

DAVID A. BONESS

Professor of Physics
Department of Physics
Seattle University
Seattle, WA 98122
USA

Phone: (206) 296-5924
Email: dboness@seattleu.edu
Web: <http://www.seattleu.edu/scieng/physics/Default.aspx?id=13930>

EDUCATION

University of Washington

Ph.D. in Geophysics, 1991. High-pressure experimental optics and condensed-matter physics, and computational condensed-matter physics. Advisor: J. Michael Brown. Dissertation title: *Shock-Wave Experiments and Electronic Band-Structure Calculations of Materials at High Temperature and Pressure*.

M.S. in Geophysics, 1985. Advisor: J. Michael Brown. Thesis title: *The Electronic Thermodynamics of Iron under Earth Core Conditions*.

University of Michigan

I entered in 1980 as a Physics graduate student interested in experimental nuclear physics. After particularly enjoying a marine geophysics course, I transferred to the Geology and Geophysics Department, which then required an undergraduate major in geology or its equivalent. During the 1981–82 academic year I completed all of the required upper-level undergraduate geology courses taught at the Ann Arbor campus. Wishing for more physics in my geophysics, I transferred to the University of Washington Graduate Program in Geophysics in 1982.

Yale University

B.A. in Physics and Philosophy, 1980. Minor concentrations in English and Classics. Senior Essay on neutrino astronomy supervised by D. Allan Bromley.

AWARDS, HONORS, AND SPECIAL APPOINTMENTS

M. J. Murdock Charitable Trust summer research appointments, 2009–12.

Arline F. Bannan Chair of Mathematics and Natural Sciences at Seattle University for 2006–08.

Visiting Faculty Fellowship, 1998 (six months), Petrophysics Group, Research School of Earth Sciences, the Australian National University, Canberra, Australia.

Visiting Professorship (physicist, second class), 1997–98 (six months), Département des Géomatériaux, l'Institut de Physique du Globe, Paris, France.

Sabbatical leaves granted by Seattle University for 1997–98; 2004–05; Spring Quarter, 2012.

Visiting faculty appointment, Lawrence Livermore National Laboratory, summer 1987.

Summer Faculty Fellowship, twice in the 1990s, Seattle University.

Elected to Sigma Xi, The Scientific Research Society, 1989.

Graduate Fellowship, 1986–88, Los Alamos National Laboratory, Los Alamos, New Mexico, for the experimental portion of my University of Washington Ph.D. dissertation work.

Outstanding Teaching Assistant Award, 1981, Physics Department, University of Michigan.

Duffendack Physics Department Graduate Fellowship, 1980–81, University of Michigan.

Exceptional Service Award, 1980, Timothy Dwight College of Yale University.

Griffin Regional Scholarship (state of Indiana), 1976–80, Yale University.

National Merit Scholarship, 1976 (Beloit College, declined, to attend Yale).

Award for scoring 11th in Indiana on national high school math exam (AHSME), 1976

ITT Science Award, 1976, and Rennselaer Medal for Mathematics and Science, 1976

TEACHING EXPERIENCE

Seattle University, Department of Physics

Professor, Department of Physics, 2004–present (Department Chair, summer 2008–present and while covering Chair’s sabbatical leave during Spring 2007).

Associate Professor, Department of Physics, 1995–2004 (Department Chair, 2001–04).

Assistant Professor, Department of Physics, 1992–95.

Instructor, Department of Physics, 1990–91 (full-time, tenure-track).

Courses taught (many taught multiple times):

Physics 100 (was 191). From Quarks to the Cosmos.

* Physics 104 (was 120). Science as a Human Process (a Core curriculum course with lab).

Physics 106. Fluids, Waves, Electricity and Magnetism (lectures and recitations).

Physics 121 (was 200). Mechanics (lectures, recitations, and labs).

Physics 122 (was 201). Electricity and Magnetism (lectures, recitations, and labs).

Physics 123 (was 202). Waves, Optics, and Thermodynamics (lectures, recitations, and labs).

Physics 203. Thermodynamics.

Physics 204. Relativity.

Physics 205. Introduction to Quantum Physics.

Physics 206. Modern Physics Laboratory.

** Physics 230 (was 292). Introduction to Computing for Scientists and Engineers (a lab course).

Physics 310. Intermediate Mechanics I.

Physics 311. Intermediate Mechanics II.

Physics 330. Electromagnetic Field Theory.

* Physics 363. Introduction to Geophysics.

* Physics 370. Modern Physical Measurement (a lab course, funded by an NSF-ILI grant).

Physics 385. Quantum Mechanics.

* Physics 393B. Atomic Physics Laboratory (a lab course).

* Physics 393D (later numbered as “491”). Computational Physics (a lab course).

§* Physics 480. Origins (a Core Phase III Interdisciplinary course).

Physics 470 (was 483). Solid State Physics.

*Honors 480. Interdisciplinary Seminar: Science and Religion (co-taught with theology colleague)

Physics 484. Thermodynamics and Statistical Physics.

Physics 487. Senior Synthesis (a Core capstone seminar course).

Physics 499. Undergraduate Research.

* indicates new courses which I invented and developed.

** a new course in Winter 2000 co-developed and team-taught with two colleagues, then taught solo in Fall 2000. Now called Physics 230: Computing Tools for Physical Science.

§ Physics 480 began life as Physics 480/Philosophy 480, in a co-taught format with Rob Deltete of the Philosophy Department.

For one to two weeks in each of four summers (1993–95, 1999) I taught minority middle-school girls about earthquakes and waves (with labs and field trips) in the National Science Foundation-funded Summer Science Splash program headed by Sister Kathleen Sullivan.

Santa Clara University, Department of Physics

Acting Assistant Professor (full-time, tenure-track), Department of Physics, 1988–90.

I left Santa Clara because my wife very strongly wanted to go back to Seattle. I was happy at Santa Clara University. Seattle University provided a similar environment.

Courses taught (each taught at least twice):

Physics 4. Physics for Scientists and Engineers I.

Physics 5. Physics for Scientists and Engineers II.

Physics 6. Physics for Scientists and Engineers III.
Physics 51. Introduction to Earth Science.
Physics 125. Quantum Mechanics.

At Santa Clara University I received commendation from the department chairman (William Duffy) for my teaching evaluations, grading standards, and scholarship output.

University of Washington, Department of Physics

Teaching Assistant, 1982–83 (introductory calculus-based physics labs).

University of Michigan, Department of Physics

Teaching Assistant, 1980–81 (introductory calculus-based physics labs; won Outstanding Teaching Assistant Award).

EXTERNAL GRANTS

- Fontana, P. W., and D. A. Boness (co-P.I.s). “The Boscovich Physics Scholars Program at Seattle University.” This grant proposal, submitted to the National Science Foundation NSF-DUE-S-STEM program, was awarded in June 2011. The total amount of the grant award is \$581,800, for Seattle University physics major scholarships and cohort activities.
- Boness, D. A. (P.I.). Proposal as department and faculty search chair for “Research Start-up Grants for New Science Faculty” program of the M. J. Murdock Charitable Trust. Grant awarded in December 2008 to provide \$25,000 (with an additional \$15,000 pending) of new faculty start-up aid in the Physics Department faculty search. The grant money increased the start-up funds available to the new hire, Assistant Professor of Physics Woo-Joong Kim.
- Along with other natural sciences faculty members in the Seattle University College of Science and Engineering, contributed to the planning, writing, and evaluation process for a major foundation grant for undergraduate science research and teaching from the M. J. Murdock Charitable Trust, awarded for 2009–2012 (total grant amount was \$350,000).
- Also, along with other natural sciences faculty members in the Seattle University College of Science and Engineering, contributed to the planning, writing, and evaluation process for a major foundation grant for undergraduate science laboratory equipment, for upper-level labs, from the Sherman Fairchild Foundation, awarded for 2006–2011 (total grant amount was \$497,000, with \$150,000 to the Physics Department).
- Boness, D. A. (P.I.). “Believing in Atoms, from Brownian Motion to the AFM: A New Upper-Level Interdisciplinary Physics Lab Course.” [\$20,233 for laboratory teaching instrumentation (matched by Seattle University) from the National Science Foundation Instrumentation and Laboratory Improvement (NSF-ILI) Program, awarded for 1994–96. Equipment purchased included a Burleigh scanning tunneling microscope, a computer-controlled spectrophotometer, a Franck-Hertz Hg tube and controller, optical experiments with black body radiation, a computer-controlled chaotic pendulum, a speed of light experiment using fiber optics, high-T superconductors, a Planck constant optical experiment, components for an ESR experiment, various National Instruments data acquisition and GPIB boards, a LabVIEW lab pack, and Macintosh computers. I developed, and taught three times, a new modern physics upper-level laboratory course (Physics 370: Modern Physical Measurement, and now called Advanced Physics Laboratory) using this new equipment.]
- Wrote the physics part of the National Science Foundation (NSF) proposal “Summer Science Splash” of Kathleen Sullivan (Seattle University Math Department) and Peter Alexander (Heritage College, a primarily Native American college near Yakima), which was funded for the triennium 1992–95. I taught the physics of waves in this program at Seattle University during each of four summers as well.

SCHOLARLY WORK

Sabbatical Leave Appointments

- Visiting Professor of Physics (funded by the French CNRS) for six months at the Institut de Physique du Globe de Paris (IPGP) in the Département des Géomatériaux, 4 place Jussieu, Paris, France, September 1997–February 1998. Did theoretical calculations of electrical conductivity of the Earth's core and of mineral samples in diamond anvil cells and in the Earth's deep mantle in two separate computational physics projects.
- Recipient of Visiting Faculty Fellowship at the Research School of Earth Sciences, the Australian National University, in the Petrophysics Group, Canberra ACT 0200, Australia, February 1998–August 1998. Developed new high-temperature ultrasonic elastic wave apparatus with Dr. Sharon Webb and Dr. Ian Jackson. Successfully measured P-wave velocities at high temperature in Al_2O_3 , Mo, and CaTiO_3 to 1600 K, to help determine the phase diagrams at high temperature.

Other Research Appointments Since Joining Seattle University

- Visiting Scientist (funded by the National Institutes of Health (NIH)) for the summer of 2000 in the research group of Dr. Viola Vogel, Director of the University of Washington Center for Nanotechnology, and Professor of Bioengineering, at the University of Washington. Designed and built a single-molecule spectroscopic optical system in collaboration with UW Bioengineering graduate students Meher Antia and Gretchen Baneyx. Took fibronectin molecule imaging and spectroscopic data with Meher Antia. This work continued after the appointment period.
- Visiting summer faculty fellowship for the summer of 1997 in the shock wave physics group in the Physics Division at Lawrence Livermore National Laboratory, Livermore, California. Did research in the theory of charge transfer in solids while waiting for the shock wave experimental facility to be repaired.

Publications

The peer-reviewed journal articles listed here have been cited an average of 43 times each, in other peer-reviewed publications, as of May 2012 (source: Web of Science citation index).

- D. A. Boness. Thermal relaxation of CsI shocked to 45 GPa, with a LiF window, and optical characterization of LiF shocked to 85 GPa. In *Shock Compression of Condensed Matter—2011*, edited by M. L. Elert, W. T. Butler, J. P. Borg, J. L. Jordan, and T. J. Vogler, 1605–08. (AIP Press, New York, 2012).
- M. Antia, L. D. Islas, D. A. Boness, G. Baneyx, and V. Vogel. Single molecule fluorescence studies of surface adsorbed fibronectin. *Biomaterials*, 27, 679–90 (2006).
- I. Jackson, S. Webb, L. Weston, and D. Boness. Frequency dependence of elastic wave speeds at high temperature: a direct experimental demonstration. *Phys. Earth Planet. Interiors*, 148, 85–96 (2005).
- S. L. Webb, I. Jackson, D. A. Boness, and L. J. Weston. High-temperature ultrasonic interferometry. *Annual Report 2000*, Research School of Earth Sciences, Institute of Advanced Studies, the Australian National University, 114–15 (2001).
- D. Boness. Metastability in shocked iron: controversy with regard to sound velocity and temperature measurements. In *Shock Compression of Condensed Matter—1999*, edited by M. D. Furnish, L. C. Chhabildas, and R. S. Hixson, 77–80. (AIP Press, New York, 2000).
- D. Boness, J. M. Brown, M. Morgan, and J. Madamba. Disagreement between shock and static temperature data: calculation of argon optical transmittance in laser-heated diamond anvil cells. In *Shock Compression of Condensed Matter—1999*, edited by M. D. Furnish, L. C. Chhabildas, and R. S. Hixson, 173–76. (AIP Press, New York, 2000). *J. Madamba was an undergraduate student of ours at Seattle University.*
- S. L. Webb, I. Jackson, D. A. Boness, and L. J. Weston. High-temperature ultrasonic interferometry. *Annual Report 1999*, Research School of Earth Sciences, Institute of Advanced Studies, the Australian National University, 58–59 (2000).

- S. L. Webb, D. A. Boness, and I. Jackson. High-temperature ultrasonic interferometry. *Annual Report 1998*, Research School of Earth Sciences, Institute of Advanced Studies, the Australian National University, 70–71 (1999).
- D. A. Boness, and J. M. Brown. Heat capacity of shocked alkali halides. In *Shock Compression of Condensed Matter—1995*, edited by S. C. Schmidt and W. C. Tao, 85–88. (AIP Press, New York, 1996).
- D. A. Boness and J. M. Brown. Bulk superheating of solid KBr and CsBr with shock waves. *Phys. Rev. Lett.*, 71, 2931–34 (1993).
- D. A. Boness and J. M. Brown. Melting along the Hugoniot of KBr and CsBr: Optical pyrometry – rarefaction overtake experiments. In *Shock Compression of Condensed Matter—1991*, edited by S. C. Schmidt, R. D. Dick, J. W. Forbes, and D. G. Tasker, 187–90. (North-Holland, Amsterdam, 1992).
- D. A. Boness and J. M. Brown. The electronic band structures of iron, sulfur, and oxygen at high pressures and the Earth's core. *J. Geophys. Res.*, 95, 21721–30 (1990). (Cited 39 times as of 27 Dec. 2010---ISI.)
- D. A. Boness and J. M. Brown. Time-resolved optical spectroscopy of shock-compressed fluid alkali halides. In *Shock Compression of Condensed Matter—1989*, edited by S. C. Schmidt, J. N. Johnson, and L. W. Davison, 863–66. (North-Holland, Amsterdam, 1990).
- R. S. Hixson, D. A. Boness, J. W. Shaner, and J. A. Moriarty. Acoustic velocities and phase transitions in molybdenum under strong shock compression. *Phys. Rev. Lett.*, 62, 637–40 (1989).
- D. A. Boness, J. M. Brown, and J. D. Bass. Thermal conductivity of iron alloys. In *Frontiers in Mineral Physics*, edited by S. J. Mackwell, W. A. Bassett, and P. F. McMillan, 64–65. (The American Geophysical Union, Washington, DC, 1989).
- D. A. Boness, J. M. Brown, and J. W. Shaner. Rarefaction velocities in shocked lead. In *Shock Waves in Condensed Matter—1987*, edited by S. C. Schmidt and N. Holmes, 115–18. (North-Holland, Amsterdam, 1988).
- J. W. Shaner, R. S. Hixson, M. A. Winkler, D. A. Boness, and J. M. Brown. Birch's law for fluid metals. In *Shock Waves in Condensed Matter—1987*, edited by S. C. Schmidt and N. Holmes, 135–38.
- J. M. Brown, M. D. Furnish, and D. A. Boness. Sound velocities for San Carlos olivine. In *Shock Waves in Condensed Matter—1987*, edited by S. C. Schmidt and N. Holmes, 119–21. (North-Holland, Amsterdam, 1988).
- D. A. Boness, J. M. Brown, and A. K. McMahan. The electronic thermodynamics of iron under Earth core conditions. *Phys. Earth Planet. Interiors*, 42, 227–40 (1986).

Published Abstracts of Presentations at Professional Meetings (all presentations given by D. A. Boness unless noted otherwise)

- D. A. Boness. Thermal relaxation of shocked CsI with a LiF window and optical characterization of shocked LiF to 42 GPa. *Bull. Am. Phys. Soc.*, 56, F1.00194 (2011). [Poster presented at the 17th Biennial International Conference of the American Physical Society Topical Group on Shock Compression of Condensed Matter, Chicago, IL, June 26–July 1, 2011.]
- D. A. Boness and B. Terrell-Martinez. Archean Earth Atmosphere Fractal Haze Aggregates: Light Scattering Calculations and the Faint Young Sun Paradox, *EOS Trans. AGU*, 91(52), Fall Meet. Suppl., Abstract A13C-0236 (2010). [Poster presented at the American Geophysical Union Fall Meeting, San Francisco, California, December 13–17, 2010.]
- Bernice Terrell-Martinez and David Boness. Cluster-Cluster Aggregation Calculations of Fractal Haze Particles: Titan and the Early Earth. *Bull. Am. Phys. Soc.* 55, NWS.D1.25 (2010). [Poster presented by undergraduate physics major Bernice Terrell-Martinez at the American Physical Society Northwest Section Meeting, Walla Walla, Washington, Oct. 1–2, 2010.]
- D. A. Boness and B. Canion. T-matrix optical scattering calculations for atmospheric aerosol fractal soot aggregates over a wide range of fractal dimension, *Eos Trans. AGU*, 90(52), Fall Meet. Suppl.,

- Abstract A13A-0191 (2009). [Poster presented at the American Geophysical Union Fall Meeting, San Francisco, California, December 13–18, 2009.]
- A. Smith and D. Boness. T-matrix calculations of fractal black carbon atmospheric aerosol particle optical scattering. *Bull. Am. Phys. Soc.* 53, C1.00025 (2008). [Poster presented by undergraduate physics major Anna Smith at the American Physical Society Northwest Section Meeting, Portland, Oregon, May 15–17, 2008.]
- D. Boness. Melting mechanisms of shocked superheated alkali halide single crystals. *Bull. Am. Phys. Soc., Ser. II*, 50, 477 (2005). [Talk presented at the American Physical Society March Meeting, Los Angeles, California, March 20–25, 2005.]
- M. Antia, L. Islas, D. Boness, G. Baneyx, and V. Vogel. Discrete conformations of surface-adsorbed fibronectin observed by single-molecule fluorescence resonance energy transfer. *Biophysical Journal (suppl.)*, 84, no. 2, abstract 753-Pos (Feb. 2003). [Talk presented by M. Antia at the Biophysical Society 2003 Meeting, San Antonio, Texas, March 1-5, 2003.]
- M. Antia, L. Islas, G. Baneyx, D. Boness, and V. Vogel. Single-molecule fluorescence resonance energy transfer studies of conformational changes of surface-adsorbed fibronectin. *Bull. Am. Phys. Soc.* 47, No. 1, Part II, 824 (2002). [Talk presented by M. Antia at the Annual American Physical Society March Meeting, Indianapolis, Indiana, March 18–22, 2002.]
- D. Boness. Metastability in shocked iron: controversy with regard to sound velocity and temperature measurements. *Bull. Am. Phys. Soc.*, 44, 43 (1999). [Talk presented at the American Physical Society Topical Conference on Shock Waves in Condensed Matter, Snowbird, Utah, June 27–July 2, 1999.]
- D. Boness, J. M. Brown, M. Morgan, and J. Madamba. Disagreement between shock and static temperature data: calculation of argon optical transmittance in laser-heated diamond anvil cells. *Bull. Am. Phys. Soc.*, 44, 77 (1999). [Talk presented at the American Physical Society Topical Conference on Shock Waves in Condensed Matter, Snowbird, Utah, June 27–July 2, 1999. *J. Madamba was an undergraduate physics major.*]
- J. Fitz Gerald, S. Webb, D. Boness, and I. Jackson. Changes in physical properties due to high temperature phase transitions in CaTiO₃ perovskite. *J. Conf. Abs.* 4, no. 1, L06 : 1P/03 : PO (1999). [Talk presented by John FitzGerald at the European Union of Geosciences EGU10 conference, Strasbourg, France, March 28–April 1, 1999.]
- D. A. Boness. Constraints from liquid-state transition-metal physics on the electrical conductivity of the Earth's core. *EOS–Trans. AGU*, 79(45), Fall Meet. Suppl., F232 (1998). [Poster presented at the American Geophysical Union Fall Meeting, San Francisco, California, December 6–10, 1998.]
- S. Webb, D. A. Boness, and I. Jackson. High-temperature ultrasonic measurement of wave speeds in polycrystalline materials. *EOS–Trans. AGU*, 79(45), Fall Meet. Suppl., F867 (1998). [Invited poster presented by D. Boness at the American Geophysical Union Fall Meeting, San Francisco, California, December 6–10, 1998.]
- D. A. Boness. Percolation theory and the electrical conductivity of high-pressure crystalline grain assemblages: application to DAC experiments and the Earth's lower mantle. *EOS–Trans. AGU*, 77(46), Fall Meet. Suppl., F754 (1996). [Poster presented at the American Geophysical Union Fall Meeting, San Francisco, California, December 15–19, 1996.]
- D. A. Boness. Mineral physics constraints on lower-mantle electrical and thermal conductivity. *EOS–Trans. AGU*, 77, W134 (1996). [Talk at the Study of Earth's Deep Interior session at the Western Pacific Geophysics Meeting, Brisbane, Australia, July 23–27, 1996.]
- D. A. Boness and J. M. Brown. Fluid and transport properties of shocked fluid metals and alkali halides. *Bull. Am. Phys. Soc.*, 40, 1384 (1995). [Talk at American Physical Society Topical Conference on Shock Waves in Condensed Matter, Seattle, Washington, August 14, 1995.]
- D. A. Boness. Tools for experiments on shock waves in condensed matter. *Mathematica Conference*, Rotterdam, The Netherlands, Sept. 2–4, 1992. *Rotterdam Program Guide* (abstract pages not numbered, poster session section, alphabetical order), Wolfram Research (1992). [The abstract was listed as a poster presentation, but I gave a 45-minute talk instead.]

- D. A. Boness and J. M. Brown. Observation of bulk superheating in a solid: shocked KBr and CsBr. Unpublished abstract due to Gordon Conference rules. (Poster presentation by J. M. Brown.) Gordon Conference: Research at High Pressure, Kimball Union Academy, Meriden, New Hampshire, June 22–26, 1992.
- D. A. Boness and J. M. Brown. Melting along the Hugoniot of KBr and CsBr: Optical pyrometry – rarefaction overtake experiments. *Bull. Am. Phys. Soc.*, 36, 1842 (1991). [Talk at American Physical Society Topical Conference on Shock Waves in Condensed Matter, Williamsburg, Virginia, June, 1991.]
- D. A. Boness, J. M. Brown, and J. W. Shaner. Optical investigations of alkali halides under strong shock compression. *Bull. Am. Phys. Soc.*, 34, 1705 (1989). [Talk at American Physical Society Topical Conference on Shock Waves in Condensed Matter, Albuquerque, New Mexico, August, 1989.]
- D. A. Boness and J. M. Brown. Shock compression studies of alkali halide phase diagrams. *EOS–Trans. AGU*, 69, 1461 (1988). [Talk at American Geophysical Union Fall Meeting, San Francisco, California, December, 1988.]
- J. M. Brown and D. A. Boness. Hugoniot temperatures based on interface radiation. *EOS–Trans. AGU*, 69, 1461 (1988). [Talk at American Geophysical Union Fall Meeting, San Francisco, California, December, 1988. This talk presented by J. M. Brown.]
- D. A. Boness and J. M. Brown. Equation of state and electronic structure of candidate outer core compositions. *EOS–Trans. AGU*, 68, 1455 (1987). [Talk at American Geophysical Union Fall Meeting, San Francisco, California, December, 1987.]
- D. A. Boness and J. M. Brown. Chemistry of the Fe-FeS system at high pressure: composition of the inner core. *EOS–Trans. AGU*, 68, 427 (1987). [Talk at American Geophysical Union Spring Meeting, Baltimore, Maryland, March, 1987. This talk presented by J. M. Brown.]
- J. M. Brown, J. W. Shaner, and D. A. Boness. Rarefaction velocities in shocked lead. *Bull. Am. Phys. Soc.*, 32, 1390 (1987). [Talk at American Physical Society Topical Conference on Shock Waves in Condensed Matter, Monterey, California, August, 1987.]
- J. W. Shaner, R. S. Hixson, M. A. Winkler, D. A. Boness, and J. M. Brown. Birch's law for fluid metals. *Bull. Am. Phys. Soc.*, 32, 1389 (1987). [Talk at American Physical Society Topical Conference on Shock Waves in Condensed Matter, Monterey, California, August, 1987. This talk presented by J. W. Shaner.]
- D. A. Boness, J. M. Brown, and M. D. Furnish. Sound velocities for San Carlos Peridot to 200 GPa. *Bull. Am. Phys. Soc.*, 32, 1389–90 (1987). [Talk at American Physical Society Topical Conference on Shock Waves in Condensed Matter, Monterey, California, August, 1987.]
- D. A. Boness, J. M. Brown, and A. K. McMahan. The electronic thermodynamics of iron. *EOS–Trans. AGU*, 66, 1058 (1985). [Talk at American Geophysical Union Fall Meeting, San Francisco, California, December, 1985.]

Other Invited Talks

At Lawrence Livermore National Laboratory; at l'Institut de Physique du Globe de Paris; at the Research School of Earth Sciences at the Australian National University; at Seattle University; at Santa Clara University; at Loyola Marymount University; at the University of Puget Sound; at Central Washington University; at Mount Holyoke College; at St. Lawrence University, and in Olympia, Washington.

SERVICE

Professional, Outside the University

- Referee (at many times from 1994 to present, and continuing, especially for *Physical Review B* and for *Physical Review Letters*) for submittals for publication in *Physical Review B*, in *Physical Review Letters*, in the *Journal of Applied Physics*, in the *Journal of Geophysical Research*, in *Geophysical*

Research Letters, in *Acta Acustica*, in the *Canadian Journal of Physics*, in *Physics Essays*, and for proposals to the Cornell Supercomputing Center.

- Reviewer for Prentice-Hall for the second edition of *Introduction to Quantum Mechanics*, by David Griffiths, 2004.
- Reviewer for Prentice-Hall for the third edition of *Physics for Scientists and Engineers*, by P. M. Fishbane, S. Gasiorowicz, and S. T. Thornton, 2003.
- Reviewer for Prentice-Hall for the second edition of *Numerical Methods for Physics*, by A. L. Garcia, 1999.
- Member of the Class of 1994 in the National Science Foundation-funded Project Kaleidoscope Faculty for the 21st Century, 1994 to present. Project Kaleidoscope is an umbrella organization of college and university faculty and administrators, and of leaders in government and industry, with the common broad-based goal of improving the nation's science and mathematics through innovative measures at primarily-undergraduate institutions. This involvement for me began with my participation in the Project Kaleidoscope Faculty for the 21st Century symposium held in Atlanta, October 28–30, 1994. I led workshops at the 1995 Project Kaleidoscope national symposium held in Minneapolis, November 3–5.
- Reviewer for the introductory calculus-based physics textbook, *Physics: The Nature of Things*, by Susan Lea and John Burke, for West Educational Publishing, 1992–94.
- Contributing Member of the Mineral Physics Committee of the American Geophysical Union releasing the September 1988 report entitled *Frontiers in Mineral Physics*.

University-Level Service (Seattle University)

- University Rank and Tenure Committee (2009–10) [filling in for colleague on sabbatical leave].
- Science Building Planning Committee (2010–).
- Co-chair, Sullivan Leadership Award Committee (2008–09) [filling in for colleague on maternity leave].
- Co-chair, Provost Colloquium (on Environmental Justice), 2008.
- Chair, Science and Engineering Dean Search Committee (2006–07).
- Core Senior Synthesis Committee (2003–04).
- Chair, Science and Technology Core Action Group (2000–04).
- Academic Assembly Representative (1999–2002).
- Academic Assembly Sabbatical Subcommittee (2000–01).
- University Rank and Tenure Committee (1998–2002).
- Gave presentation on visions of academic quality to the Seattle University Board of Regents in April 2000.
- University Instructional Technology Policy Committee (1998–2000).
- University Budget Conference Committee member (1995–96).
- Chair, Instructional Computing Committee (1994–95).
- Instructional Computing Committee (1993–95).
- Honorary Degrees Committee (1991–94).
- Faculty representative to Jesuit Education conference at Loyola Marymount University.
- Academic Council Engineering Program Review Subcommittee review of the Civil and Environmental Engineering Program (1993–94).
- Faculty Senate (elected as an at-large representative, 1992–95).
- Faculty Senate Semester Evaluation Subcommittee (1995).
- Faculty Senate Faculty Handbook Subcommittee (1993–95).
- Faculty Senate Faculty Benefits Subcommittee (1993–94).

College-Level Service (Seattle University)

- College Personnel Committee (2011–)

- Bannan Scholars Advisor (2010–11) [filled in for colleague on sabbatical leave].
- Bannan Scholarship Selection Committee (2010–11).
- Science Building Planning Committee (2010–).
- Science Building Architect Selection Committee (2009–10).
- Science and Engineering Facilities Planning Committee (2008–09).
- EXCO member as chair of the Physics Department (2007–).
- Organized and led SU group to Project Kaleidoscope Science Facilities Planning Workshop, Chantilly, Virginia, March 16–18, 2007.
- Chair, Science and Engineering Dean Search Committee (2006–07).
- Chair, Academic Quality Committee (for student academic conduct policy, 2003–06).
- EXCO member as chair of the Physics Department (2001–04).
- Science and Engineering Library Task Force (2002–04).
- Science and Engineering Academic Grievance Board (1999–2002).
- Science and Engineering General Science Program Committee (1998–99).
- Science and Engineering Scholarship Policy Committee (1996–97).
- Science and Engineering Release Time Selection Committee (Chair, 1994–95).
- Science and Engineering Laboratory Planning Committee (1992–93).

Departmental Service (Seattle University)

- Department chair (2001–04 and 2008–; also acting chair in spring 2007).
- Chair, Physics Department Assessment Committee (2009–).
- Chair, Search Committee, for the last three Physics Department tenure-track faculty searches. Each search resulted in the hiring of the search committee's first choice candidate.
- Faculty Review Committee (for 2nd and 4th-year reviews of departmental colleagues).
- Academic advisor of all or some of the physics majors (1992–97, 1999–2000, 2003–04, 2009–12).
- PhysFest recruitment fair participant as department chair (2010–).
- Society of Physics Students (SPS) chapter advisor (1992–97, 2008–09).
- Library liaison (various times).
- Web pages designer and maintainer (1996–).
- Step-Ahead registration advisor (1993–97).

Community Arts Service

- Member, Board of Directors, Infinity Box Theatre Project, Seattle, WA, 2012–.

PROFESSIONAL AFFILIATION

- American Physical Society.
- American Physical Society Topical Group on Shock Compression of Condensed Matter.
- American Geophysical Union
- History of Science Society
- American Association of Physics Teachers.
- American Association for the Advancement of Science.

PERSONAL

- Likes include cross-country skiing, hiking, volleyball, and discussion of many topics related to the sciences and the humanities.