

Rachel J. Beane

Earth and Oceanographic Science
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EDUCATION

Stanford University, Stanford, CA

Ph. D. in Geological and Environmental Sciences **1997**

Advisor, J.G. Liou

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

Williams College, Williamstown, MA

B.A. with Highest Honors in Geology, Magna Cum Laude **1993**

Advisor, R.A. Wobus

Honors thesis: "Petrogenesis of the Sugarloaf Syenite, Pikes Peak Batholith, Colorado."

ACADEMIC POSITIONS

Professor, Bowdoin College, Brunswick, ME **2011-**

Investigating Earth, Structural Geology, Prototectonics,
Tectonics and Climate, Mineral Science,
Preparing to Face Earth's Future

Associate Professor, Bowdoin College, Brunswick, ME **2004-2011**

Department Chair, Bowdoin College, Brunswick, ME **2005-2008**

Assistant Professor, Bowdoin College, Brunswick, ME **1998-2004**

Sydney B. Karofsky Prize; Stanley F. Druckenmiller Research Fellowship

Assistant Professor, Bowling Green State University, Bowling Green, OH **1997-1998**

Physical Geology, Metamorphic Petrology (graduate), Summer Field Course (Colorado)

Instructor, Stanford University, Stanford, CA **1994-1997**

Wilderness Skills, Introduction to Mountaineering

AWARDS

Sydney B. Karofsky Prize for Junior Faculty, Bowdoin College	2004
given to “an outstanding Bowdoin Teacher who best demonstrates the ability to impart knowledge, inspire enthusiasm, and stimulate intellectual curiosity.”	
National Science Foundation Graduate Fellowship	1993-1996

RESEARCH APPOINTMENTS

External Graduate Faculty, <i>The University of Maine</i>	2008-13
Ph.D. Committee Member for Department of Earth Sciences	
Visiting Scholar, <i>Department of Geological Sciences, University of Michigan</i>	2008
Sabbatical research and writing	
Visiting Scientist, <i>National Museum of Natural History, Smithsonian Institution</i>	2002
Sabbatical research with S. Sorensen on eclogite chemistry	
Visiting Scholar, <i>Department of Earth Sciences, Boston University,</i>	2002
Sabbatical research in T. Plank’s LA-ICP-MS laboratory	
Research Fellow, <i>Department of Earth Sciences, University of Liverpool</i>	2001
Sabbatical research in D. Prior’s Electron Backscatter Diffraction laboratory	

FIELD EXPERIENCE

Maine	Petrologic and structural field research and teaching	1998 – present
Syros, Greece	Blueschists and eclogites, Keck Geology Consortium project	2000
Maine	GSA Field Forum: Silicic magma chamber processes	2000
Colorado	Bowling Green State University Field Course Instructor	1998
South Africa	Stanford University, participant and contributor to field guide	1997
Alaska	Stanford University, coordinated itinerary and field guide	1995
Kazakhstan	Ultrahigh-pressure metamorphism, Kokchetav Massif	1994
Russia	Dissertation research on Maksyutov Complex	1993-1996
Colorado	Pikes Peak Batholith, Keck Geology Consortium Project	1992
Wyoming	Iowa State University Field Course at Bighorn Basin	1992
Florida Straits	Offshore, oceanographic field seminar, Williams-Mystic	1992
Mexico	Williams College paleoecology field course in Baja California	1992
Quebec	Gaspé Peninsula, Keck Geology Consortium project	1991
Israel	Weismann Institute Judean Desert field seminar	1989

FUNDING

External Funding (sole PI unless otherwise indicated)

<i>On the Cutting Edge: A Community Resource Transforming Geoscience Education</i>	2010-15
National Science Foundation CCLI-Type 3 grant. Co-PI with H. Macdonald, C. Manduca, D. McConnell, D. Mogk, B. Tewksbury, K. Wiese and M. Wyssession. \$3.2 million	
Evaluation of Crustal Suture Zones Using Electron Backscatter Diffraction Analysis	2010
Colby-Bates-Bowdoin Collaborative Faculty Enhancement Grant, funded by the Mellon Foundation. Co-PI with W. Sullivan. \$17,417	
Electron Backscatter Diffraction Analysis of Minerals from a California Shear Zone	2008-9
Colby-Bates-Bowdoin Collaborative Faculty Enhancement Grant, funded by the Mellon Foundation. "Electron Backscatter Diffraction Analysis of Minerals from a California Shear Zone," Co-PI with W. Sullivan. \$5,058	
Interpretation of Garnet Microstructure	2007
Maine Space Grant Consortium Fellowship for undergraduate researcher. \$4700	
Microstructural Investigations of Martian meteorites	2005-6
Maine Space Grant Consortium NASA EPSCoR Grant. \$14,851	
Acquisition of an Electron Backscatter Diffraction System	2003-5
National Science Foundation MRI grant. \$144,100	
Integrating research with undergraduate education through a petrotectonic study of Casco Bay, Maine.	2002-5
National Science Foundation CCLI grant. \$38,158	
Improving undergraduate learning through use of a low-vacuum scanning electron microscope with an energy dispersive x-ray spectrometer.	1999-2002
National Science Foundation CCLI grant. \$100,000.	
National Science Foundation, Graduate Fellowship	1993-6
Geological Society of America, Research Grant	1994
Geological Society of America, Research Grant	1995
Sigma Xi, Grant-in-Aid of Research	1995

Internal Funding

Electron Backscatter Diffraction at University of Liverpool Bowdoin College Fletcher Research Grant for sabbatical travel and research	2001
Geochemical interpretations of eclogite Bowdoin College Faculty Leave Supplement for sabbatical research	2001
Creating a new mineralogy course Bowdoin College Course Development Fund	2000-2
Geographic Information Systems Bowdoin College Course Development Fund	1999-2001
Druckenmiller Research Fellowship, Bowdoin College	1998-2000
Faculty Development Grants, Bowling Green State University	1997 and 1998
McGee Foundation Grant, through Stanford University	1995 and 1996
Shell Fund Grants, through Stanford University	1993, 1994, 1995, and 1996

PUBLICATIONS

* denotes undergraduate student author

Journal Articles – Peer Reviewed

- Beane, R.J.** and Wiebe, R. A., *in review*, Origin of quartz clusters in Vinalhaven granite and porphyry, coastal Maine. *Contributions to Mineralogy and Petrology*.
- Sullivan, W.A., **Beane, R.J.** and Fereday, W.H., *in review*, Evidence for high-temperature sinistral transpression in the Cheyenne belt, southeastern Wyoming. *Journal of Structural Geology*.
- Sullivan, W.A., **Beane, R.J.**, Beck, E.N.* and Roberts-Pierel, A.M.* , 2011, Testing the transpression hypothesis in the western part of the Cheyenne belt, Medicine Bow Mountains, southeastern Wyoming. *Rocky Mountain Geology* v. 46, p. 111-135.
- Sullivan, W.A. and **Beane, R.J.**, 2010. Asymmetrical quartz crystallographic fabrics formed during constrictional deformation. *Journal of Structural Geology*, v. 32 , p. 1430-1443.
- Grew, E.S., Yates, M.G., **Beane, R.J.**, Floss, C. and Gerbi, C., 2010. Chopinite-sarcopside solid solution, [(Mg,Fe)₃](PO₄)₂, in GRA95209, a transitional acapulcoite: Implications for phosphate genesis in meteorites. *American Mineralogist* v. 95, p. 260-272.
- Johnson, S.E., Lenferink, H.J., Price, N.A., Marsh, J.H., Koons, P.O., West, D.P., and **Beane, R.J.**, 2009. Clast-based kinematic vorticity gauges: the effects of slip at matrix/clast interfaces. *Journal of Structural Geology*, v. 31, p. 1322-1339.
- Beane, R.J.** and Field, C., 2007. Kyanite deformation in whiteschist of the UHPM Kokchetav Massif, Kazakhstan. *Journal of Metamorphic Geology* v. 25, p. 117-128. (*Invited contribution to special issue.*)
- Beane, R.** and Leech, M., 2007. The Maksyutov Complex: The first UHP terrane 40 years later. In Cloos, M., Carlson, W.D., Gilbert, M.C., Liou, J.G., and Sorensen, S.S., eds., *Convergent Margin Terranes and Associated Regions. Geological Society of America Special Paper 419*, ch. 8, p. 153-170. (*Invited contribution.*)
- Hawkins, A.T., Selverstone, J., Brearley, A.J., **Beane, R.J.**, Carlson, W.D. and Ketcham, R., 2007. Origin and mechanical significance of honeycomb garnets in high-pressure metasedimentary rocks from the Tauern Window, Eastern Alps. *Journal of Metamorphic Geology*, v. 25, 565-583.
- Beane, R.J.** and Sorensen, S.S., 2007. Protolith Signatures and Element Mobility in the Maksyutov Subducted Slab, Southern Ural Mountains, Russia. *International Geology Review*, v. 49, p. 52-72.

- 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*, v. 1, no. 11, p. 2983-2986.
- 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.**, 2001. 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.** 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.

Journal Articles in preparation

Beane, R.J. and Prior, D. Crystallographic orientation evidence for the formation of atoll garnet in eclogite. *Geology*.

Drew, S.* , **Beane, R.J.**, Lawrence, K.* , and Rodriguez, A.* , and Hussey, A.M., II. Geochemical analysis and interpretation of tectonic setting for metavolcanics of the Ordovician Casco Bay Group and East Harpswell Group. *Canadian Journal of Earth Sciences*.

Eveleth, R.E.* , Horton, F.* , **Beane, R.J.**, and Irby, I.* Origin of elongated garnets of the Spring Point Formation, Casco Bay, Maine. *Journal of Metamorphic Geology*.

Levy, B.* ,**Beane, R.J.** and Hussey, A. M., II. The Peaks Island member of the Cushing Formation, a sub-aqueous volcanic flow succession in Maine. *Atlantic Geology*.

McPherrren, E.D., Kuiper, Y.D. and **Beane, R.J.** Effects of dissolution-precipitation creep on the crystallographic preferred orientation of quartz within the purgatory conglomerate, RI. *Journal of Structural Geology*.

Book chapters

Beane, R.J. and Urquhart, J. 2009. Providing Research Experiences to Non-Science Majors in an Introductory Science Course. In Boyd, M. and Wesemann, J., ed., *Broadening Participation in Undergraduate Research: Fostering Excellence and Enhancing the Impact. Council on Undergraduate Research* publication, p. 223-226. *(Invited contribution.)*

Beane, R.J. and Sorensen, S.S., 2008. Protolith Signatures and Element mobility in the Maksyutov Subducted Slab, Southern Ural Mountains, Russia. In *Metamorphic conditions along convergent plate junctions: Mineralogy, petrology, geochemistry, and tectonics – A tribute to J. G. Liou* (W.G. Ernst and D. Rumble III, eds.), *Geological Society of America International Book Series*, v. 10, p.577-597. *(Invited contribution.)*

Beane, R. and Leech, M., 2007. The Maksyutov Complex: The first UHP terrane 40 years later. In Cloos, M., Carlson, W.D., Gilbert, M.C., Liou, J.G., and Sorensen, S.S., eds., *Convergent Margin Terranes and Associated Regions. Geological Society of America Special Paper 419*, ch. 8, p. 153-170. *(Invited contribution.)*

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 – A tribute to Robert G. Coleman: Geological Society of America, International Book Series*, v. 8, p. 423-439. *(Invited contribution.)*

2011-2015 Conference Papers

Macdonald, H., Manduca, C., Mogk, D., Tewksbury, B., Iverson, E., Kirk, K., **Beane, R.**, McConnell, D., Wiese, K., and Wysesession, M., 2011. On the Cutting Edge: Face-to-Face and Virtual Professional Development for Current and Future Geoscience Faculty. American Geophysical Union, Annual Meeting, Abstract ED23A-0615.

Macdonald, H., Manduca, C., Ormand, C., Dunbar, R., **Beane, R.**, Bruckner, M., Bralower, T., Feiss, P., Tewksbury, B., Wiese, K., 2011. Preparing Future Geoscience Professionals: Needs, Strategies, Programs, and Online Resources. American Geophysical Union, Annual Meeting, Abstract ED14A-01.

Mogk, D.W., **Beane, R.J.**, Whitney, D.L., Nicolaysen, K.E.P., Panero, W., and Peck, W., 2011. Teaching Mineralogy, Petrology and Geochemistry in the 21st Century: Instructional Resources for Geoscience Faculty. American Geophysical Union, Annual Meeting, Abstract ED11A-0752.

Buckner, M.Z., **Beane, R.J.** and Macdonald, R.H., 2011. *On the Cutting Edge* webinar series supports graduate students and post-docs pursuing an academic career. Geological Society of America, Abstracts with Programs, v. 43, p. 255.

Sullivan, W.A. and **Beane, R.J.**, 2011. New evidence for sinistral transpression in the Cheyenne belt. Geological Society of America, Abstracts with Programs, v. 43, p. 34.

Becker, T.E.* , Reynolds, V.S., **Beane, R.J.** and McCoy, T.J., 2011. Preferred orientations of pyroxene in the Zagami shergottite: implications for magmatic emplacement. 42nd Lunar and Planetary Science Conference. May 7-11, 2011.

Eveleth, R* . and **Beane, R.J.**, 2011. Formation of elongated garnets in the spring point amphibolites, Harpswell, Maine. Northeastern and North-Central Joint Meeting of the Geological Society of America. March 20-22, 2011.

2006-2010 Conference Papers

Beane, R.J. and Wiebe, R.A., 2010. Origin of quartz clusters in the Vinalhaven granite, Maine. Geological Society of America, Abstracts with Programs, v. 42, p. 646.

Sullivan, W.A., Roberts-Pierel, A.M.* , Beck, E.N.* and **Beane, R.J.**, 2010. Quartz crystallographic fabrics from the northern mylonite zone of the Cheyenne Belt, SE Wyoming. Geological Society of America, Abstracts with Programs, v.42, p. 261.

McPherrren, E.D., Kuiper, Y.D. and **Beane, R.J.**, 2010. Effects of dissolution-precipitation creep on the crystallographic preferred orientation of quartz within the purgatory conglomerate, RI. Geological Society of America, Abstracts with Programs, v. 42, p. 635.

Sullivan, W.A. and **Beane, R.J.**, 2009. Asymmetric quartz crystallographic fabrics produced during constrictional deformation. Geological Society of America, Abstracts with Programs, v. 41, p. 87.

Grew, E.S., Yates, M.G., **Beane, R.J.**, Floss, C. and Gerbi, C., 2008. Chopinite-sarcopside solid solution (Mg,Fe)₃ (PO₄)₂, in Lodranite GRA95209. 71st Annual Meteoritical Society Meeting.

Tsai, C.-H., Zhou, H., Izuka, Y., and **Beane, R. J.**, 2008. Textures of progressive garnet growth recorded in Ti-rich metagabbros from the southern Tongbai Mountains, central China. Goldschmidt Conference Abstracts. Geochimica et Cosmochimica Acta; v. 72, p. A958.

Grew, E.S., Yates, M.G., **Beane, R.J.**, Floss, C. and Gerbi, C., 2008. Chopinite-sarcopside in meteorite GRA95209. Goldschmidt Conference Abstracts. *Geochimica et Cosmochimica Acta*; v. 72, p. A328.

Horton, F.* , **Beane, R.J.**, Ketcham, R., and Irby, I.* , 2008. EBSD and HRXCT analysis of elongated garnets of the Spring Point Formation, Casco Bay, ME. Geological Society of America, Abstracts with Programs, v. 40, p. 20.

Beane, R. and Urquhart, J., 2007. Field and petrologic research projects in introductory courses. Geological Society of America, Abstracts with Programs, v. 39, p.246

Naus-Thijssen, F., Johnson, S., and **Beane, R.**, 2007. Crenulation cleavage development and its rheological implications. Geological Society of America, Abstracts with Programs, v. 39, p.78.

Rodriguez, A.* and **Beane, R.J.**, 2006. Pigeonite Microstructures in Martian Meteorite EETA79001. Geological Society of America, Abstracts with Programs, v. 38, No. 7, p.77.

Naus-Thijssen, F., Johnson, S., and **Beane, R.J.**, 2006. Chemical and Mechanical Development of Crenulation Cleavage. Knowledge Based Materials, Marie Curie Summer School on Polyphase and Composite Materials, Älvdalen, Sweden.

Rodriguez, A.* and **Beane, R.J.**, 2006. Pigeonite Microstructures in Martian Meteorite EETA79001. Maine Space Grant Consortium, Annual Meeting, Boothbay, Maine.

2001-2005 Conference Papers

Beane, R.J. and Field, C.F., 2005. Kyanite deformation in whiteschist of the UHPM Kokchetav Massif, Kazakhstan. *Eos Trans. AGU*, 86(52), Fall Meet. Suppl., Abstract V43A-1549.

Lea, P.D., **Beane, R. J.**, and Laine, E. P., 2005. Building a strong geoscience department by emphasizing curriculum and pedagogy. *Eos Trans. AGU*, 86(52), Fall Meet. Suppl., Abstract ED13B-1145.

Hawkins, A., Selverstone, J., Brearley, A. and **Beane, R.**, 2005. Fishnet and atoll garnets from the Tauern Window, Eastern Alps: Conditions and Mechanisms of Formation. Geological Society of America, Abstracts with Programs, v. 37, p. 226.

Msall, M.E., Dietsche, W., **Beane, R.**, Wichard, R. and Carpenter, J*, 2004. 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. and Prior, D. 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.

1996-2000 Conference Papers

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.

1992-1995 Conference Papers

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.

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.

Web and other publications

Beane, R. and Lewis, J., 2010. Complete website with handouts for the *On the Cutting Edge Workshop: Pursuing an Academic Career*. Science Education Research Center (SERC).
<http://serc.carleton.edu/NAGTWorkshops/careerdev/AcademicCareer2010/index.html>

Beane, R. and Macdonald, H., 2010. Course Design, Learning Styles, and Teaching Styles. Science Education Research Center (SERC)
http://serc.carleton.edu/files/NAGTWorkshops/earlycareer2010/course_design_presentation.pptx

Beane, R., 2010. Integrating Research into Courses. Science Education Research Center (SERC)
http://serc.carleton.edu/files/NAGTWorkshops/earlycareer2010/integrating_research_handout.docx

Beane, R. and Ebert, J. 2010. Research with undergraduates. Science Education Research Center (SERC)
http://serc.carleton.edu/files/NAGTWorkshops/earlycareer2010/undergraduate_research_present.ppt

Beane, R., 2010. Assessing the effectiveness of our teaching. Science Education Research Center (SERC)
http://serc.carleton.edu/files/NAGTWorkshops/earlycareer2010/assessing_effectiveness_handou.doc

Beane, R. and Argow, B., 2009. Complete website with handouts for the *On the Cutting Edge Workshop: Pursuing an Academic Career*. Science Education Research Center (SERC).
<http://serc.carleton.edu/NAGTWorkshops/careerdev/NEGSA-Workshop09/index.html>

Macdonald, H. and **Beane, R.**, 2009. Designing a Course: Learning, Teaching, and Assessment. Science Education Research Center (SERC)
http://serc.carleton.edu/files/NAGTWorkshops/earlycareer09/macdonald_beane_designing_course.v2.pdf

Beane, R. and Sankey, J., 2009. Research with Undergraduates. Science Education Research Center (SERC).
http://serc.carleton.edu/files/NAGTWorkshops/earlycareer09/beane_undergrad_research_prese.pdf

Beane, R. and Wiese, K., 2009. What to do when our teaching isn't going well. Science Education Research Center (SERC).
http://serc.carleton.edu/files/NAGTWorkshops/earlycareer09/beane_improving_teaching_hando.doc

Beane, R., 2009. Designing class activities and assignments. Science Education Research Center (SERC). http://serc.carleton.edu/files/NAGTWorkshops/earlycareer09/beane_activity_review_handout.doc

Beane, R. J., 2008. EBSD sample preparation. Science Education Research Center (SERC).
http://serc.carleton.edu/research_education/geochemsheets/ebsd_sample_preparation.html

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RESEARCH ADVISEES

Undergraduate *honors* independent study students

Rachel Eveleth '11, supported by Rusack Coastal Studies Fellowship and Grua/O'Connell Research Award; Arthur M. Hussey departmental award (PhD candidate, Duke University).

Forrest Horton '08, supported by Maine Space Grant Consortium, Arthur M. Hussey departmental award (mineral exploration, Avalon Development Corporation; MS student, San Francisco State University; NSF graduate fellowship; Global War on Terrorism Civilian Service Medal for mineral exploration in Afghanistan).

Astrid Rodriguez '07, supported by Maine Space Grant Consortium, Arthur M. Hussey departmental award (MS student, Texas A&M)

Scott Drew '05, supported by NSF grant, Arthur M. Hussey departmental award, Walter Anderson statewide prize (MS, Ohio State University)

Brandon Levy '03, supported by NSF grant, Arthur M. Hussey departmental award

Lindsay Szramek '02, Keck Geology Consortium project, Doherty Fellowship, Arthur M. Hussey departmental award (MS University of Alaska; PhD, University of Texas at Austin; Visiting Professor, U. Wisconsin, Oshkosh)

Kelly Lawrence '01, NCUR Fellowship (MS student, Tufts)

Edward Meyer '01, NCUR Fellowship (PhD, Dartmouth; Research Associate)

Harriet Van Vleck '01, Surdna Fellowship, Arthur M. Hussey Award (PhD candidate, University of Minnesota)

David Thomas '00, Surdna Fellowship, Arthur M. Hussey Award (boat builder)

Undergraduate independent study students

Owen McKenna '07, Serena Bartovics '08, Jeremy Huckins '06, Ed Sweeney '03

Undergraduate summer research students

Alex Roberts-Pierel '12, Emma Beck (Colby '12), Rachel Eveleth '11, Ike Irby '09, Astrid Rodriguez '07, Owen McKenna '07, Jeremy Huckins '06, Scott Drew '05, Brandon Levy '03, Lindsay Szramek '02, Clayton Salem '02, Ed Meyer '01, Kelly Lawrence '01, Harriet Van Vleck '01, David Thomas '00

Ph.D. committee member

Nancy Price, University of Maine, Orono (anticipated 2012 graduation)

CONVENER AND LEADER FOR WORKSHOPS AND SYMPOSIA

On the Cutting Edge: Professional Development for Geoscience Faculty

- 2011 ***Teaching Mineralogy, Petrology, and Geochemistry in the 21st Century.***
Co-convener with D. Mogk, D. Whitney, K. Nicolaysen, W. Panero, and W. Peck
University of Minnesota, Minneapolis, MN, August 7-10
<http://serc.carleton.edu/NAGTWorkshops/mpg/workshop2011/>
- 2011 ***Pursuing an Academic Career in the Geosciences.***
Co-convener with H. Macdonald
Monthly virtual events. January-June
<http://serc.carleton.edu/NAGTWorkshops/careerdev/AcademicCareer2011/>
- 2010 ***Workshop for Early Career Faculty: Teaching, Research, and Managing Your Career.***
College of William and Mary, Williamsburg, VA, June 6-11
<http://serc.carleton.edu/NAGTWorkshops/earlycareer2010>
- 2010 ***Pursuing an Academic Career***
Co-leader with J. Lewis
GSA Northeastern/Southeastern Section Meeting, Baltimore, MD, March 13
<http://serc.carleton.edu/NAGTWorkshops/careerdev/AcademicCareer2010>
- 2009 ***Workshop for Early Career Faculty: Teaching, Research, and Managing Your Career***
College of William and Mary, Williamsburg, VA, June 14-18
<http://serc.carleton.edu/NAGTWorkshops/earlycareer09>
- 2009 ***Pursuing an Academic Career***
Co-leader with B. Argow
GSA Northeastern Section Meeting, Portland, ME, March 14
<http://serc.carleton.edu/NAGTWorkshops/careerdev/AcademicCareer2010>
- 2006 ***Workshop for Early Career Faculty: Teaching, Research, and Managing Your Career***
College of William and Mary, Williamsburg, VA, June 7-12
<http://serc.carleton.edu/NAGTWorkshops/earlycareer06>
- 2005 ***Preparing for an Academic Career in the Geosciences: Workshop for Graduate Students and Post-Doctoral Fellows***
Pennsylvania State University, State College, PA, July 21-24
<http://serc.carleton.edu/NAGTWorkshops/careerprep05>

Kibbe Science Symposia at Bowdoin College, Brunswick, ME

- 2005 ***Microstructure analysis using electron backscatter diffraction***
Convener
- 2000 ***Appalachian Symposium***, Convener

INVITED PROFESSIONAL LECTURES

- 2011 University of Maine at Orono
Origin of quartz clusters in the Vinalhaven granite
- 2005 Stanford University
Fluid-mediated mass transfer in subduction zones: geochemistry of eclogites and metapelites, Maksyutov Complex, south Ural Mountains
- 2003 Bates College
The History of Metamorphism in Maine
Presented for the *Geological Society of Maine* short course
- 2002 Carnegie Institution, Washington D.C.
Geochemical interpretations of eclogite
- 2001 University of Liverpool, U.K.
Using EBSD to interpret atoll garnet formation
- 2001 Boston University, Massachusetts
Implications of high-pressure metamorphism with examples from the south Ural Mountains
- 2000 University of Maine at Orono
Implications of high-pressure metamorphism with examples from the south Ural Mountains
- 2000 Williams College
Implications of high- and ultrahigh- pressure metamorphism, with examples from Russia and Kazakhstan
- 2000 University of Maine at Farmington
Implications of high- and ultrahigh- pressure metamorphism, with examples from Russia and Kazakhstan
- 1997 Eastern Transvaal Consolidated Mines Ltd., Barberton, South Africa
Metasomatism and high-pressure metamorphism in the South Ural Mountains

SERVICE

Bowdoin College Committee Service

2010-2011	Chair	Solid Earth Search
1999-Present	Manager	SEM Laboratory
1999-Present	Adviser	First years and majors
2010-2011	Member	Radiation Safety Committee
2010	Facilitator	On-going Learning Evaluations (OLE)
2010	Member	EOS summer working group
2009-2010	Member	Ad-hoc Committee on Pre-Major Advising
2009	Instructor/Adviser	Bowdoin Science Experience
2009	Member	Geology summer working group
2009	Member	Earth System Sciences summer working group
2005-2008	Chair	Geology Department
2005	Chair	Geology summer working group
2006-2008	Member	Committee on Teaching
2007-2008	Member	Kent Island Director Search
2005-2007	Consultant	Consultants for Teaching
2006	Instructor/Adviser	Bowdoin Science Experience
2005-2006	Member	Benefits Advisory Committee
2004-2005	Member	Curriculum and Educational Policy Committee
2002-2003	Member	Budget and Financial Priorities
2000-2001	Member	Recording Committee
1999-2000	Member	Academic Computing
1999	Faculty Participant	Bowdoin Outing Club pre-O canoe trip
1998-	Member	Visiting and Ad-Hoc search committees

Bowdoin College Talks

2011	Course Design: an approach using student-centered goals Faculty seminar sponsored by the Faculty Development Committee
2010	Mineral Lattice Insights into Meteorites, Magma Chambers, and Faults Faculty Seminar sponsored by the Dean for Academic Affairs
2007	OLE (ongoing learning evaluation) Common Concerns lunch time discussion
2007	Discussion with first-year tenure track faculty led by Nancy Jennings, Associate Dean for Academic Affairs
2006, 2007, 2008	Being a Department Chair Invited to present and lead discussion for Department Chair Workshops

- 2005 **Volcanoes in Brunswick? And other research into our geologic history**
Faculty Seminar sponsored by the Dean for Academic Affairs
- 2005 **Bringing Research into the Classroom**
Faculty talk sponsored by the Committee on Teaching
- 2004 **Stimulating Discussion in Introductory Courses**
Faculty talk sponsored by the Committee on Teaching
- 2004 **Honoring the Offer of the College by Losing Ourselves in Generous Enthusiasms**
Honors Day Address, 2004
- 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.
- 1998 **High-pressure metamorphism in a Paleozoic subduction zone, Ural Mountains**
Department of Geology, 1998

Professional Service

On the Cutting Edge National Association of Geoscience Teachers workshop program convener and leader, 2005-present, and co-PI for NSF award, 2010-2015.

National Science Foundation proposal reviewer (Major Research Instrumentation, DUE, and Tectonics programs).

Manuscript reviewer for *American Mineralogist*, *Chemical Geology*, *Earth and Planetary Science Letters*, *Geology*, *International Geology Review*, *Journal of Geoscience Education*, *Journal of Metamorphic Geology*, *Meteoritics and Planetary Science*.

Textbook reviewer: Structural Geology of Rocks and Regions (Wiley), Mineralogy and Optical Mineralogy (MSA), Structural Geology (Freeman), Introduction to Mineralogy (Oxford).

Geological Society of America, chair of "Advances in Petrology" meeting session, 2010.

American Geophysical Union, chair of "Ultrahigh-Pressure Metamorphism: Geodynamics" annual meeting session, 2005.

Mineralogical Society of America, Distinguished Public Service Award Committee, 2003-2005.

Geological Society of America, campus representative, 1999-present.

Keck Geology Consortium, advisory board member, 1998-2000.

Community Outreach

2008-2011	Harpswell Heritage Land Trust	Trustee (Harpswell, Maine)
2010	Nature Camp	Leader with Harpswell Heritage Land Trust
2010	Rocks, Rocks, Rocks	K/1 presentation Harpswell Island School
2009	Introduction to the Geology of Giant Stairs	Harpswell Heritage Land Trust <i>~100 attendees for public field walk & talk at Giant Stairs, Bailey Island, ME</i>
2008	Geology Careers and Opportunities	Curtis Memorial Library, Brunswick, ME
2006	Geology of Bailey Island	Bailey Island Association, ME
2005	Exploring the geology of Giant Stairs	Harpswell Heritage Land Trust, ME <i>~60 attendees for public field walk & talk at Giant Stairs, Bailey Island, ME</i>
2006	Fab Female	Zoey's Room: a tech know community for girls <i>on-line chat about geology</i>
2005	Volcanoes in Harpswell?	Harpswell Heritage Land Trust, Maine <i>~100 attendees for public presentation</i>
1998	High-pressure metamorphism in subduction zones	MIT <i>for the Research Science Institute - a summer program for high-school seniors</i>

CONTINUING EDUCATION

2009	Evaluation and Web Development	<i>On the Cutting Edge</i> virtual workshop
2006	Workshop for Writing Intentional Courses	Bowdoin College
2001	EBSD Short Course	D. Prior, University of Liverpool
2001	Thermodynamic Modeling of Mineral Reactions	F. Spear, Geological Society of America
2000	Inside the Subduction Factory	MARGINS
2000	Scanning Electron Microscopy	LEO
2000	Energy Dispersive X-ray Analysis	EDAX
2000	Hewlett Teaching Workshop	Bowdoin College
1999	Women Throughout the Curriculum	Bowdoin College
1999	Workshop for Early Career Faculty	Nat'l Assn. Geoscience Teachers
1998	First-year seminar workshop	Bowdoin College
1998	Ultrahigh-Pressure Metamorphism	Stanford University
1996	Emergency Medical Technician Course	Wilderness Medicine Institute, Colorado
1995	Effective Teaching Workshop	Nat'l Assn. Geoscience Teachers
1994	Ultrahigh-Pressure Metamorphism	Stanford University