

**CURRICULUM VITAE
MELINDA DARBY DYAR**

July 13, 2006

Department of Earth and Environment and Department of Astronomy
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Birth date: April 13, 1958, Indianapolis, IN. Married to Peter D. Crowley. Two children: Duncan D. Crowley (b. 7/21/95) and Malinda C. Crowley (3/3/97).

Education:

Ph.D., Geochemistry, 1985, Massachusetts Institute of Technology, Cambridge, Mass. Thesis topic: Crystal chemistry and statistical analysis of iron in mineral standards, micas, and glasses. Advisor: Roger G. Burns.

B.A., Geology and Art History, 1980, Wellesley College, Wellesley, Mass. Thesis topic: Geology of the Broadmoor Wildlife Sanctuary, South Natick, MA: Structural and petrographic analysis. Advisor: Margaret Thompson. Summer Field Camp, Indiana University, Cardwell, Montana.

Employment:

Associate Professor Department of Astronomy and Department of Earth and Environment, Mount Holyoke College and Five College Astronomy Department, 2002-present.

Associated Five College Graduate Faculty in Astronomy, University of Massachusetts, 2002-present.

Visiting Associate Professor, Department of Astronomy and Department of Earth and Environment, Mount Holyoke College and Five College Astronomy Department, 2001-2002.

Visiting Associate Professor, Department of Astronomy, University of Massachusetts (Amherst), 2001-2002.

Affiliated Staff, Department of Geological Sciences, University of Idaho, 2000-2001.

Visiting Assistant Professor, Department of Astronomy and Department of Earth and Environment, Mount Holyoke College and Five College Astronomy Department (University of Massachusetts), 1998-2001.

Assistant Professor, Department of Geology and Astronomy, West Chester University, 1993-1998.

Visiting Assistant Professor, Department of Geology, Smith College, 1995-1996.

Assistant Professor, Department of Geological Sciences, University of Oregon, 1986-1993. Member, Materials Science Institute, 1987-1993.

Research Fellow, Division of Geological and Planetary Sciences, California Institute of Technology, 1985-1986 (G.R. Rossman, supervisor).

Post-Doctoral Fellow, Department of Earth, Atmospheric, and Planetary Sciences, Massachusetts Institute of Technology, 1985 (R.G. Burns, supervisor).

Research Assistant, Department of Earth, Atmospheric, and Planetary Sciences, Massachusetts Institute of Technology, 1980-1985.

Research Staff, Chevron Oil Field Research Company, La Habra, CA, summer, 1982.

Assistant Instructor, Indiana University Geologic Field Station, Cardwell, MO, summer, 1980.

Professional Societies:

Association for Women Geoscientists
Mineralogical Society of America
Geochemical Society

American Geophysical Union
Council for Undergraduate Research
Meteoritical Society

Honors:

Sigma Xi, 1980
1984 Mineralogical Society of America (M.S.A.) Grant for Research in Crystallography
1990-1991 National Lecturer, Mineralogical Society of America
Outstanding Service Award, Mineralogical Society of America, 1991
Fellow, Mineralogical Society of America, 1995
Girls' Incorporated, Holyoke, Massachusetts, Honoree, 1 April, 2004

Professional Service:

M.S.A. Research Grants Committee, 1991
M.S.A. Science Grants Committee, 1991
The Geochemical Society Program Committee, 1991-1994
National Science Foundation Instrumentation and Laboratory Instruction Panel, 1988 and 1992
National Science Foundation Undergraduate Curriculum and Course Development Panel, 1991
National Science Foundation Workshop: The Role of Faculty in the Disciplines in the Undergraduate Education of Future Teachers, invited participant, contributor to working paper, 1992
Program Committee, Geological Society of America National Meetings, 1992-1994
American Geophysical Union Workshop: Shaping the Future of Undergraduate Earth Science Education, invited participant and contributor to working paper, 1996
M.S.A. Lecture Program Committee, 1998-2000; Chair 1999-2000
M.S.A. Crystallography Research Grant Committee 1998-1999
Council for Undergraduate Research (C.U.R.), Councillor, 1999-2000
American Geological Institute (A.G.I.) Outreach Committee, 2000-2003
Associate Editor, *American Mineralogist*, 2000-present
Review Panel, NASA Cosmochemistry program, 2001-present
Review Panel, NSF/NATO Postdoctoral Fellowship Program, 2002-2003
Judges Panel, Name the Rovers contest, 2003
Review Panel, NSF, CCLI Program, 2003
International Program Committee, Goldschmidt Conference, 2005
Review Panel, NSF, CCLI Program, 2004
Instrument Selection Review Panel, Mars Science Lander 2009, NASA, 2004
Executive Committee, AWIS National Meeting, 2005

Invited Talks and Professional Presentations:

University of California at Riverside, 1986 and 1991¹
University of Maine at Orono, 1987 and 1991¹
Oregon State University, 1986 and 1991
Massachusetts Institute of Technology, 1987
Wellesley College, 1987
Smith College, 1988
State University of New York at Albany, 1989
Southern Methodist University, 1989
University of Washington, 1990
University of Saskatchewan, 1991¹
San Diego State University, 1991¹
University of California at Davis, 1991¹
Sonoma State University, 1991¹

¹talk sponsored by Mineralogical Society of America Lecture Program.

University of Calgary, 1991¹
University of New Mexico, 1991¹
University of Houston, 1991¹
Louisiana State University, 1991¹
Texas Tech, 1991¹
University of Chicago, 1992
Penn State University, 1992
University of Kentucky, 1992
University of Colorado at Boulder, 1993
European Research Conference, Hydrogen-Containing Defects in Minerals and Ceramics, 1993
Deep Continental Studies Workshop, Microknowledge and Megathinking, 1993
Portland State University, 1993
Hopi Buttes Workshop, invited participant, 1993
Rutgers University, 1994
University of North Carolina, 1994
Southern Methodist University, 1994
University of Massachusetts at Amherst, 1996
Mount Holyoke College, 1997
University of Western Ontario, 2000
University of Idaho, 2001
Eastern Washington University, 2001
Wellesley College, 2001
State University of New York at Stony Brook, 2003
Lunar and Planetary Institute, 2003
Brearley School, 2004
Massachusetts Institute of Technology, 2004
University of Massachusetts, 2004
Wellesley College, 2004
Rhode Island College, 2006

College and University Service:

Structural Geologist Search Committee, University of Oregon (UO) 1987-1988
Chair, Affirmative Action Search Committee, UO, 1988
Chair, X-ray and Thin Section Committee, Dept. of Geological Sciences, UO, 1986-1987
Faculty Advisor, Condon Undergraduate Society, UO, 1986-1988
Affirmative Action Liaison, Dept. of Geological Sciences, UO, 1986-1989
Materials Science Institute Budget Committee, UO, 1987-1992
Treasurer, Materials Science Institute, UO, 1988-1992
Director, Materials Science Institute Research for Undergraduates Program, UO, 1988 & 1989
Physics Department Condensed Matter Search Committee, UO, 1988 and 1989
Graduate Teaching Fellow Coordinator, Dept. of Geological Sciences, UO, 1988-1989
Seismology Search Committee, Dept. of Geological Sciences, UO, 1988-1989
Volcanologist Search Committee, Dept. of Geological Sciences, UO, 1989-1990, 1990-1991
Telephone Counselor, Dept. of Geological Sciences, UO, 1990-1991
Chair, Displays Committee for Cascade Hall, UO, 1990-1993
Computer Coordinator, Dept. of Geological Sciences, UO, 1989-1993
Member, President's Task Force on Campus Infrastructure and Technology, UO, 1990-1992
Member, Committee on Campus Hazardous Waste Remediation, UO, 1988-1993
Member, University Library Committee, UO, 1987-1989
Member, Faculty Advisory to the Museum of Art, UO, 1989-1993
Chair, Faculty Advisory to the Museum of Art, UO, 1990-1993

Member, Departmental Computer Lab Managers, UO, 1989-1993
Board Member, Faculty Club of the University of Oregon, 1988-1993
Secretary-Treasurer, Faculty Club of the University of Oregon, 1989-1990
Member, Docent Council, University of Oregon Museum of Art, 1988-1993
Member, Board of Governors, University of Oregon Museum of Art, 1988-1993
Member, Curriculum Committee, Dept. of Geology and Astronomy, WCU, 1993-present²
Member, College of Arts and Sciences Recruitment Committee, WCU, 1994-1995
Internship Coordinator, Dept. of Geology & Astronomy, WCU, 1993-present²
Member, Undergraduate Review Committee, Dept. of Geology & Astronomy, WCU, 1993-1998²
Member, Graduate Review Committee, Dept. of Geology & Astronomy, WCU, 1994-1998²
Member, Radiation Safety Committee, Mount Holyoke College, 1999-present
Member, Curriculum Committee, Five College Astronomy Department, 1999-present
Member, Fellowship Committee, Mount Holyoke College, 2002-present.
Member, Planning and Budget Committee, 2003-2004.
Chair, Fellowship Committee, Mount Holyoke College, 2003-present.

Miscellaneous Presentations to the College Community and Beyond:

Mathematics Department, MHC, 2000
Five College Geology Symposium, February 2001
Mount Holyoke Club of Bridgeport, CT, 2003
Lyon Lecture series, Denver, 25 Oct. 2003
Family Weekend, 31 Oct. 2003
Mathematics Department, MHC, February 2004
Five College Geology Symposium, February 2004
Mars lecture, AST 11, Amherst College, 5 March 2004
Fascinating Professor program, Francis Perkins scholars, 9 March, 2004
South Hadley Lions Club, 6 April 2004
East Longmeadow Library, 1 May, 2004
Dedication of Kendade Hall, 8 May, 2004
Class of 1959 reunion dinner, 28 May 2004
Mount Holyoke Club of South Hadley, 9 June, 2004
NOVA/WGBY fundraiser, Mount Holyoke College, 14 June, 2004
Summer math for high school students, summer Mars project, July, 2004
MHC Office of Admissions, summer staff training seminar, August, 2004
Family Weekend, 30 Oct. 2004
Hughes Symposium on Integrating Undergraduates into Research Programs, January 2005
Mount Holyoke Club of Houston, March, 2005
Springfield Star Club, April, 2005
Mount Holyoke Reunion, June 2005
Century Club, Springfield, MA, March 2006
Mount Holyoke Reunion, June 2006
Mid-Coast Maine Mount Holyoke Club, June, 2006

Courses Taught or in the Planning Stages:

Mineralogy I and II (including crystallography, optics, and systematic mineralogy)
Igneous and Metamorphic Petrology
Introduction to Earth History (historical geology)

²Maternity leave from West Chester University was taken during the academic years 1995-1996 and 1997-1998.

Introduction to Geology (physical geology)
Geochemistry (graduate and undergraduate)
Spectroscopy (graduate and undergraduate)
Geometrics (applications of statistical methods)(graduate and undergraduate)
Planetary Science (100 and 200 level)
Planetary Science seminar on Mars (300 level)
Spectroscopy of the Planets (300 level)
Meteorites

Books and Electronic Media:

- Dyar, M.D., and Gunter, M.C. (in preparation) *Minerals and Optical Mineralogy: A Three-Dimensional Approach*. Textbook. Mineralogical Society of America. Expected publication date: spring 2007.
- Dyar, M.D. (1999) *Hands-On Mineral Identification*. CD-ROM. Tasa Graphic Arts, Inc., Albuquerque, N.M.
- Dyar, M.D., Busch, R.M., and Wiswall, G. (1997, 1998) *The Study of Minerals*. CD-ROM. Tasa Graphic Arts, Inc., Albuquerque, N.M.
- Dyar, M.D., McCammon, C.A., and Schaefer, M.W., Eds. (1996) *Mineral Spectroscopy: A Tribute to Roger G. Burns*. Special Publication #5, The Geochemical Society, Washington, D.C., 400 pp.

Papers:^{3,4}

1. Dyar, M.D., and Burns, R.G., (1981) Coordination chemistry of iron in glasses contributing to remote-sensed spectra of the moon. *Proc. Lunar and Planet. Sci. Conf.*, **12B**, 695-702.
2. Burns, R.G. and Dyar, M.D. (1983) Spectral chemistry of green glass-bearing 15426 regolith. *Proc. Lunar and Planet. Sci. Conf.*, 14, *J. Geophys. Res.*, **88**, B221-B228.
3. Dyar, M.D., and Birnie, D.P. (1984) The effects of quench media on iron partitioning and ordering in a lunar glass. *Proc. 1st Intl. Conf. on Glass in Planet. and Geolog. Phenomena, J. Non-Cryst. Sol.*, **67**, 397-412.
4. Stone, A.J., Parkin, K.M., and Dyar, M.D. (1984) STONE: a program for resolving Mössbauer spectra. DEC Users Soc. 11-720, Marlboro, Mass.
5. Dyar, M.D. (1984) Precision and interlaboratory reproducibility of measurements of the Mössbauer effect in minerals. *Amer. Mineral.*, **69**, 1127-1144.
6. Dyar, M.D. (1984) Experimental methods for quenching structures in lunar-analog silicate melts: variations as a function of quench media and composition. *Proc. Lunar and Planet. Sci. Conf.*, 15, *J. Geophys. Res.*, **84**, supplement, C233-C239.

³ As of June 1, 2004, there have been 1297 citations to my work in the literature, in publications tracked by the Science Citation Index.

⁴ My Ph.D. research at M.I.T. was funded entirely by NASA, but my actual thesis work was split between terrestrial and planetary projects. Although I dearly loved the field of planetary science, my desire to carve out my own niche in the application of Mössbauer and other spectroscopies to geological problems led me to pursue only terrestrial studies, beginning with my post-doc at Caltech and continuing into my subsequent positions at the University of Oregon and West Chester University. In the 1990's, several things happened that drew me back into the field of planetary science: 1) Roger Burns, who was my Ph.D. supervisor and world's expert on Mössbauer spectroscopy of extraterrestrial rocks and minerals, died suddenly in 1994, leaving a conspicuous void in the discipline of extraterrestrial spectroscopy, 2) I led a panel at a workshop and was the senior author on the Mineralogy team report in a planning document for planetary exploration, and 3) planning began for the inclusion of Mössbauer spectrometers on martian landers. These changes in the field led me to pursue a position at Mount Holyoke College with a joint appointment in the Departments of Astronomy and Geology (which subsequently became the Department of Earth and Environment). At that time, I returned to the field of planetary science as part of my research program. Accordingly, my c.v. reflects only a terrestrial emphasis from 1986-1998, while subsequent work has been split between the disciplines.

7. Dyar, M.D. (1985) A review of Mössbauer data on inorganic glasses: the effects of composition on iron valency and coordination. *Amer. Mineral.*, **70**, 304-316.
8. Birnie, D.P., and Dyar, M.D. (1986) Cooling rate calculations for silicate glasses. Proc. Lunar and Planet. Sci. Conf., 16, *J. Geophys. Res.*, **91(B4)**, D509-D513.
9. DeGuire, M.R., Dyar, M.D., O'Handley, R.C., and Kalongi, G. (1986) Magnetic ordering in splat-quenched ferrite-silica compositions. *J. Magn. Magn. Mater.*, **54-57**, 1337-1338.
10. Dyar, M.D., and Burns, R.G. (1986) Mössbauer spectral study of ferruginous one-layer trioctahedral micas. *Amer. Mineral.*, **71**, 951-961.
11. Dyar, M.D. (1986) Practical application of Mössbauer goodness-of-fit parameters for evaluation of real experimental results: a reply. *Amer. Mineral.*, **71**, 1266-1267.
12. DeGuire, M.R., O'Handley, R.C., Kalongi, G., and Dyar, M.D. (1986) Spinel ferrite-silica glass obtained by splat quenching. *J. Non-Cryst. Sol.*, **81**, 351-364.
13. Dyar, M.D. (1986) Comment on ferric/ferrous Mössbauer analysis of simulated nuclear waste glass with and without computer fitting. *Commun., Am. Cer. Soc.*, **69(7)**, C-160-C-162.
14. Dyar, M.D. (1987) A review of Mössbauer data on trioctahedral micas: evidence for tetrahedral Fe³⁺ and cation ordering. *Amer. Mineral.*, **72**, 102-112.
15. Dyar, M.D., Naney, M.T., and Swanson, S.E. (1987) Effects of quench methods on Fe³⁺/Fe²⁺ ratios: a Mössbauer and wet chemical study. *Amer. Mineral.*, **72**, 792-800.
16. Fudali, R.F., Dyar, M.D., Griscom, D.L., and Schreiber, H.D. (1987) The oxidation state of iron in tektite glass. *Geochim. Cosmochim. Acta.*, **51(10)**, 2749-2756.
17. Dyar, M.D., and Naney, M.T. (1988) Effects of quench methods on Fe³⁺/Fe²⁺ ratios: Reply. *Amer. Mineral.*, **73**, 1479.
18. Dyar, M.D. (1989) Application of Mössbauer goodness-of-fit parameters to experimental spectra: Further discussion. *Amer. Mineral.*, **74**, 688.
19. ⁵McGuire, A.V., Dyar, M.D., and Ward, K.W. (1989) Neglected Fe³⁺/Fe²⁺ ratios: a study of Fe³⁺ contents of megacrysts from alkali basalts. *Geology*, **17**, 687-689.
20. Dyar, M.D., McGuire, A.V., and Ziegler, R.D. (1989) Redox equilibria and crystal chemistry of coexisting minerals from spinel lherzolite mantle xenoliths. *Amer. Mineral.*, **74**, 969-980.
21. Dyar, M.D. (1990) Mössbauer spectra of biotite from metapelites. *Amer. Mineral.*, **75**, 656-666.
22. Guidotti, C.V., and Dyar, M.D. (1991) Ferric iron in metamorphic biotite and its petrologic and crystallochemical implications. *Amer. Mineral.*, **76**, 161-175.
23. Dyar, M.D., Perry, C.P., Rebbert, C.R., Dutrow, B., Holdaway, M.J., and Lang, H. (1991) Mössbauer spectroscopy of synthetic and naturally occurring staurolites. *Amer. Mineral.*, **76**, 27-41.
24. Burns, R.G., and Dyar, M.D. (1991) Crystal chemistry and Mössbauer spectra of babingtonite. *Amer. Mineral.*, **76**, 892-899.
25. Dyar, M.D., Colucci, M.T., and Guidotti, C.V. (1991) Forgotten major elements: Hydrogen and oxygen variation in biotite from metapelite. *Geology*, **19**, 1029-1032.
26. Holdaway, M.J., Mukhopadhyay, B., Dyar, M.D., Dutrow, B.L., Rumble, D. III., and Grambling, J. (1991) A new perspective on staurolite crystal chemistry: Use of stoichiometric and chemical end-members for a mole fraction model. *Amer. Mineral.*, **76**, 1910-1919.
27. McGuire, A.V., Dyar, M.D., and Nielson, J.E. (1991) Metasomatic oxidation of upper mantle peridotite. *Contrib. Min. Petrol.*, **109**, 252-264.
28. Dyar, M.D., Mackwell, S.M., and McGuire, A.V. (1992) Fe³⁺/H⁺ and D/H in mantle kaersutites - Misleading indicators of mantle source fugacities. *Geology*, **20**, 565-568.
29. Dyar, M.D., McGuire, A.V., and Harrell, M.D. (1992) Crystal chemistry of iron in two styles of metasomatism in the upper mantle. *Geochim. Cosmochim. Acta.*, **56**, 2579-2586.

⁵Names of undergraduate coauthors are underlined.

30. Banfield, J.M., Dyar, M.D., and McGuire, A.V. (1992) The defect microstructure of oxidized mantle olivine from Dish Hill, California. *Amer. Mineral.*, **77**, 959-975.
31. McGuire, A.V., Francis, C.A., and Dyar, M.D. (1992) Mineral standards for electron microprobe analysis of oxygen. *Amer. Mineral.*, **77**, 1087-1091.
32. Holdaway, M.J., Gunst, R.F., Mukhopadhyay, B., and Dyar, M.D. (1993) Staurolite end member molar volumes determined from unit-cell measurements of natural specimens. *Amer. Mineral.*, **78**, 56-67.
33. O'Hanley, D.S., and Dyar, M.D. (1993) The crystal chemistry of lizardite and the formation of magnetite. *Amer. Mineral.*, **78**, 391-407.
34. Dyar, M.D. (1993) Mössbauer spectroscopy of tetrahedral Fe³⁺ in trioctahedral micas - Discussion. *Amer. Mineral.*, **78**, 665-668.
35. Dyar, M.D., Guidotti, C.V., Holdaway, M.J., and Colucci, M. (1993) Non-stoichiometric hydrogen contents in common rock-forming hydrous silicates. *Geochim. Cosmochim. Acta.*, **57**, 2913-2918.
36. Dyar, M.D., Mackwell, S.M., McGuire, A.V., Cross, L.R., and Robertson, J.D. (1993) Crystal chemistry of Fe³⁺ and H⁺ in mantle kaersutites: Implications for mantle metasomatism. *Amer. Mineral.*, **78**, 968-979.
37. Dyar, M.D. (1993) Instructional innovation. In The role of geosciences faculty in the undergraduate education of science and mathematics teachers. In *Proceedings, National Science Foundation Workshop, Role of Faculty from the Science Disciplines in the Undergraduate Education of Future Sciences and Mathematics Teachers*, 208-210.
38. Guidotti, C.V., Yates, M.G., Dyar, M.D., and Taylor, M. (1994) Petrogenetic implications of Fe³⁺ content of muscovite in pelitic schists. *Amer. Mineral.*, **79**, 793-795.
39. Earley, D., Dyar, M.D., Ilton, E.S., and Grantham, A.A. (1995) The influence of structural fluorine on biotite oxidation in copper-bearing, aqueous solutions at low temperatures and pressures. *Geochim. Cosmochim. Acta.*, **59**, 2423-2433.
40. Hower, J.C., Graham, U.M., Dyar, M. D., Taylor, M.E., and Rathbone, R.F. (1995) Approaches to the study of iron distribution among phases in high- and low-sulfur coal fly ash. In *Coal - Energy and the Environment*, S.-H. Chiang, ed., Proceedings 12th Ann. Pittsburg Coal Conference, 1138-1143.
41. Dyar, M.D., Treiman, A.H., Beauchamp, P.M., Blaney, D.L., Kim, S.S., Klingelhoefer, G., Mehall, G., Morris, R.V., Ninkov, Z., Sprague, A.L., Zolensky, M., and Pieters, C. (1995) Mineralogy. In Morris, C. and Treiman, A. H., eds., *Planetary Surface Instrumentation Workshop, Lunar and Planetary Institute, Tech. Rep. 95-05*, 65-84.
42. Dyar, M.D., Martin, S.V., Mackwell, S.J., Carpenter, S., Grant, C.A., and McGuire, A.V. (1996) Crystal chemistry of Fe³⁺, H⁺, and D/H in mantle-derived augite from Dish Hill: Implications for alteration during transport. In: M.D. Dyar, C.A. McCammon, and M. Schaefer, eds., *Mineral Spectroscopy: A Tribute to Roger G. Burns*, Special Publication #5, The Geochemical Society, 273-289.
43. Delaney, J.S., Bajt, S., Sutton, S.R., and Dyar, M.D. (1996) *In situ* microanalysis of Fe³⁺/ΣFe ratios in amphibole by X-ray Absorption Near Edge Structure (XANES) spectroscopy. In: M.D. Dyar, C.A. McCammon, and M. Schaefer, eds., *Mineral Spectroscopy: A Tribute to Roger G. Burns*, Special Publication #5, The Geochemical Society, 170-177.
44. Robertson, J.D., and Dyar, M.D. (1996) Nuclear methods for analysis of boron in minerals. In: E.S. Grew and L.M. Anovitz, eds., *Boron: Mineralogy, Petrology, and Geochemistry in the Earth's Crust. Reviews in Mineralogy*, vol. 32, Mineralogical Society of America, 805-820.
45. Holdaway, M.J., Mukhopadhyay, B., Dyar, M.D., Guidotti, C.V., and Dutrow, B.L. (1997) Garnet-biotite geothermometry revised: New Margules parameters and a natural specimen data set from Maine. *Amer. Mineral.*, **82**, 582-595.
46. Bettison-Varga, L., Burger, R., Creasy, J., Dyar, D., Knight, P., Shapiro Ledley, T., and McManus, D. (1996) How should we integrate research and education? In: M.F.W. Ireton, C.A. Manduca,

- and D.A. Mogk, Eds., *Shaping the Future of Undergraduate Earth Science Education*, American Geophysical Union, 29-32.
47. Dyar, M.D. (1997) Color in minerals. In: J.B. Brady, Mogk, D.W., and Perkins, D., eds., *Teaching Mineralogy*, Mineralogical Society of America, 323-348.
 48. Smyth, J.R., Dyar, M.D., May, H.M., Bricker, O.P., and Acker, J.G. (1997) Crystal structure refinement and Mössbauer spectroscopy of an ordered, triclinic clinoclone. *Clays Clay Mins.*, **45**, 544-550.
 49. Delaney, J.S., Dyar, M.D., Sutton, S.R., and Bajt, S. (1998) Redox ratios with relevant resolution: Solving an old problem using the Synchrotron microXANES probe. *Geology*, **26**, 139-142.
 50. Dyar, M.D., Taylor, M.E., Lutz, T.M., Francis, C.A., Robertson, J.D., Cross, L.M., Guidotti, C.V., and Wise, M. (1998) Inclusive chemical characterization of tourmaline: Mössbauer study of Fe valence and site occupancy. *Amer. Mineral.*, **83**, 848-864.
 51. O'Hanley, D.S., and Dyar, M.D. (1998) The composition of chrysotile: integration of Mössbauer and electron microprobe data and the relationship between chrysotile and lizardite. *Canad. Mineral.*, **36**, 727-739.
 52. Dyar, M.D., Delaney, J.S., Sutton, S.R., and Schaefer, M.W. (1998) Fe³⁺ distribution in oxidized olivine: A synchrotron micro-XANES study. *Amer. Mineral.*, **83**, 1361-1365.
 53. Dyar, M.D., Guidotti, C.V., Core, D.P., Wearn, K.M., Wise, M.A., Francis, C.A., Johnson, K., and Brady, J.B. (1999) Stable isotope and crystal chemistry of tourmaline across pegmatite - country rock boundaries at Black Mountain and Mount Mica, southwestern Maine, U.S.A. *Euro. J. Mineral.*, **11**, 281-294.
 54. Bloodaxe, E.S., Hughes, J.M., Dyar, M.D., Grew, E.S., and Guidotti, C.V. (1999) Linking structure and chemistry in the schorl-dravite series. *Amer. Mineral.*, **84**, 922-928.
 55. Tagg, S.L., Cho, H., Dyar, M.D., and Grew, E.S. (1999) Tetrahedral boron in naturally-occurring tourmaline. *Amer. Mineral.*, **84**, 1451-1455.
 56. Francis, C.A., Dyar, M.D., and Williams, M. (2000) The occurrence and crystal structure of foitite from a tungsten-bearing vein at Copper Mountain, Taos County, New Mexico. *Canad. Mineral.*, **37**(6), 1431-1438.
 57. Carpenter, S., Mackwell, S.J., and Dyar, M.D. (2000) Hydrogen in diopside: Diffusion profiles. *Amer. Mineral.*, **85**, 480-487.
 58. King, P.L., Hervig, R.L., Holloway, J.R., Delaney, J.S., and Dyar, M.D. (2000) Partitioning of Fe³⁺/Fe_{total} between amphibole and basanitic melt as a function of oxygen fugacity. *Earth Planet. Sci. Lett.*, **178**, 97-112.
 59. Hughes, J.M., Ertl, A., Dyar, M.D., Grew, E.S., Shearer, C.K., Yates, M.G., and Guidotti, C.V. (2000) Tetrahedrally coordinated boron in a tourmaline: Boron-rich olenite from Stoffhütte, Koralpe, Austria. *Canad. Mineral.*, **38**, 861-868.
 60. Hughes, K.-A., Hughes, J.M., and Dyar, M.D. (2001) Chemical and structural evidence for ⁴B <-> ⁴Si substitution in natural tourmalines. *Eur. J. Mineral.*, **13**, 743-747.
 61. Dyar, M.D., Delaney, J.S., and Sutton, S.R. (2001) Fe XANES spectra of iron-rich micas. *Eur. J. Mineral.*, **13**, 1079-1098.
 62. Righter, K., Dyar, M.D., Delaney, J.S., Vennemann, T.W., and Hervig, R.L. (2002) Correlations of octahedral cations with OH⁻, O²⁻, Cl⁻, and F⁻ in biotite from volcanic rocks and xenoliths. *Amer. Mineral.*, **142**-153.
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199. Ertl, A., Rossmann, G.R., Hughes, J.M., Wang, Y., O'Leary, J., Dyar, M. D., Prowatke, S., and Ludwig, T. (2006) *Gemological Research Conference*. San Diego.
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Transmittance, and Emission Spectroscopy. 3rd Mid-European Clay Conference, Opatija, Croatia.

201. Dyar, M.D., Bishop, J.L., and Drief, A. (2006) The Influence of Physical Alteration on the Mössbauer and Reflectance Spectra of Antigorite and Applications to Soil Alteration Processes on Mars. 3rd Mid-European Clay Conference, Opatija, Croatia.
202. Sanchez, M.S., Gunter, M. E., Dyar, M.D., Badger, S.R., Hobbs, G.C., Van Orden, D.R., and Potter, M.S. (2006) Characterization of historical amphibole samples from the former vermiculite mine near Libby, Montana U.S.A. Abstract to G.S.A. Annual Meeting, Philadelphia, #110913.
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205. Seaman, S.J., Helfrich, E., and Dyar, M.D. (2006) The role of water in the growth of spherulites in rhyolitic lava flows. Abstract to G.S.A. Annual Meeting, Philadelphia, #116469.

Theses Supervised:

- Reich, D.R. (M.S., University of Oregon, 1989) Geology and Petrology of the Mt. Emily Volcanic Center.
- Hull, C.D. (Ph.D., University of Oregon, 1990) Multicomponent Chemical Equilibrium Modeling of Fluids and U-Th Geochronology of Minerals in Geothermal Systems.
- Harrell, M.D. (Honors College, B.A., University of Oregon, 1991) *In situ* Alteration of a Rock from the Earth's Mantle
- Moeller, K. J. (M.S., University of Oregon, 1991) Crystal Chemistry of Chlorites from Metapelites.
- Grant, C. G. (Ph.D., 1995, Chemistry, University of Oregon) Sources of Experimental and Analytical Error in Measurements of the Mössbauer Effect in Amphibole.
- Taylor, M.E. (M.A., West Chester University, 1996) Crystal Chemistry of Iron in Tourmaline.
- Voci, Christopher (M.A., West Chester University, 1996) Pb Stability in Pyromorphite from Landfills.
- Stefanis, M. (B.A., Mount Holyoke College, 1999) An Interpretation of the Rocks at the Mars Pathfinder Landing Site.
- Polyak, D.E. (B.A., Mount Holyoke College, 1999) Crystal Chemistry of Iron in Plagioclase from Four Heavenly Bodies.
- Blackwell, M.A. (B.A., Mount Holyoke College, 2000) Recoil-free Fraction Effects in Amphibole.
- Lowe, E.W. (B.A., Mount Holyoke College, 2000) Distribution Coefficients for Fe³⁺ and Fe²⁺ in Metapelites from Western Maine.
- Cartwright, B.M. (M.S., University of Massachusetts, 2003) Plagioclase Fe³⁺/Fe²⁺ Correlation with Magma Oxygen Fugacity in a Volcanic Succession: The Atascosa Mountains, South-central Arizona. Co-supervised with Sheila Seaman.
- Makuch, L.B. (B.A., University of Massachusetts, 2002) The Ares Project. Honors College.
- Therkelsen, J.B. (B.A., Amherst College, 2002) Shock-induced changes in redox state of experimentally shocked plagioclase, pyroxene, and olivine.
- Peek, K.M. (B.A., Mount Holyoke College, 2002) The disruption of an icy satellite and the evolution of the resulting debris ring. A formation scenario for Saturn's rings.
- Dickson, J. (B.A., Hampshire College, 2002) Water on Mars: A synthesis of hydrologic features on the surface of Mars.
- Daane, A.R. (B.A., Mount Holyoke College, 2004) Brightness and color variations in the hot pulsating horizontal branch star PG1627+017.
- Hunter, N. (B.A., Mount Holyoke College, 2004) Pacific Equatorial Current systems during the waning of the 2002-2003 El Niño.

- O'Connor, V. (B.A., Smith College, 2005) Comparative crystal chemistry of hydrous iron sulfates from different terrestrial environments.
- Dopfel, E. (B.A., Mount Holyoke College, 2006) The chemical activators of cathodoluminescence in jadeite.
- Sklute, E.C. (B.A., Mount Holyoke College, 2006) Mössbauer spectroscopy of synthetic olivine across the Fe-Mg solid solution.
- Rothstein, T. (B.A., Mount Holyoke College, 2006) Spectroscopy of jarosite and implications for the mineralogy of Mars.
- Howenstine, J. (B.A., University of Massachusetts, 2006) Analysis of depth-diameter relationship of martian craters.

Graduate Committees:

- McCanta, Molly (Ph.D., Brown University, 2004)
- Buczowski, Debra (Ph.D., University of Massachusetts, 2006)
- Keskula-Snyder, Anna (Ph.D., University of Massachusetts, 2006)

Previous Funding:

American Chemical Society, Petroleum Research Fund:

- "Cation Ordering in Synthetic Trioctahedral Micas"
 \$18,000 funded, 7/1/87-8/31/89
 \$4,500 supplement, 5/1/88-9/30/88
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- "Detailed Crystal Chemistry of Iron-Bearing Phyllosilicates"
 \$40,000 funded, 5/1/91-8/31/93
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National Science Foundation, Earth Sciences Division:

- "Crystal Chemistry and Petrogenesis of Biotites from Pelitic Schists"
 \$60,000 funded, 7/1/87-6/30/90
- "Equipment for Program Improvement in Mineralogy/Petrology"
 \$45,000 funded, 1/1/89-12/31/89
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- "Crystal Chemistry of Metapelitic Minerals in a Petrologic Context"
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- "Crystal Chemistry of Hydrogen and Oxygen in Common Phyllosilicate Minerals"
 \$61,774 funded, 1/1/92-12/31/93
- "Development of Standards for Light Element Analysis in Geological Materials: Collaborative Research"
 \$ 21,639 funded, 6/1/93-12/31/95
- "The Boron Budget in High-Grade Pelitic Metamorphic Rocks: How, When, and Where does the Boron Go?" (Joint with C.V. Guidotti and E.S. Grew)
 \$56,333 funded for period 1/1/96-12/31/97
- "Hydrogen Partitioning and Fe³⁺ Exchange in Mantle Minerals: Effects on Mechanical Behavior - Collaborative Research" (Joint with S.J. Mackwell)
 \$142,997 funded for period 11/1/93 to 5/31/98
 \$5,000 supplement funded for 5/1/94 to 9/1/94
- "Redox Processes in Rio Grande Rift and Colorado Plateau Xenoliths: Collaborative Research" (Joint with A.V. McGuire)
 \$55,598 funded for period 6/1/94-5/31/98
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“Synchrotron MicroXANES Study of Iron Redox in Mantle Phases”

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“R.U.I.: Acquisition of a New Mössbauer spectrometer”

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“R.U.I.: Collaborative Research: Chemical Equilibria Involving Iron and Hydrogen in Metapelites from Western Maine”

\$27,468 funded for period from 8/1/99 - 7/31/01

National Science Foundation, Division of Undergraduate Education:

“Support for Development of Minerals and Mineralogy: A Three-Dimensional Approach”

\$75,000 funded for period from 3/1/00 - 2/28/02

“A Modular, Inquiry-Based Regional Approach to Introductory Laboratories” (Joint with L. Savoy, M.J. Markley, A. Werner, M.A. McMenamin, S. Dunn, and T. Millette)

\$170,000 funded for period from 1/1/00 - 6/30/05

National Science Foundation, Materials Research Division:

"Undergraduate Research Program in Materials Science"

\$14,500 funded, 5/1/88-9/30/88

"Undergraduate Research Program in Materials Science"

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Tektronix Foundation:

"Request for Upgrade to Mössbauer Spectroscopy Laboratory"

\$4,000, 1987

\$6,000, 1988

\$10,000, 1989

Packard Foundation

“Earth and Environmental Sciences in California and the Southwest” (Joint with A. Ellison, L. Savoy, and T. Millette)

\$200,000 funded for period from 1/1/00 - 12/31/02

NASA, Cosmochemistry Division:

“Synchrotron microFTIR characterization of hydrogen in nominally anhydrous minerals in martian materials.”

\$68,000 funded for period from 1/1/01 - 12/31/02

“Ferric Iron and Hydrogen in Mars Minerals”

\$45,000 funded for period from 1/1/03 - 12/31/03

National Science Foundation, Earth Sciences Division:

“RUI: Acquisition of a Scanning Electron Microscope at Mount Holyoke College”

\$226,560 funded for period from 6/1/02-5/30/03

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National Science Foundation, Division of Undergraduate Education:

“Support for Development of Minerals and Mineralogy: A Three-Dimensional Approach”

\$417,244 funded for period from 3/1/02 – 2/28/05

“An Integrative Curriculum in Planetary Science”

(C.M. Hamilton, T. Burbine, co-Is)

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NASA, Mars Fundamental Research Program:

“Temperature Dependence and Resolution of Fundamental Mössbauer Parameters in Mars-Analog Minerals”

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“Taking Apart the Rocks of Mars” (C. Pieters, P.I., J. Bishop, J. Sunshine, T. Hiroi, Co-Is)

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“Analysis and Characterization of Sulfates and Sulfides Using Multiple Spectral Techniques (M. Lane, P.I., J.L. Bishop, Co-I)

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“Temperature Dependence and Resolution of Fundamental Mössbauer Parameters in Mars-Analog Minerals”

(collaborative with M. Schaefer, LSU)

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“Mineral Standards and Technique Development for Laser-Induced Breakdown Spectroscopy”

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“Formation of Magnetic Minerals on Mars by Alteration of Nanophase Ferric Oxides/Oxyhydroxides”

(collaborative with Janice Bishop, SETI/Ames)

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“Further Analysis and Characterization of Sulfates and Sulfides Using Multiple Spectral Techniques”

(collaborative with Melissa Lane, Planetary Science Institute)

\$32,000 funded for period from 3/1/06-2/28/09

National Science Foundation, Earth Sciences Division:

“RUI: Collaborative Research: Hydrogen and Ferric Iron in Felsic Melts”

(collaborative with Sheila Seaman, University of Massachusetts)

\$86,000 funded for period from 1/1/03-12/31/05

“Improvements in the Application of the Mössbauer Effect to Studies of Minerals”

(collaborative with Martha Schaefer, LSU)

\$76,939K funded for period from 1/1/05-12/31/07

NASA, Cosmochemistry Division:

“Hydrogen and Iron in Terrestrial Bodies” (S.J. Mackwell, Co-I)

\$195,000 funded for period from 3/1/04-2/28/07

“Acquisition of a 4.5K Mössbauer Spectrometer”

\$35,345 funded for period from 1/1/05 to 12/31/06

Pending Funding:**NASA, Cosmochemistry Division:**

Iron and Hydrogen in Terrestrial Bodies”

\$297,000 requested for period from 3/1/07-2/28/10