

RACHEL J. BEANE

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EDUCATION

STANFORD UNIVERSITY, Stanford, CA

Ph.D. in Geological and Environmental Sciences, June 1997.

Dissertation: "Petrologic evolution and geochronologic constraints for high-pressure metamorphism in the Maksyutov Complex, south Ural Mountains." Advisor: J. G. Liou.

WILLIAMS COLLEGE, Williamstown, MA

B. A. *magna cum laude* with Highest Honors in Geology, June 1993.

Undergraduate thesis: "Field relations, petrology and geochemistry of Sugarloaf Intrusive Center, Pikes Peak Batholith, Colorado." Research was part of a Keck Geology Consortium Project. Advisor: R. A. Wobus. Elected to Sigma Xi.

TEACHING POSITIONS

ASSOCIATE PROFESSOR, Bowdoin College, 2004-present.

Teach Introduction to Physical Geology, Mineralogy, Structural Geology, Igneous and Metamorphic Petrology, and Mountain Belts.

ASSISTANT PROFESSOR, Bowdoin College, 1998-2004.

Awarded the 2003 Sydney B. Karofsky Prize. The prize recognizes a Bowdoin College teacher who "best demonstrates the ability to impart knowledge, inspire enthusiasm, and stimulate intellectual curiosity."

ASSISTANT PROFESSOR, Bowling Green State University, 1997-1998.

TEACHING ASSISTANT, Geographic Information Systems, Stanford University, 1996 - 1997.

INSTRUCTOR, Outdoor Education Program, Stanford University, 1994-1996.

Taught natural history and wilderness skills. Elected as program director, 1995.

RESEARCH POSITIONS

RESEARCH FELLOW, Department of Earth Sciences, University of Liverpool, Fall 2001.

Research in D. Prior's Electron Backscatter Diffraction laboratory.

VISITING SCIENTIST, National Museum of Natural History, Smithsonian Institution, Spring 2002.

Research with S. Sorensen on eclogite chemistry.

VISITING SCHOLAR, Department of Earth Sciences, Boston University, Spring, 2002.

Research in T. Plank's LA-ICP-MS laboratory.

EXTERNAL GRANTS

- National Science Foundation Grant, "Acquisition of an Electron Backscatter Diffraction System," \$144,100, 2003-2005.
- National Science Foundation Grant, "Integrating research with undergraduate education through a petrotectonic study of Casco Bay, Maine," \$38,158, 2002-2005.
- National Science Foundation Grant, "Improving undergraduate learning through use of a low-vacuum scanning electron microscope with an energy dispersive x-ray spectrometer," \$100,000, 1999-2002.
- National Science Foundation, Graduate Fellowship, 1993-1996.
- Geological Society of America, Research Grants, 1994 and 1995.
- Sigma Xi, Grant-in-Aid of Research, 1995.

PUBLICATIONS

- Beane, R.J., and Liou, J.G., 2005. Metasomatism in Serpentinite Melange Rocks from the High-Pressure Maksyutov Complex, Southern Ural Mountains, Russia. *International Geology Review*, v. 47, p. 24-40.
- Beane, R. J., 2004. Using the scanning electron microscope for discovery based learning in undergraduate courses. *Journal of Geoscience Education*, v. 52, p. 250-253.
- Msall, M.E., Dietsche, W., Beane, R., Wichard, R. and Carpenter, J., 2004. Examination of an unusual grain boundary in CaF₂. *Physica Status Solidi (c)*, v. 1, no. 11, p. 2983-2986.
- Beane, R. J., and Liou, J.G., 2004. Metasomatism in Serpentinite Melange Rocks from the High-Pressure Maksyutov Complex, Southern Ural Mountains, Russia. In Ernst, W.G., ed., *Serpentinite and Serpentinites: Mineralogy, Petrology, Geochemistry, Ecology, Geophysics, and Tectonics: Geological Society of America, International Book Series*, v. 8, p. 423-439.
- Beane, R.J., 2004. Electron Backscatter Diffraction. *The Maine Geologist*, v. 30, no. 1, p. 7-8.
- Bostick, B., Jones, R.E., Chen, C., Ernst, W.G., Leech, M.L., Hacker, B.R., and Beane, R.J., 2003. Positive identification of microdiamond from the Maksyutov Complex, south Urals, Russia, *American Mineralogist* v. 88, p. 1709-1717.
- Van Vleck, H. E. and Beane, R. J., 2002. Geochemical comparison of mafic, felsic and ultramafic rocks in the Hurrigan Mountain Melange to the Boil Mountain Ophiolite Complex, west-central Maine. *Atlantic Geology*, V. 37, issue 1, p. 3-15.
- Beane R. J. and Connelly J. N., 2000. ⁴⁰Ar/³⁹Ar, U-Pb, and Sm-Nd constraints on the timing of metamorphic events in the Maksyutov Complex, southern Ural Mountains. *Journal of the Geologic Society, London*, v. 157, p. 811-822.
- Beane R. J., 2000. Constraints for high-pressure metamorphism in the southern Ural Mountains. Weizmann Institute of Science, International Summer Science Institute Newsletter, p. 4-5.
- Beane R. J. and Wobus R. A., 1999. Petrogenesis of the Sugarloaf Syenite, Pikes Peak Batholith, Colorado. *Rocky Mountain Geology*, v. 34, p. 313-324.
- Smith D. R., Noblett J., Wobus R. A., Unruh, D., Douglass, J., Beane R. J., Davis, C., Goldman, S., Kay, G., Gustavson, B., Saltoun, B. and Stewart, J., 1999. Petrology and geochemistry of late-stage intrusions of the A-type, mid-Proterozoic Pikes Peak Batholith (Central Colorado, USA): implications for petrogenetic models. *PreCambrian Research*, v. 98, p. 271-305.
- Dobretsov, N. L., Shatsky V. S., Coleman R. G., Lennykh V. I., Valizer P. M., Liou J. G., Zhang R. and Beane R. J., 1996. Tectonic Setting of Ultrahigh-pressure Metamorphic Rocks in the Maksyutov Complex, Ural Mountains, Russia. *International Geology Review*, v. 38, p. 136-160.
- Beane R. J., Liou J. G., Coleman R. G. and Leech M. L., 1995. Petrology and Retrograde P-T Path for Eclogite of the Maksyutov Complex, Southern Ural Mountains, Russia. *The Island Arc*, v. 4, p.254-266.
- Lennykh V. I., Valizer P. M., Beane R. J., Leech M. L. and Ernst W. G., 1995. Petrotectonic Evolution of the Maksyutov Complex, Southern Urals, Russia: Implications for Ultrahigh-Pressure Metamorphism. *International Geology Review*, v. 37, p. 584-600.

CONFERENCE PAPERS (* denotes undergraduate student author)

- Msall, M.E., Dietsche, W., Beane, R., Wichard, R. and Carpenter, J*. Examination of an unusual grain boundary in CaF₂. The 11th International Conference on Phonon Scattering in Condensed Matter (Phonons2004), St. Petersburg, Russia.
- Levy, B. M.*, Beane, R. J., and Hussey, A. M. II, 2003. The Peaks Island Member of the Cushing Formation Interpreted as a Sub-Aqueous Volcanic Flow Succession in Southeastern Maine. *Geological Society of America, Abstracts with Programs*, v. 35, p.5.
- Beane, R. J., 2002. Using EBSD analysis to interpret garnet microstructures. *Geological Society of America, Abstracts with Programs*, v. 34, p. 9.
- Szramek, L.* and Beane, R. J., 2002. Correlation and stratigraphy of exotic blocks in the Vinalhaven Pluton, Maine to the Seal Cove Formation. *Geological Society of America, Abstracts with Programs*, v. 34, p. 66.
- Bostick, B., Jones, R.E., Chen, C., Ernst, W.G., Leech, M.L., and Beane, R.J., 2002, Microdiamonds identified from the Maksyutov metamorphic complex, south Urals, Russia, *Eos Transactions American Geophysical Union*, 83 (47), V51B-1262.
- Leech, M.L., Metzger, E.P., Wooden, J.L., Jones, R.E., Schwartz, C.L., Beane, R.J., 2002, New eclogitization and protolith ages for the Maksyutov Complex (south Ural Mountains) based on U-Pb zircon SHRIMP data, *Eos Transactions American Geophysical Union*, 83 (47), V51B-1263.
- Beane, R. J., 2001. Using the scanning electron microscope for discovery based learning in undergraduate courses. *Geological Society of America, Abstracts with Programs*, v. 33, p. 243.
- Lawrence, K. E.* and Beane, R. J., 2001. Geochemistry of the metamorphosed Spring Point and Cushing Formations. *Abstracts with Programs, Geological Society of America*, v. 33, p. 10.
- Meyer, E. E.* and Beane, R. J., 2001. A petrographic study of the Spring Point Formation, Casco Bay, Maine. *Abstracts with Programs, Geological Society of America*, v. 33, p. 10.
- Van Vleck, H.* and Beane, R. J., 2001. Petrography and geochemistry of mafic blocks in the Hurricane Mountain melange in west-central Maine. *Atlantic Geoscience Society Colloquium*, p. 33.
- Thomas, D. W.* and Beane, R. J., 2000. Deformation of the Hurricane Mountain Formation Melange along Tomhegan and Cold Streams, west-central Maine. *Abstracts with Programs, Geological Society of America*, v. 32, p.78.
- Beane, R. J., 1998. Implications of mineral textures and element zoning for the formation of atoll-shaped garnets in eclogite. *Eos, American Geophysical Union; Supplement*, v. 78 (V31B-12).
- Beane R. J., 1997. Ar/Ar evidence for Devonian high-pressure metamorphism in the South Urals. *Abstracts with Programs, Geological Society of America; v. 29*, p. 119.
- Beane R. J., 1996. Calcium Metasomatism in Mafic Rocks of the Maksyutov Complex, Southern Urals. *EOS, American Geophysical Union; Supplement*, v. 77, p. 837. *Session co-convener*.
- Beane R. J., Connelly J. N., and Liou J. G., 1996. Evidence for Devonian Eclogite-facies Metamorphism in the Maksyutov Complex, Southern Ural Mountains, Russia. *Abstracts with Programs, Geological Society of America; v. 28*, p. 170. *Invited talk*.
- Leech M. L., Valizer P. M., Ernst W. G., and Beane R. J., 1996. Metamorphism and deformation in the high- to ultrahigh-pressure Maksyutov Complex, southern Ural Mountains, Russia. EUROPROBE, Conference on the Uralides, Granada, Spain.
- Beane R. J., 1995. Metamorphism of the Serpentinite Melange in the Maksyutov Complex, Southern Ural Mountains. *EOS, American Geophysical Union; Supplement*, v. 76, p. 678.

CONFERENCE PAPERS (continued)

- Lennykh V. I., Valizer, P. M., Beane R. J., Leech M. L. and Ernst W. G., 1995. Petrotectonics of the Maksyutov Ultrahigh-Pressure/High-Pressure Metamorphic Complex, South Ural Mountains, Russia. *EOS, American Geophysical Union; Supplement*, v. 76, p. 668.
- Beane R. J. and Liou J. G., 1995. Serpentinite Melanges of the Maksyutov Complex, Southern Ural Mountains, Russia. *Abstracts with Programs, Geological Society of America*; v. 27, p. 316.
- Beane R. J., Liou J. G., Coleman R. G., McWilliams M. O. and Lennykh V., 1994. Field Relations, Mineral Assemblages and Age of HP-UHPM, Maksyutov Complex, Ural Mountains, Russia. *EOS, American Geophysical Union; Supplement*, v. 75, p. 744.
- Beane R. J., Liou J. G., Zhang R. Y., Coleman R. G., McWilliams M. O. and Lennykh V., 1994. Compositional and $^{40}\text{Ar}/^{39}\text{Ar}$ Data for HP-UHPM, Maksyutov Complex, Ural Mountains, Russia: Evidence for P-T Conditions and Age of Metamorphism. *Abstracts with Programs, Geological Society of America*; v. 26, p. 226.
- Beane R. J. and Wobus R. A., 1993. Field Relations, Petrography and Geochemistry of the Sugarloaf Intrusive Center, Pikes Peak Batholith, Colorado. *EOS, American Geophysical Union; Supplement*, v. 74, p. 634.
- Sturm M., Smith D. R., Beane R., Wobus R. A. *et al.*, 1993. Geochemistry of Late Stage Alkaline Intrusions of the Pikes Peak Batholith, Colorado. *Abstracts with Programs, Geological Society of America*; v. 25, p. 271.
- Beane R. J., 1993. Field Relations, Petrology, and Geochemistry of Sugarloaf Complex, Pikes Peak Batholith. *Keck Research Symposium in Geology, Abstracts Volume*; v. 6, p. 22-25.
- Beavers R. L. and Beane R. J., 1992. Use of Image Processing to Map Sedimentary Environments and Vegetation Zones of Sandy Beach Marsh, Gaspe, Canada. *Keck Research Symposium in Geology, Abstracts Volume*; v. 5, p. 33-36.

INTERNAL GRANTS

- Fletcher Research Grant, "Electron Backscatter Diffraction at University of Liverpool," 2001.
- Faculty Leave Supplement, "Geochemical interpretations of eclogite," Bowdoin College, 2001.
- Course Development Fund, "Creating a new mineralogy course," Bowdoin College, 2000-2002.
- Course Development Fund, "Geographic Information Systems," Bowdoin College, 1999-2001.
- Druckenmiller Research Fellowship, Bowdoin College, 1998-2000.
- Faculty Development Grants, Bowling Green State University, 1997 and 1998.
- McGee Foundation Grants, through Stanford University, 1995 and 1996.
- Shell Fund Grants, through Stanford University; 1993, 1994, 1995, and 1996.

INVITED TALKS

- Bowdoin College, Brunswick, Maine, 2004. "Stimulating Discussion in Introductory Courses." Faculty talk sponsored by the Committee on Teaching.
- Bates College, Lewiston, Maine, 2003. "The History of Metamorphism in Maine" for the Geological Society of Maine short course.
- Bowdoin College, Brunswick, Maine, 2002. "Into the depths of the earth and back: uncovering the story of a subduction zone in Russia's Ural Mountains." Faculty Lecture sponsored by the Dean for Academic Affairs.
- Carnegie Institution, Washington D.C. 2002. "Geochemical interpretations of eclogite."
- University of Liverpool, U.K., 2001. "Using EBSD to interpret mechanisms of atoll garnet formation."
- Boston University, Massachusetts, 2001. "Implications of high-pressure metamorphism with examples from the south Ural Mountains."
- University of Maine at Orono, 2000. "Implications of high-pressure metamorphism with examples from the south Ural Mountains."
- Williams College, Williamstown, Massachusetts, 2000. "Implications of high- and ultrahigh-pressure metamorphism, with examples from Russia and Kazakhstan."
- University of Maine at Farmington, 2000. "Implications of high- and ultrahigh- pressure metamorphism, with examples from Russia and Kazakhstan."
- Bowdoin College, Brunswick, Maine, 1999. Panelist for "Women in Science" discussion.
- Research Science Institute (a summer program for high-school students) at Massachusetts Institute of Technology, Cambridge, Massachusetts, 1998: "High-pressure metamorphism in subduction zones."
- Bowdoin College, Brunswick, Maine, 1998: "High-pressure metamorphism in a Paleozoic subduction zone, Ural Mountains, Russia."
- Eastern Transvaal Consolidated Mines Ltd., Barberton, South Africa, 1997: "Metasomatism and high-pressure metamorphism in the South Ural Mountains."
- Bowling Green State University, Bowling Green, Ohio, 1997: "Sleuthing in the South Urals."
- Geological Society of America Symposium (S24) on the Tectonic Evolution of the Urals and Surrounding Basins; Denver, Colorado, 1996: "Evidence for Devonian eclogite-facies metamorphism in the Maksyutov Complex, southern Ural Mountains, Russia."

PROFESSIONAL SERVICE

- Keck Geology Consortium advisory board member, 1998-present.
- Geological Society of America, campus representative, 1999-present.
- Mineralogical Society of America, Distinguished Public Service Award Committee, 2003-present
- Kibbe Science Symposium on Appalachian Geology (Convener), Bowdoin College, 2000.
- Kibbe Science Symposium on "Microstructure analysis using electron backscatter diffraction" (Convener), Bowdoin College, 2005.

COLLEGE SERVICE

- Consultant for Teaching, 2005-present.
- Curriculum and Educational Policy Committee, 2004-2005.
- Budget and Financial Priorities Committee, 2002-2003
- Recording Committee, 2000-2001.
- Academic Computing Committee, 1999-2000.
- First-year and major advisor, 1999-present.
- Member of search and ad-hoc search committees, 1998-present.
- Bowdoin Outing Club pre-orientation trip, 1999.

EXTENDED FIELD TRIPS AND FIELD COURSES

- Blueschists and eclogites of Syros, Greece. Keck Geology Consortium Project, 2000.
- Geological Society of America Field Forum: Correlating volcanic and plutonic perceptions of silicic magma chamber processes - evidence from coastal Maine plutons, 2000.
- Geology of South Africa field trip. Participant and contributor to field guide. Stanford University, 1997.
- Geology of Alaska field trip. Coordinated itinerary and field guide. Stanford University, 1995.
- Kokchetav Massif, Kazakhstan. Field examination of ultrahigh-pressure metamorphism, 1994.
- Geology summer field course, Big Horn Basin, Wyoming. Iowa State University, 1992.
- Paleoecology of rocky shores field course, Baja California, Mexico. Williams College, 1992.
- Research assistant for Keck Geology Consortium Project on the Gaspè Peninsula, Quebec, 1991.

TEACHING WORKSHOPS

- Hewlett teaching workshop, Bowdoin College, 2000.
- Women throughout the curriculum workshop, Bowdoin College, 1999.
- Workshop for early career faculty, National Association of Geoscience Teachers & NSF, 1999.
- First-year seminar writing and teaching workshop, Bowdoin College, 1998.
- Effective teaching workshop, National Association of Geoscience Teachers, GSA, 1995.

OTHER WORKSHOPS AND COURSES

- EBSD short course, University of Liverpool, 2001.
- Thermodynamic Modeling of Mineral Reactions: An Introduction to GIBBs, F. Spear, 2001.
- MARGINS Theoretical and Experimental Institute: Inside the Subduction Factory, 2000.
- Microanalysis Course, EDAX, 2000.
- Ultrahigh-Pressure Metamorphism and Tectonics Workshop, Stanford University, 1998.
- Emergency Medical Technician Course, Wilderness Medicine Institute, Colorado, 1996.
- Ultrahigh-Pressure Metamorphism and Tectonics Workshop, Stanford University, 1994.

PROFESSIONAL MEMBERSHIPS

American Geophysical Union
Association of Women Geologists
Geologic Society of America
Geologic Society of Maine

Mineralogic Society of America
Microscopy Society of America
National Association of Geoscience Teachers
Sigma Xi