R. Poirier: "Heat of Mixing and Morphological Stability," *J. Crystal Growth*, vol. 92, 1988, pp. 88-96.
- J.C. Henrich, S. Felicelli, P. Nandapurkar and D.R. Poirier: "Thermosolutal Convection during Dendritic Solidification," 27th AIAA Aerospace Science Meeting, Reno, NV, January 8-12, 1989, paper no. 89-0626
- S. Ganesan and D.R. Poirier: "Solute Redistribution in Dendritic Solidification with Diffusion in the Solid," *J. Crystal Growth*, vol. 97, 1989, pp. 851-859.
- K. Yeum and D.R. Poirier: "Computer Model for Reaction Kinetics of VIM Nickel-Base Alloys," in *Special Melting and Processing Technologies*, G.K. Bhat, ed., Noyes Publications, Park Ridge, NJ, 1989, pp. 68-97.
- K.S. Yeum, R. Speiser and D.R. Poirier: "Estimations of the Surface Tensions of Binary Liquid Alloys," *Metall. Trans. B*, vol. 20B, 1989, pp. 693-703.
- P.J. Nandapurkar, D.R. Poirier, J.C. Heinrich and S. Felicelli: "Thermosolutal Convection during Dendritic Solidification of Alloys, Part I - Linear Stability Analysis," *Metall. Trans. B*, vol. 20B, 1989, pp. 711-721.
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3. "Simulation of Microporosity in 8620 Steel" (with P.K. Sung and S.D. Felicelli), Oct. 4, 2001.
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5. "Simulation of Microporosity in 8620 Steel Investment Casting Alloy" (with P.K. Sung and S.D. Felicelli), Jan. 23, 2002.
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7. "The Effect of Titanium on Inclusion and Porosity Formation in 30CrMoV9 Steel Casting Alloy" (with M. Hawthorne), May 21, 2002.
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2. "Modeling Freckles in Superalloy Ingots," (with P.K. Sung and R.G. Erdmann), November 4, 2002.
3. "Modeling Freckles in Superalloy Ingots," (with S.D. Felicelli), November 11, 2002.
4. "Modeling Freckles in Superalloy Ingots," (with P.K. Sung and R.G. Erdmann), February 12, 2003.
5. "Modeling Freckles in Superalloy Ingots," (with P.K. Sung and R.G. Erdmann), June 10, 2004.
6. "Primary Dendrite Arm Spacing Spacings in IN 718," (with P.K. Sung), September 1, 2004.
7. "Characteristic Temperatures for the Solidification of IN718," (with P.K. Sung and R.G. Erdmann), September 14, 2004.
8. "Solidification of IN718 - Simulating the Formation of Freckles in Superalloy Ingots," (with P.K. Sung and R.G. Erdmann), September 14, 2004.
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10. "Densities of the Laves Phase and the Gamma/Laves Eutectic in IN718," (with P.K. Sung and W. Lyman), November 29, 2004.
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14. "Prediction of Freckles in VAR-ingots of Alloy 718," (with P.K. Sung and R.G. Erdmann), August 5, 2005.

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5. "Characterization of Porosity in Thin Wall Castings of IN718," (with W.D. Lyman and P.K. Sung), June 25, 2004.

"Behavior of Oxide Inclusions in Processing of NiTi –Alloy and Their Characterization," for ATI Wah Chang, Albany, Oregon. *Progress Reports*: Jan. 2, 2008 (7 pages); Feb. 14, 2008 (7 pages); Aug. 5, 2008 (13 pages). *Final Report* October 21, 2008 (67 pages).

Presentations/Seminars

"Improved Wrought Materials Through Solidification Control," The Metallurgical Society of AIME, Fall Meeting, Cleveland, OH, 1967.

"The Brass and Bronze AFS Research Progress Report," The American Foundrymen's Society Annual Meeting, Cleveland, OH, 1968 (published).

"The Brass and Bronze Research Report," The American Foundrymen's Society Annual Meeting, Cincinnati, OH, 1969 (published).

"The Heat Transfer Approach to the Design of Sand Castings," Seminar before the Henry Krumb School of Mines, Columbia University, January 8, 1971.

"Manufacturing Engineering Education at the Right Time," for Chapter 206 of Society of Manufacturing Engineers, September 1971.

"Fundamentals of Convection, Conduction and Radiation," the Ross Mayfield Seminar before the Chicago-Western Chapter of ASM, March 22, 1972.

"The Anisotropic Cutting Behavior of Free-Machining Steels," Annual Winter Meeting of ASME, NY, November 1974 (published).

"Optimization of Riser Designs with Insulating Sleeves to Achieve Minimum Cost," AFS 80th Casting Congress, 1976 (published).

"Macrosegregation in ESR Ingots," presented at 106th AIME Annual Meeting, Atlanta, GA, March 1977.

"Centrifugal Refinement of Semisolid Alloys," presented at 106th AIME Annual Meeting, Atlanta, GA, March 1977.

"Modeling Macrosegregation in Electroslag Remelted Ingots," 25th Sagamore Army Materials Conference, Bolton Landing, NY, July 1978 (published).

"Some Effects of Forced Convection on Macrosegregation," Conference on the Modeling of Casting and Welding Processes, Rindge, NH, August 1979 (published).

"Modeling of Macrosegregation" presented to Research Department of Special Metals Corp., New Hartford, NY, May 1980.

"Analysis and Calculation of Macroseggregation in a Casting Ingot," presented to Materials Research Group at Marshall Space Center (NASA), Huntsville, AL, October 15, 1980.

"Macroseggregation and Fluid Flow in Solidifying Metals," Materials Science Seminar, Sandia Laboratories, Albuquerque, NM, October 1980.

"Thermite Welds in Rail," presented at the Albuquerque ASM Chapter Monthly Meeting, October 1980.

"Advances in the Analysis of Solidification," presented at the Phoenix ASM Chapter Monthly Meeting, October 1981.

"An Analysis of Convection in the Two-Phase Zone of Solidifying Alloys," presented at 16th Southeastern Seminar on Thermal Sciences, Miami, FL, April 19-21, 1982, and before the Materials Research Group at Marshall Space Flight Center (NASA), in Huntsville, AL, April 22, 1982 (published).

"Convection of Interdendritic Liquid in Unidirectionally Solidified Alloys," presented at the U.S.-Japan Cooperative Science Program Seminar on Solidification Processing, Dedham, MA, June 26-29, 1983 (published).

"Modeling Macroseggregation," presented to Processing Science Section of the Materials Division at Lewis Research Center (NASA), Cleveland, OH, August 8, 1983.

"Flow of Interdendritic Liquid and Permeability in Solidifying Alloys," presented at the 113th TMS-AIME Annual Meeting, Los Angeles, February 1984.

"Short Course on Dendritic Solidification," presented two days of intensive lectures on solidification theory to metallurgists and engineers of North Star Steel, Minneapolis, MN, May 7-8, 1984.

"Flow of Interdendritic Liquid in Alloys" presented at the 114th TMS-AIME Annual Meeting, NY, February 1985.

"Modeling Macroseggregation in Alloys," presented to General Motors Research Laboratories, Warren, MI, July 16, 1985.

"Segregation in Alloys," presented at the National Science Foundation Workshop on Interaction of Thermal and Material Sciences in Materials Processing, Snowmass, Colorado, July 30 - August 1, 1985.

"Modeling Macroseggregation in Alloys," presented to Department of Mechanical Engineering, University of Massachusetts at Amherst, October 4, 1985.

"Status of Modeling Macroseggregation," presented at the Fall Meeting of TMS-AIME, Toronto, October 14-17, 1985.

"Modeling Macroseggregation and Porosity in Steel Castings," presented at the 1st International Steel Foundry Congress, Chicago, November 1985 (published).

"Modeling of Macroseggregation and Porosity," presented at Alcoa Laboratories Centennial Technical Symposia, Solidification Seminar, Nemaquin Woods, PA, August 24-28, 1986.

"Modeling Macroseggregation and Porosity in Steel Castings," presented at the TMS-AIME Fall Meeting, Orlando, FL, October 5-9, 1986.

"Vacuum Induction Melting of Nickel-Base Superalloys - Status Report," presented at TRW Castings Division, Cleveland, OH, June 1986.

"Computer Simulation of Macroseggregation," presented at NASA Solidification Macroseggregation Workshop, NASA-Lewis Research Center, Cleveland, OH, September 1986.

"Modeling Interdendritic Porosity," presented to the Molten Metals Processing Division, Alcoa Laboratories, Alcoa Center, PA, June 1987.

"Modeling Interdendritic Porosity," presented at Solidification Processing 1987, Sheffield, U.K., September 21-24, 1987 (published).

"Computer Model for Reaction Kinetics of VIM of Nickel-Base Alloys," presented at the 35th Annual Meeting of the Investment Casting Institute, Washington, DC, October 5-7, 1987 (published).

"Predicting Microporosity in Nickel-Base DS Castings," presented at the 35th Annual Meeting of the Investment Casting Institute, Washington, DC, October 5-7, 1987 (published).

"Modeling Microporosity in Solidifying Alloys," seminar lecture for the Department of Mechanical and Materials Engineering, Washington State University, January 20, 1988.

"Convection in Solidifying Alloys," presented to The Center for Low-Gravity Fluid Mechanics and Transport Phenomena, University of Colorado, February 29, 1988.

"Thermosolutal Convection during Dendritic Solidification," presented at the Materials Processing in Space Sessions, ASM International, World Materials Congress, Chicago, September 24-30, 1988 (published).

"Segregation and Structure of High Carbon Steel," presented at North Star Steel Technical Meeting, Wilton, IA, November 3-4, 1988.

"Thermosolutal Convection during Dendritic Solidification," seminar for the Metallurgical and Materials Engineering Department, Colorado School of Mines, February 16, 1989.

"Macroseggregation in Alloy Castings: A Need to Analyze Convection Therein," presented at The Arizona Fluid Mechanics Seminar, Tucson, AZ, February 17-18, 1989.

"Macroseggregation in Alloy Castings: A Need to Analyze Convection Therein," seminar for the Department of Materials Science and Engineering, University of Pittsburgh, April 6, 1989.

"Attacking Chronic Problems in Materials Processing," Seminar for the Department of Metallurgical and Materials Engineering, University of Texas-El Paso, June 27, 1989.

"Momentum Equation and Permeability for Flow of Interdendritic Liquid during Solidification," Seminar for the Department of Metallurgical Engineering, Michigan Technological University, July 24, 1989.

"Conservation Equations for Modelling Macroseggregation in Dendritic Alloys," Sessions on Modeling of Microstructure Evolution during Solidification, The 119th TMS Annual Meeting, Anaheim, CA, February 18-22, 1990.

"Channel Segregation and Thermosolutal Convection," Seminar for Department of Materials Science and Engineering, University of Cincinnati, February 25, 1991.

"Continuum Model for Predicting Macroseggregation in Dendritic Alloys," Symposium on Computer Modeling and Microstructures, International Metallographic Society 25th Annual Convention, Denver, CO, August 2-5, 1992, published in *Materials Characterization*, 1994.

"Simulation of Solidification of Dendritic Alloys with a Porous Media Model," Session on Multiple Component Convection, 1992 National Heat Transfer Conference, San Diego, CA, August 9-12, 1992 (published).

"Continuum Model for Predicting Macrosegregation in Dendritic Alloys," Seminar for Department of Aerospace and Mechanical Engineering, The University of Arizona, October 15, 1992.

"Principles of Solidification," Course on dendritic solidification of alloys presented at the Alcoa Technical Center, Alcoa Center, PA, May 24-26 and June 7-9, 1993.

"Dendritic Solidification," Seminar for International Center of Numerical Modeling in Engineering, Polytechnic University of Catalonia, Barcelona, Spain, June 9, 1994.

"Status of Computer Simulations of Advanced Solidification Processes," Seminar for the Science and Engineering Materials Program, Arizona State University, Feb. 6, 1995.

"Transport Phenomena and Solidification," Keynote Talk for ProCAST Users Meeting, Universal Energy Systems, Annapolis, MD, March 30, 1995.

"Solid-Liquid Equilibria in Continuously Cast Steels," progress report on research at Research Council Meeting, Center for Pyrometallurgy, Tucson, AZ, Sept. 18, 1995.

"Convection and Macrosegregation," presented at the NIST Consortium on Casting of Aerospace Alloys," Semi-Annual Meeting, Boulder, CO, November 6, 1995.

"Modeling of Transport Phenomena in Directional Solidification Processes," Symposium on Solidification Science and Processing, International Symposia on Advanced Materials and Technology for the 21st Century, The 117th Meeting of JIM, Honolulu, Hawaii, Dec. 13-15, 1995.

"Equilibrium Partition Ratios in Multicomponent Steels," presented at Materials Processing Fundamentals Symposium, The 125th Annual Meeting of TMS and AIME, Anaheim, CA, Feb. 4-8, 1996.

"Modeling Convection and Macrosegregation during Solidification of Single-Crystal Superalloys," presented at AeroMat 96, Dayton, OH, June 4-6, 1996.

"Comparison of Structure and Segregation in Alloys Directionally Solidified in Terrestrial and Microgravity Environments," presented at Microgravity Materials Science Conference, Huntsville, AL, June 10-11, 1996 (published).

"Progress Report on the Mushy Zone Model," presented at the meeting of the Investment Casting Consortium Arrangement, Whitehall, MI, Sept. 11-12, 1996.

"Simulations of Convection and Segregation during Solidification of Dendritic Monocrystals," presented at Colloquium of Program in Applied Mathematics, The University of Arizona, November 8, 1996.

"Convection and Segregation in Solidifying Alloys," presented at Workshop on Quantitative Methods in Materials Research, Institute of Theoretical Physics, University of California at Santa Barbara, January 30, 1997.

"Simulation of Macrosegregation in Directional Solidification of Alloys," presented at Metals and Ceramics Division, Oak Ridge National Laboratory, March 21, 1997.

"Transport Phenomena and Macrosegregation during Solidification," presented as lecture seminars in Japan: Kawasaki Steel Research Laboratory, Chiba; Japanese Foundry Engineers Technical Committee Meeting, Tokyo; Nippon Steel, Nagoya; Nagoya University, Nagoya. Presented during July and August, 1997.

"Simulation of Transport Phenomena in Directionally Solidified Castings," presented at the 1997 TMS Fall Extraction & Processing Conference, The Julian Szekely Memorial Symposium on Materials Processing, Cambridge, Massachusetts, October 5-8, 1997 (published).

Progress Report on "Modeling Shrinkage and Pressure during Solidification," presented at the ICCA/NIST Meeting, National Institute of Standards and Technology, Gaithersburg, MD, Oct. 22-23, 1997.

"Microstructure Dependence of Fatigue Life for A356.2," presented at the 127th TMS Annual Meeting, San Antonio, TX, Feb. 15-19, 1998.

"Phenomena Related to the Formation of Microporosity in Castings," Keynote Talk at Engineering Foundation Conference on Modeling of Casting, Welding and Advanced Solidification Processes VIII, San Diego, CA, June 7-12, 1998 (published).

"Comparison of Structure and Segregation in Alloys Directionally Solidified in Terrestrial and Microgravity Environments," presented at Microgravity Materials Science Conference, Huntsville, AL, July 14-16, 1998 (published) and as Science Concept Review at Marshall Space Flight Center, Huntsville, AL, Dec. 17 and 18, 1998.

"Fatigue Behavior of A356.2 Casting Alloy with Gradients in Dendrite Arm Spacings and Porosity," presented at the 128th TMS Annual Meeting, San Diego, CA, Feb. 28-Mar. 4, 1999.

"Permeability for Convection in Solidifying Alloys," Seminar for Centro Atomico Bariloche, San Carlos de Bariloche, Argentina, Mar. 17, 1999.

"Permeability for Modeling Solidification of Equiaxed Alloys" and "Fatigue Properties and Microstructure in A356 Alloy," Seminars for the Alcoa Technical Center, Alcoa Center, PA, Aug. 18, 1999.

"Research in Progress: Prediction of Microporosity in IN 718 Equiaxed Castings," Seminar for Operhall Research Center, Howmet Castings, Whitehall, MI, Oct. 15, 1999.

"Predicting Defects in Superalloy Castings," Seminar for Integrated Materials Division, Sandia National Laboratories, Albuquerque, NM, Oct. 26, 1999.

"Permeability for Flow through Equiaxed-Dendritic Alloys," presented at the Merton C. Flemings Symposium, TMS Special Meeting, Cambridge, MA, June 28-30, 2000 (published).

"Modeling Solidification Defects in Ingots," presented at the Specialty Metals Processing Consortium Semiannual Meeting, Albuquerque, NM, Feb. 6, 2001.

"Role of Microstructure on the Fatigue Behavior of an Aluminum Casting Alloy," seminar presented at Centro Atomico Bariloche, San Carlos de Bariloche, Argentina, March, 2001.

"Model for Filling of Thin Section Castings," seminar presented at Operhall Research Center, Howmet Castings, Whitehall, MI, August 23, 2001.

"Simulations of Microporosity in an Aluminum Casting Alloy," presented at Metal Forming Processes, ASM Int. Materials Solutions Conference, Nov. 5-8, 2001, Indianapolis, Indiana.

"Improving Production Yields of Castings," Materials Corridor Council, Annual Meeting, University of Texas at El Paso, May 1-2, 2002.

"Computer Simulations of Microporosity in Superalloy Castings," presented at Accelerated Transition of Materials & Processes, AeroMat 2002 Conference, ASM Int. 13th Advanced Aerospace Materials and Processes Conference, June 10-13, 2002, Orlando, Florida.

"Simulating the Formation of Freckles in Superalloy Ingots-Progress Reports," presented at the Specialty Metals Processing Consortium Semiannual Meeting, Albuquerque, NM, August 7, 2002 and another at the Specialty Metals Processing Consortium, Technical Workshop, Las Vegas, NV, December 10&11, 2002.

"Microporosity in A356.2 Aluminum Alloy Cast under Pressure," 2nd International Aluminum Casting Technology Symposium, ASM 2002 Materials Solutions Conference, October 7-10, 2002, Columbus, Ohio.

"Simulating Microporosity in Casting Alloys," presented at the Casting Development and Validation Center, General Motors, Saginaw, Michigan, October 10, 2002.

"Simulating Microporosity in an Alloy," 39th Annual Technical Meeting of the Society of Engineering Science, October 13-16, 2002, Pennsylvania State University.

"Casting and Solidification Research at The University of Arizona," presented at Honeywell, Materials and Process Engineering Department, Phoenix, Arizona, December 19, 2002.

"Simulating the Formation of Freckles in Superalloy Ingots-Progress Reports," at meetings/workshops of the Specialty Metals Processing Consortium: Albuquerque, NM, February 18 & 19, 2003; Cleveland, OH, June 24 & 25, 2003; Albuquerque, NM, August 20, 2003.

"Collaborative Projects between University Researchers and Industry," Grantmanship Consortium-First Joint University and Industry Planning Meeting, Arizona Department of Commerce, Phoenix, AZ, June 12, 2003.

"Using Transport Phenomena in Solidification Processing of Nickel-Base Superalloys," Peter G. Winchell Memorial Lecture, Purdue University, September 8, 2003.

"Using Transport Phenomena in Solidification Processing of Nickel-Base Superalloys," Colloquium for the Department of Materials Science and Engineering, The University of Arizona, October 13, 2003.

"Simulation of Macrosegregation Defects in Ni-Base Superalloys," Materials Science & Technology 2003, Iron and Steel Industry and TMS, Chicago, Illinois, November 9 - 12, 2003.

"Simulating the Formation of Freckles in Superalloy Ingots-Progress Reports," at meetings/workshops of the Specialty Metals Processing Consortium: Albuquerque, NM, February 10-12, 2004; Las Vegas, NV, June 23 & 24, 2004; Albuquerque, NM, August 18, 2004; Las Vegas, NV, December 8&9, 2004.

"Solidification/Casting Research at The University of Arizona," Academic Program Review of the Department of Materials Science and Engineering, The University of Arizona, Tucson, AZ, May 13 & 14, 2004.

"Simulating the Formation of Freckles in Superalloy Ingots-Progress Reports," at meetings/workshops of the Specialty Metals Processing Consortium: Albuquerque, NM, February 16-17, 2005; Las Vegas, NV, June 15-16, 2005; Albuquerque, NM, August 17-18, 2005.

UNM/LANL Materials Solidification Modeling Workshop, Santa Fe, April 28-29, 2005.

"Simulating the Formation of Freckles in Superalloy Ingots," National Energy Technology Laboratory (NETL), Albany, OR, August, 2006.

"Effect of Casting Over-Pressure on the Fatigue Resistance of Aluminum Alloy A356-T6," 2nd International Symposium on Shape Casting, 136th Annual Meeting of TMS, Orlando, Florida, Feb. 25-Mar. 1, 2007.

"Renaissance in Solidification Processing," Keynote Speaker, 2007 Franklin Institute Laureate Symposium, Pennsylvania State University, College Park, PA, April 23, 2007.

"Ground Base Research for ESA Space Experiments on Directional Solidification of Alloys," presented at NASA/ESA workshop for collaborative research on the ISS, ESTEC, Noordwijk, Netherlands, June 23-34, 2008.

"Deterministic and Stochastic Permeability in Solidifying Alloys," Merton C. Flemings Honorary Symposium, MS&T Conference, Pittsburgh, PA, Oct. 28, 2009.

“Modelling Formation of Porosity and Macrosegregation,” Kaiser Aluminum, Spokane, WA, August 10, 2010.

NASA Presentations:

R.G. Erdmann (speaker), D.R. Poirier, and S.N. Tewari, "Directional Solidification of Al-7 wt pct Si in microgravity: Preliminary Results" *49th AIAA Aerospace Sciences Meeting*, Orlando, 4-7 January 2011.

R.G. Erdmann (speaker), D.R. Poirier, S.N. Tewari, and R.N. Grugel, "MICAST 6 Early Results", *MICAST IV Kickoff Meeting*, Noordwijk, Netherlands, March 29, 2011.

R.N. Grugel (speaker), R.G. Erdmann, J.R. Van Hoose, S.N. Tewari and D.R. Poirier: “Detachment of Tertiary Dendrite Arms during Controlled Directional Solidification in Aluminum 7 wt% Silicon Alloys; Observations from Ground-based and Microgravity Processed Samples,” *141st TMS Annual Meeting, Materials Research in Microgravity*, Orlando, FL, March 12-16, 2012.

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