Curriculum Vitae for Michael F. Roden

Present Position: Professor & Department Head of Geology
Dept. Geology
University of Georgia
Athens GA 30602
Tenure Status: Tenured
Graduate Faculty Status: Member

Personal Data:

US Citizen, born Sept. 10, 1950
US Army Veteran, 1972-1975

Education:

Ph.D. [geochemistry] 1982, Massachusetts Institute of Technology
M.S. [geology] 1977, University of Texas (Austin)
A.B. [geology] 1972, Hamilton College

Professional Positions:

2006-2012, Head, Dept. of Geology, University of Georgia
2000-2006, Associate Head, Dept of Geology, University of Georgia
1998-present, Professor, Dept. of Geology, University of Georgia
1996 (Fall-Winter) Visiting Research Associate, Max Planck Institut fur Chemie, Mainz, Germany
1989-1998, Associate Professor, University of Georgia
1986 (Fall), Visiting Associate Professor, Universite de Clermont-Ferrand II, Clermont-Ferrand, France
1984-1989, Assistant Professor, University of Georgia
1982-1984, Research Associate, University of Minnesota (Minneapolis)

Awards and Honors:

Teacher of the Year, Department of Geology, 2005
Professor of the Year, Department of Geology, 1984-5, 1988-9, 1989-90
Graduated with Honors (Hamilton College, 1972)
Elected to Sigma Xi (Hamilton College, 1972)
Rogers Prize in Geology (Hamilton College, 1972)

Petrography Prize (University of Texas, 1977)
Listed in Who's Who in Science and Engineering

Professional Societies:

Member: American Geophysical Union, Geological Society of America, Geochemical Society, Sigma Xi, Georgia Geological Society, National Association of Geology Teachers

Research Focus:

I am primarily interested in understanding how the earth and the planets have become chemically differentiated over time into crusts, mantle and core. My current work involves studying mantle lithosphere in the form of xenoliths brought to the surface by explosive volcanoes. These xenoliths are samples of mantle lithosphere ranging in age from Archean (>2500 million years old) to Recent, and in principle can yield information on the mechanisms responsible for earth differentiation as a function of time. More recently I've become interested in planetary geology including the origin of impact glasses ("georgiaites") found in east-central Georgia, and in the implications of apatite compositions for the fugacities of water, chlorine and fluorine in planetary interiors.

Current projects

- Phosphate equilibria in planetary and terrestrial basalts (with Alberto Patino-Douce)
- Chemical evolution of the upper mantle, western U.S.A.
- Petrogenesis of leucite basalts and lamprophyres, northern Turkey
- Petrogenesis of minettes & camptonites, Spanish Peaks, CO

Research Grants/Contracts:

2010-2011, National Science Foundation, Upgrade of JEOL JXA 8600 electron microprobe at the University of Georgia (co-PI, PI: Sam Swanson), $182,000.
2007-2008 Scholarship of Engagement Grant-International Program (OVP Public Service and Outreach): An Economic Development Initiative for Antofagasta de la Sierra, Argentina, $3000, with A. Patino Douce
2007, President's Venture Fund, Outreach and geological research in the Antofagasta de la Sierra region of Argentina, $3000, with A. Patino Douce
2003, Preparation of Interlaboratory Stones Testing Kit ($5700, U.S. Customs Service)
2002-03, Computer-assisted Field Studies in Geology: Application of Linked ArcView/GIS technology for the UGA Geology Field School (w/ Doug Crowe, $23559, University of Georgia)
1997-2000 NATO Collaborative Research Grant, Role of garnet pyroxenites in Archean lithosphere, Siberia (with E. Jagoutz, Max Planck Inst. Chemie, $5730)
1996 Research Fellowship, Abteilung Kosmochemie, Max Planck Institut fur Chemie ($12000)

1994 Education, Research & Development Association of Georgia Universities, Crystalline basement core - Savannah River Site (with J. Whitney, $47597)
1993 University of Georgia Office for Academic Affairs: Establishment of Cooperative Research with Russian Academy of Sciences ($10,300, with D. Crowe)
1990-1993 National Science Foundation, Combined ion probe-electron probe study of continental lithosphere, western U. S. ($41,300)
1992-1993 National Science Foundation, Acquisition of gas-source mass spectrometer (co-PI, principal PI: D. Crowe, $80,000)
1991 National Academy of Sciences, Project Development Grant with the Russian Academy of Sciences (approximately $3000)
1988-1990 National Science Foundation, Acquisition of electron microprobe (co-PI, principal PI: J. Whitney, $270,000)
1987-1989 National Science Foundation, Mantle composition as a function of crustal tectonics, southwestern U.S. ($27,000)
1985-1986 University of Georgia Faculty Research Grant: Geochemistry of the terrestrial mantle, western U.S. ($5900)
1984-1985 Amideast: Support of the research of Peace Fellow Serrya Ibrahim ($2700)

Editorial Work:

Editorial Board for *Geology* 1990-1992
Editorial Board for *Lithos* 1997-

Manuscript Reviewer for: *Geology, Journal of Petrology, Journal of Geophysical Research, Contributions to Mineralogy and Petrology, Earth and Planetary Science Letters, Geochimica Cosmochimica Acta, Science, Chemical Geology, Lithos, Neues Jahrbuch fur Mineralogie, J. Metamorphic Geology, J. Petrology, Am. Mineralogist, Gondwana Research, Geosphere, J. S. American Earth Sciences, Geological Soc. Amer. Sp. Pap., McGraw-Hill, Prentice Hall, Am. J. Science, J. Asian Earth Sciences, Am Geosciences Institute, Anais Academia Brasileria Ciencias*
Proposal Reviewer for: National Science Foundation, Petroleum Research Fund, National Geographic Society, Australian Research Council, Canadian Research Council, NERC U.S. Civilian Research and Development Foundation, National Agency for the Promotion of Science and Technology (Argentina)

Invited Lectures:

2011, Atlanta Geological Society, Supervolcanoes in the Puna of Argentina
2010, University of Georgia, Apatite as a probe of terrestrial mantles
2010, Georgia State Univeristy, Apatite as a probe of planetary interiors
2010, Frey Symposium, MIT, Apatite as a probe of terrestrial mantles
2008, Istanbul Technical University, Nature of Back-Arc Magmatism in the Puna of Argentina
2008, Georgia Southern University, Nature of Back-Arc Magmatism in the Puna of Argentina

2004, Washington & Lee University, Messengers from Hades: Mantle xenoliths and the mineralogy and composition of the mantle
2002, Georgia State University, Upper mantle composition beneath the Colorado Plateau
2002, Max Planck Institut, Mainz, Germany Pyroxene and rutile exsolution in garnet: high temperature or high pressure signature?
2001, Pyroxene and rutile exsolution in garnet: high temperature or high pressure signatrure?, Kornprobst symposium, Clermont-Ferrand, France
2000, Geol. Soc. Amer. Meeting, South Central Section, Alkali gabbro xenoliths in basalt of Easy Chair Crater, central Nevada
2000, University of Tennessee, Upper mantle composition beneath the Colorado Plateau
1999, Georgia Southwestern State University, Georgiaites: 35 million year-old impact glasses from central Georgia
1997, University of the South, Xenoliths and mantle composition, western U.S.
1994, Florida State University,Geochemistry of Hawaiian lavas: Seeing through crystal fractionation into the heart of the plume
1993, University of North Carolina, Chapel Hill, He, Sr, Nd and Pb compositions of Koolau lavas and their bearing on the origin of Hawaiian lavas.
1988, Georgia State University, Upper mantle composition beneath the Colorado Plateau
1987, Auburn University, Upper mantle composition beneath the Colorado Plateau
1987, San Diego State University, Isotopic and trace element composition of the upper mantle beneath the Rio Grande Rift
1986, Universite Clermont Ferrand II, Geochimie et petrologie des magmas tres potassiques du district de Navajo (sud-ouest americain)
1985, M.I.T., Upper mantle composition beneath a young continental rift
1983, Rice University, Geochemistry of tholeiitic lavas from the Koolau Range, Oahu
1983, University of Wyoming, Mantle metasomatism and the genesis of alkalic basalts
1983, University of Missouri, Peridotite xenoliths and mantle compositions
1983, University of Minnesota, What xenoliths can tell us about upper mantle compositions
1981, S.U.N.Y. at Albany, Mantle metasomatism and trace element enrichment in the upper mantle
1981, University of Northern Illinois, Xenoliths from Nunivak Island, Alaska: evidence for incompatible element enrichment in the upper mantle

Teaching Experience:

Courses taught:

FRES 1020: Freshman seminar on Mars, 2000, 2005, 2007
GLY 115, Earth Processes & Environments, 1998
GEOL 1121, Earth Processes & Environments, annually, 1999-2002, 2005, 2008(2), 2009-2012, 2013(2)
GLY 125, GEOL 1250: Physical Geology, 1988, 2003, 2005
GLY 322: Optical Mineralogy and Petrology I [team-taught], annually 1992-7 except 1996 (on leave)
GLY 323: Petrology, annually 1986-91 except 1987
GLY 408: Optical Mineralogy, annually 1984-6

GLY 425/625; GEOL 4250/6250: Field Methods in Geology, annually 1993-2001
GLY 427, GEOL 4270: Geology Field School [team-taught], annually 1987-
GEOL 1250, 2003
GEOL 4020, Internal Processes, 2000, 2001, 2004-13
GEOL 4300/6300, Igneous and Metamorphic Petrology [team-taught], 1998, 2000, 2002, 2004, 2006, 2010
GEOL 4350/6350, Geology of the Planets & Moons [team-taught], biennially 1999-2011
GEOL 4330/6330, Geology of North America, 2008
GEOL 4110/6110 Principles of Geochemistry, 2001, 2003
GLY 644: Chemical Mineralogy, 1984, biennially 1985-97
GLY 800: Petrology, 1990
GLY 816, GEOL 8160: Advanced Igneous Petrology, biennially 1985-03
GLY 822: Advanced Metamorphic Petrology biennially 1986-90
GLY 845: Geochronology and Isotope Geology Seminar, biennially 1986-94
GLY 846: Radiogenic Isotope Geochemistry, 1996
GEOL 8460: Isotope Geochemistry, 1999

Administrative Appointments Related to Teaching:

***Graduate Coordinator*:** 1991-1993
***Field School Director*:** 1993-1995, 2001-03, 2006

Senior Theses Supervised

A.Biagi (2002)
A. Moore (2002)
S. Cox (2008) –co-supervised with A. Patino Douce
J. Mosely (2010)
A. Sarafian (2010) –co-supervised with A. Patino Douce
E. First (2011) – co-supervised with A. Patino Douce
A. Gesualdo (2011) – co-supervised with A-Patino Douce
E. Summerlin (2011)
A. Saenger (2013)
R. Leahy (current)

Graduate Students Supervised (year graduated, current position):

A. ***M.S. students***:

C. Lapallo (1988, uncertain),
M. Alfaro (1990, Research Specialist, Exploration Resources, Aiken SC),
T. Williams (1991, Research Associate, University of Idaho),
A. Havenhill (1992, Research Scientist, IBM)
J. Norris (1996, Czech Geological Survey)
A. Bedell (2003, environmental scientist, Atlanta)
S. Harris (2003, Ph.D. candidate, Brown University)

S. Clark (2009, Selman drilling))
H. McGregor (2010, environmental scientist, Atlanta)
A. Sarafian (2012, PhD student, WHOI)
B. Hamil (2013, Lab Technician, CAIS)
F.E. Waters (current)
J. Mosely (current)

B. ***Ph.D. students***:

D. Askren (1992, Research Scientist, Environmental Protection Agency)
D. Chen (1992, President, PT. Asiamax Mining Indonesia)
E. Albin (1997, Staff Astronomer, Fernbank Science Center, Atlanta)
D. Dvoracek (2003, Research Scientist, CAIS, U. Georgia)
J. Chaumba (2009, Lecturer, Auburn University)

Service on Advisory Committees (year graduated)

A. *M.S. students*

Stephanie Fochtman (current)
Joao Luna-Gonzalez (2013)
Heather Veasey (2013)
Dana Susina (current)
Mariela Noriega (2009)
Scott Baker (2006)
Elizabeth Hollingsworth (2006)
Brian Veal (2004)
Charlie Fortner (2002)
Christian Schrader (2002)
John LeGolvan (2001)
Chad Wolak (2001)
Julie Rosdeutscher (1999)
Michelle Anderson (1997)
Joshua Sternberg (1997)
Zachary Hall (1996)
Frank Lieth (1996)
Greg Vaughan (1995)
Maureen Bottrell (1992)
Teresa Cannan (1992)
Lawrence Motebe (1991)
Wolfgang Von der Hyde (1990)
Victor Johnson (1989)
Jim Renner (1989)
Andrew Clark (1989)
Joseph McKinney (1989)
Choon-Sik Kim (1988)
Lisa Hardy (1987)
Dan Askren (1986)
Ken Tyson (1986)

Ken Eubanks (1985)
Mark Mitchell (1985)
Elizabeth Porter (1985)

B. ***Ph.D. students***

Horry Parker (current)
Sheldon Skaggs (2010)
Christian Schrader (2009)
Chris Kelson (2006)
Drew Mirante (2005)
Don Thieme (2003)
Mohamed Khalifa (2002)
Mark Colberg (2001)
Alex Riter (1999, University of Texas)
Sang-Hwan Gwak (1998)
T.C. McCarthy (1998)
Nathan Melear (1998)
Chris Capps (1996)
Debra Dooley (1995)
Choon-Sik Kim (1992)
Valderez Ferreira (1991)
Lyle Phillips (1989)
Mariano Gorki (1988)
Wilhelmus Van Middlelaar (1988)
Michael Dorais (1987)
Brian Schumacher (1985, Agronomy)

Service:

Member, Grants-In-Aid-Of-Research, Sigma Xi, 1991-7
Tier I Judge, Georgia Science Fair, 1994-5, 1997
Tier II Judge, Georgia Science Fair, 2001, 2003
Lecturer, Franklin College Outreach Program 1995-2001
Member, University Review Committee for Physical Sciences, 1999-01
Member, Publications Committee, VGP Section, Am. Geophys. Union, 2000-
Chairman, Academic Affairs Committee, Faculty Senate, 2005-06
Faculty Senator, 2005-06
President, Georgia Geological Society 2006-07
Participant, Enhancing Faculty Impact Through Engagement and Renewal, Teaching Academy, Academic Affairs Faculty Symposium, UGA 2007
Student Marshall, Spring and Summer Commencements, 2007
Member, GSA Research Grant Committee, Geol. Soc. Amer. 2008-2011
Member, Proposal Evaluation Committee, CURO Summer Research Fellowship, 2009
Judge, Student Posters, American Geophysical Union Fall 2010-2011
Student Marshall, Fall Commencement 2011

Faculty Senator 2012-
Franklin College Promotion & Tenure Committee (Chair, 2013) 2012-
OVPR Program Review of Center for Applied Isotope Studies 2012-

Research Publications:

McGetchin, T.R., D. Smith, S.N. Ehrenberg, M. Roden, H.G. Wilshier, 1977, Navajo kimberlites and minettes, Field Excursion Guide, Second International Kimberlite Conference, 37 pp.

Roden, M.F. and D. Smith, 1979, Field geology, chemistry, and petrology of the Buell Park minette diatreme, Apache County, Arizona, ***in*** Boyd F.R. and H.O.A. Meyer (eds.) **Kimberlites, Diatremes, and Diamonds: Their Geology, Petrology and Geochemistry**, Am. Geophys. Un.: Proc. Second Int. Kimberlite Conf.: 364-81.

Roden, M.F., F.W. McDowell and D. Smith, 1979, Age and extent of potassic volcanism on the Colorado Plateau, ***Earth Planet. Sci. Lett.*** 43: 279-84.

Frey, F.A., M.F. Roden and A. Zindler, 1980, Constraints on mantle source compositions imposed by phosphorous and the rare earth elements: Critical comments on the paper by Beswick and Carmichael, ***Contr. Mineral. Petrol***. 75: 165-173.

Smith, D. and M.F. Roden, 1981, Geothermometry and kinetics in a two-spinel peridotite nodule, Colorado Plateau, ***Am. Mineral.*** 66: 334-45.

Roden, M.F., 1981, Origin of coexisting minette and ultramafic breccia, Navajo volcanic field, ***Contr. Mineral. Petrol***. 77: 195-206.

Roden, M.F., F.A. Frey and D.M. Francis, 1984, An example of consequent mantle metasomatism in peridotite inclusions from Nunivak Island, Alaska, ***J. Petrol.*** 25: 546-77.

Roden, M.F., F.A. Frey and D.A. Clague, 1984, Geochemistry of tholeiitic and alkalic lavas from the Koolau Range, Oahu, Hawaii: Implications for Hawaiian volcanoes, ***Earth Planet. Sci. Lett***. 69: 141-58.

Roden, M.F., V. Rama Murthy and J.C. Gaspar, 1985, Sr and Nd isotopic composition of the Jacupiranga carbonatite, ***J. Geol.*** 93: 212-20.

Roden, M.F. and V. Rama Murthy, Mantle Metasomatism, 1985, ***Ann. Rev. Earth Planet. Sci.*** 13: 1269-96.

Frey, F.A., C.Y. Chen, A. Kennedy and M.F. Roden, 1985, Utilization of geochemistry to understand the origin of the Hawaiian Islands, **Trans. Am. Nuclear Soc.** 49: 175-77.

McDowell, F.W., M.F. Roden, and D. Smith, 1986, Comment on "Tectonic implications of athe age, composition and orientation of lamprophyre dikes, Navajo volcanic field, Arizona", by A.W. Laughlin et al., ***Earth Planet Sci. Lett.*** 80: 415-417.

Frey, F.A. and M.F. Roden, 1987, The mantle source for the Hawaiian Islands: Constraints from the lavas and ultramafic inclusions, ***in*** Menzies, M. and C. Hawkesworth (eds.) **Mantle Metasomatism**, Academic Press: London, 423-464.

Roden, M.F., 1987, Rb/Sr and Sm/Nd ratios of metasomatized mantle: Implications for the role metasomatized mantle in the petrogenesis of Na2O-rich, alkaline basalts, ***in*** Morris, E.M. and J.D. Pasteris (eds.), **Mantle Metasomatism and Alkaline Magmatism**, Geol. Soc. Amer. Sp. Pap. 217: 127-138.

Menzies., M. et al., 1987, A record of subduction processes and within-plate volcanism in lithospheric xenoliths of the southwestern U.S., ***in*** Nixon, P. (ed.), **Mantle Xenoliths**, J.

Wiley & Sons: 59-74.
Roden, M.F., A.J. Irving and V. Rama Murthy, 1988, Isotopic and trace element composition of the upper mantle beneath a young continental rift: Results from Kilbourne Hole, New Mexico, ***Geochim. Cosmochim. Acta*** 52: 461-473.
Roden, M.F., D. Smith and V. Rama Murthy, 1990, Chemical constraints on lithosphere composition and evolution beneath the Colorado Plateau, ***J. Geophys. Res***. 95: 2811-31.
Kornprobst, J., M. Piboule, M. Roden, and A. Tabit, 1990, Corundum-bearing garnet clinopyroxenites at Beni Bousera (Morocco): Original plagioclase-rich gabbros recrystallized at depth within the mantle?, ***J. Petrol***. 31: 717-745.
Dorais, M.J., J.A. Whitney and M.F. Roden, 1990, Origin of mafic enclaves in the Dinkey Creek Pluton, central Sierra Nevada Batholith, California, ***J. Petrol***. 31: 853-81.
Askren, D.R.R., J.A. Whitney and M.F. Roden, 1991, Petrology and geochemistry of the Huerto andesite, San Juan volcanic field, Colorado, ***Contr. Mineral. Petrol.*** 107: 373-86.
Roden, M.F. and N. Shimizu, 1993, Ion microprobe analyses bearing on the composition of the upper mantle beneath the Colorado Plateau and Basin and Range Provinces, ***J. Geophys. Res***. 98: 14091-14108.
Roden, M.F., T. Trull, S.R. Hart and F.A. Frey, 1994, New He, Nd, Pb, and Sr isotopic constraints on the constitution of the Hawaiian plume: Results from Koolau Volcano, Oahu, Hawaii, USA, ***Geochim. Cosmochim. Acta*** 58: 1431-1440.
Frey, F.A., M.O. Garcia and M.F. Roden, 1994, Geochemical characteristics of Koolau volcano: Implications of intershield geochemical differences among Hawaiian volcanoes, ***Geochim. Cosmochim. Acta*** 58: 1441-62.
Chen, W. D. and M.F. Roden, 1994, Biotite reequilibration in the Blue Ridge, southern Appalachians around Shooting Creek Area (NC) and its implications for the thermobarometric calculation, ***J. Geol. Soc. China*** 37: 39-52.
Chen, W.D. and M.F. Roden, 1994, Garnet zonation in metapelites of the Blue Ridge, southern Appalachians around Shooting Creek area (NC), USA, ***J. Geol. Soc. China*** 37: 19-38.
Roden, M.F., D.M. Francis and F.A. Frey, 1995, Upper mantle composition beneath the eastern Bering Sea, in Simakov, K.V. and D.K. Thurston (eds.) ***1994 Proceedings International Conference on Arctic Margins***, Russian Academy of Sciences, Far East Branch, Northeast Science Center, 147-152.
LaTour, T., M.F. Roden, D.A. Vanko and J.A. Whitney, 1995, Crystalline basement core - Savannah River Site: Final Report to Westinghouse Corporation, 304 pp.
Akinin, V.V., M.F. Roden, D. M. Francis, J. Apt and E. Moll-Stalcup, 1997, Compositional and thermal state of the upper mantle beneath the Bering Sea basalt province: Evidence from the Chukchi Peninsula of Russia, ***Can. J. Earth Sci***. 34: 789-800.
Askren, D.R., M. F. Roden and J. A. Whitney, 1997, Petrogenesis of Tertiary andesite lava flows interlayered with large-volume, felsic ash-flow tuffs of the western United States,. ***J. Petrol.*** 38: 1021-1046.
Roden, M.F., E.E. Laz'ko and E. Jagoutz (1999), The role of garnet pyroxenites in the Siberian lithosphere: Evidence from the Mir kimberlite, in, Gurney, J. et al. (eds.), ***Proceedings of the VIIth Kimberlite Conference***, 714-720.
Roden, M.F. and N. Shimizu (2000), Trace element abundances in mantle-derived minerals which bear on Compositional Complexities in the Lithosphere of the Colorado Plateau, ***Chem. Geol***. 165: 283-305

Albin, E., M. Norman, and M.F. Roden (2000), Major and trace element compositions of georgiaites: Clues to the source of North American tektites, ***Meteoritics & Planetary Science*** 35: 795-806

Bedell, A., M. Roden & J. Raymer, 2001, Petrography of rocks from the Chattahoochee tunnel, inner Brevard zone, Cobb Coutny. Georgia, in R.L. Kath & T. J. Crawford (eds.) Across the Brevard Zone: The Chattahoochee Tunnel, Cobb County, Georgia, Georgia Geological Society Guidebook 21, pp. 51-54.

Roden, M., 2001, [Book Review] Orign of Igneous Rocks: the Isotopic Evidence, ***Lithos***, 58: 83-84

Roden, M.F., T.E. La Tour, J. Whitney, V.M. Anderson & R.C. Capps, 2002, Geochemistry and petrology of crystalline basement beneath Coastal Plain sediments at the Savannah River Site, South Carolina, USA, ***Southeastern Geology,*** 41: 37-62.

Schroeder, P., J. LeGolvan & M. Roden (2002) Weathering of ilmeninte from granite and chlorite schist in the Georgia Piedmont, USA, ***Am Mineral***., 87: 1616-1625.

Harris, R.S., M.F. Roden, P.A. Schroeder, S.M. Holland, M.S. Duncan, & E.F. Albin, 2004, Upper Eocene impact horizon in east-central Georgia, ***Geology***, 32: 717-720.

Dallmeyer, R.D., Roden, M.F., Swanson, S., 2005, Geologic overview of the Elberton, GA area, in Roden, M., Schroeder, P., Swanson, S. (eds.), **Geologic Investigations of Elberton Granite and Surrounding Rocks**, ***GA Geol. Soc. Guidebook 25***, 1-16.

Dvoracek, D. Roden, M.F., 2005, The Danburg (GA) granite, Carolina Terrane: An Alleghanian pluton showing evidence for mixing with a relatively alkaline magma, in Roden, M., Schroeder, P., Swanson, S. (eds.), **Geologic Investigations of Elberton Granite and Surrounding Rocks**, ***GA Geol. Soc. Guidebook 25*****,** 81-95.

Roden M.F., Albin, E.A., 2005, Georgiaites, **The New Georgia Encyclopedia** http://www.georgiaencyclopedia.org/nge/Home.jsp

Roden, M.F., Schroeder, P., Swanson, S., (eds.), 2005, **Geologic Investigations of Elberton Granite and Surrounding Rocks,** ***GA Geological Society Guidebook 25,*** 120 pp.

Patino-Douce, A., Roden, M. ,2006, Apatite as a probe of halogen and water fugacities in the terrestrial planets, ***Geochim. Cosmochim. Acta 70:*** 3173-3196

Roden, M.F., Patino-Douce, A., Jagoutz, E., Laz'ko, E., 2006, High pressure petrogenesis of Mg-rich garnet pyroxenites from Mir kimberlite, Siberia, ***Lithos 90:*** 77-91

Shepherd, M., Mote, T., Dowd, J., Roden, M., Knox, P., McCutcheon, S., Nelson, S. 2011, An overview of synoptic and mesoscale factors contributing to the disastrous Atlanta flood of 2009; ***Bull Am Meteorological Soc 92:*** 861-870.

Patino-Douce, A.E., Roden, M.F., Chaumba, J., Fleisher, C., Yogodzinski, G., 2011, Variations in halogen and water contents in the mantles of Earth and Mars revealed by apatite compositions, ***Chemical Geology 288:*** 14-31, doi:10.1016/j.chemgeo.2011.05.018

Chaumba, J., Roden, M.F., 2012, Petrogenesis of gabbroic cumulates and intrusives of the Carolina superterrane in Georgia, southern Appalachians, ***SE Geology 49:*** 49-97.

Ozdamar, S., Roden, M.F., Esenli, F., Uz, B., Wampler, J.M., 2012, Geochemical features and K-Ar age data from metadetrital rocks and high-K metasomatized metarhyolites in the Afyon-Bolkardag Zone (Ilgin-Konya, SW Turkey, ***N. Jb. Miner. Abh. 189/2:*** 155-176.

Semiz, Baris, Çoban, H., Roden, M.F., Özpinar, Y, Flower, M.F.J., McGregor, H. 2012, Mineral compositions in cognate inclusions in Upper Miocene potassic lavas from the Denizli

region, western Anatolia, Turkey: Petrological implications for uppermost mantle processes, ***Lithos 134-135:*** 253-272

Ozdarmar, S., Billor, M.Z., Sunal, G., Esenli, F., Roden, M.F., 2013, First U-Pb SHRIMP zircon and $^{40}Ar/^{39}Ar$ ages of metarhyolites from the Afyon-Bolkardag Zone, SW Turkey: Implications for the rifting and closure of the Neo-Tethys, ***Gondwana Res.24:*** 377-91

Sarafian, A.R., Roden, M.F., Patiño Douce, A.E., 2013, The volatile content of Vesta: Clues from apatite in eucrites, ***Meteoritics & Planetary Science 48:*** 2135-2154

Roden, M.F., 2013, Review of "Roadside Geology of Georgia" by Pamela J.W. Gore & William Witherspoon, ***Ga J Sci 71***: 173.

Chaumba, J.B., Roden, M.F., submitted, Amphibole, olivine, pyroxene, plagioclase, and spinel mineral compositions from the Russell Lake Allocthon, southern Appalachians, ***Am Mineral***

Abstracts and Oral Presentations:

Roden, M.F., 1976, Abundance of rare earth elements in volcanic rocks from the Rim Rock country of west Texas, Geol. Soc. Amer. Abs. Prog. 8: 623.

Roden, M.F., 1977, Field geology and petrology of the minette diatreme at Buell Park, Apache county, Arizona, Ext. Abs. Second Int. Kimberlite conf., no pagination.

Roden, M.F., 1978, Trace element geochemistry of mafic and felsic minettes, Buell Park diatreme, Navajo volcanic field, Geol. Soc. Amer. Abs. Prog. 10: 480.

McDowell, F.W., M.F. Roden, R.J. Arculus and D. Smith, 1978, Potassic volcanism and associated intrusions on the Colorado Plateau, Geol. Soc. Amer. Abs. Prog. 10: 116.

Coish, R., M. Roden, F. Frey, and C.J. Suen, 1979, Rare earth element abundances in ultramafic rocks from the ocean floor, ophiolites and alpine peridotites, Geol. Soc. Amer. Abs. Prog. 11: 403.

Smith, D. and M. F. Roden, 1980, Geothermometry and kinetics in a two spinel peridotite nodule, EOS 61: 392.

Roden, M.F., F.A. Frey, and D.M. Francis, 1980, REE, K, Rb, Sr, and Sr isotopic geochemistry of peridotite xenoliths in basalt from Nunivak Island, Alaska, EOS 61: 401.

Roden, M.F., F.A. Frey, and D. M. Francis, 1980, REE and Sr isotopic geochemistry of pyroxenite and granulite xenoliths, Nunivak Island, Alaska, Geol. Soc. Amer. Abs. Prog. 12: 511.

Roden, M.F., F.A. Frey and S.R. Hart, 1981, The mantle source for the Honolulu Volcanic Series: Nd isotopic evidence, EOS 62: 423.

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