

JOHN T. HAYNES

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EDUCATION

1994-95 Postdoctoral Research Fellowship, Department of Mineral Sciences, Smithsonian Institution
1989 Ph.D., The University of Cincinnati (Geology)
1985 M.S., The University of Cincinnati (Geology)
1981 B.S., Denison University (Geology major with Chemistry concentration)

EMPLOYMENT

2008-present Assistant Professor of Geology, James Madison University, Harrisonburg, VA
2007-present Consulting geologist (sedimentary petrology and petrography), OMNI Laboratories, Houston, TX
2007-2008 Visiting Assistant Professor of Geology, James Madison University, Harrisonburg, VA
2006-2007 Assistant Professor of Geology, Kent State University, Kent, OH
2003-2006 Adjunct Professor of Geology, University of Connecticut, Storrs, CT
2001 Consulting geologist (EDMAP, Pendleton County), West Virginia Geological Survey, Morgantown, WV
1998-2006 Instructor, Pomfret School, Pomfret, CT
1995-present Research Associate, Dept. of Mineral Sciences, Smithsonian Institution, Washington, DC
1995-1998 Instructor, McDonogh School, Owings Mills, MD
1994-1996 Contractor to Museum Exhibits for new Geology Hall, Smithsonian Institution, Washington, DC
1994-1995 Postdoctoral Fellow, Dept. of Mineral Sciences, Smithsonian Institution, Washington, DC
1992-1998 Adjunct Professor of Geology, George Mason University, Fairfax, VA
1987-93 Senior Geologist, Brown & Root Environmental, Gaithersburg, MD
1987 Staff Geologist, Peer Consultants, Dayton, OH
1986 Summer Intern, U.S. Environmental Protection Agency, Washington, DC
1982-87 Graduate Teaching and Research Assistant, University of Cincinnati, Cincinnati, OH
1981-82 Staff Geologist, P.E. LaMoreaux and Associates, Tuscaloosa, AL, and Lakeland, FL
1979-81 Map librarian, Dept. of Geology & Geography, Denison University, Granville, OH

COURSES TAUGHT

2008- Introduction to Oceanography, Science Processes
2007-2008 Sedimentary Petrography; Earth Systems, Cycles, and Human Impact – James Madison University, Harrisonburg, VA
2006-2007 Earth History; Earth Dynamics; Environmental Geology – Kent State University, Kent, OH
2003-2006 Physical Geology; Earth and Life Through Time; Age of the Dinosaurs; Karst Geology in the Field – University of Connecticut, Storrs, CT
1998-2006 Physical Geology; Physical Oceanography; AP Environmental Science - Pomfret School, Pomfret, CT
1995-98 Chemistry; AP Environmental Science - McDonogh School, Baltimore, MD
1996 Geologic Field Studies in the High Chaparral - Duke University, 3-week summer field course, Taos, NM
1992-98 Stratigraphy; Sedimentary Geology; Sedimentary Petrology - George Mason University, Fairfax, VA

GRANTS AND AWARDS

2007 \$6,500 University Teaching Council Summer Research Award, Kent State University
2004 \$1,800 for U-Pb dating of zircon from Ordovician K-bentonites, Dept. of Mineral Sciences, Smithsonian Institution
2004 \$1,000 cash award, The Prize for Teaching Excellence, Pomfret School
2003-present Appointed as a reader for the College Board's A.P. Environmental Science reading at the U. of Nebraska
2003 \$3,500 for salary and expenses for summer research, Dept. of Mineral Sciences, Smithsonian Institution

GRANTS AND AWARDS cont'd

- 2002 \$2,500 for summer field expenses, from the Summer Study Program, Pomfret School
- 1998 \$7,500 for salary and field expenses from the Scholarly Studies Program, Smithsonian Institution, to fund summer research activities in the Dept. of Mineral Sciences: 1) EMX study of detrital biotites in Devonian sandstones of the Appalachian basin, 2) EMX study of Paleozoic shales, Maryland, Virginia, West Virginia.
- 1997 \$7,000 for salary and field expenses from the Sprague-Becker Fund, Dept. of Mineral Sciences, Smithsonian Institution, to fund summer research activities: 1) supervision of a summer intern for 10 weeks; 2) EMX and SEM study of Paleozoic shales from northern Virginia and the Hamburg Klippe of Pennsylvania, and 3) petrographic study of heavy minerals in Ordovician shales and K-bentonites from Virginia
- 1995 \$18,800 from the Smithsonian Research Initiatives Program to fund study of large volume tephra as monitors of atmospheric wind circulation patterns. The dispersal pattern of Holocene tephra in Costa Rica provides an analog to ongoing study of the dispersal of Ordovician tephra (now preserved as K-bentonites) in the southern Appalachians.
- 1994 \$21,000 as salary from the Smithsonian Office of Fellowships and Grants for a one-year Postdoctoral Fellowship in the Department of Mineral Sciences, plus \$1,000 for expenses during 1994. This award allowed me to take up residence fulltime in the Division of Petrology and Volcanology in the Department of Mineral Sciences at the Museum of Natural History in Washington.
- 1981 Kirtley F. Mather Award, given to the Outstanding Geology Major: Denison University, Granville, OH

PROFESSIONAL ASSOCIATION ACCOMPLISHMENTS

President of the Southeastern Section of SEPM, 1998-99

SUMMARY OF RESEARCH INTERESTS

Nature and origin of Ordovician K-bentonites in the central and southern Appalachians:

- Biotite composition compared with biotites from Cenozoic tephra as an indicator of tectonic setting
- Composition and significance of rhyolitic melt inclusions
- Sequence stratigraphic significance and usefulness as stratigraphic markers

Sealevel history and sequence stratigraphy of Appalachian foreland basin sediments:

- Petrology of the Ordovician Walker Mountain and Colvin Mountain Sandstones, southern Appalachians
- Depositional sequences in Upper Ordovician strata of the central Appalachians

Paleozoic Appalachian shales as a major reservoir of large volumes of altered tephra:

- Geochemistry of Cambrian to Pennsylvanian shales from microprobe analysis of whole rock samples
- EMX analysis of micas in shales to determine if altered volcanic micas can be distinguished from detrital micas

Environmental geology of caves and karst in the Valley and Ridge province:

- Hydrogeology of the Blue Spring system in the lower Rich Patch Valley, Alleghany County, Virginia
- Hydrogeology of Marshalls Cave, Highland County, Virginia
- Hydrogeology of the sinks of the Cowpasture River, Highland County, Virginia

RESEARCH COLLABORATORS and ADVISORS

James Aronson, Dept. of Earth Sciences, Dartmouth College, 1995-present

Richard Diecchio, Dept. of Geography and Earth Systems Science, George Mason University, 1992-1999

W. Crawford Elliott, Dept. of Geology, Georgia State University, 1992-present

Michael Kunk, U. S. Geological Survey, 1995-1996

Postdoctoral Advisors - William Melson and Jim Luhr, Smithsonian Institution

Ph.D. Dissertation Advisors - Warren Huff and Atilla Kilinc, Univ. of Cincinnati; Richard Hay, Univ. of Illinois

M.S. Thesis Advisors - Wayne Pryor, Paul Potter, Kees DeJong, and Barry Maynard, Univ. of Cincinnati

PUBLICATIONS

Professional scientific papers - I have authored or co-authored 15 papers that total over 250 pages

- HAYNES, J.T., and HUFF, W.D., 1990, Discussion of 'Origin and tectonic setting of Ordovician bentonites in North America: Isotopic and age constraints': *Geological Society of America Bulletin*, v. 102, p. 1439-1440.
- MATA, L., and HAYNES, J.T., 1991, A suggested strategy for characterizing the hydrogeologic regime of karst terranes in the Valley and Ridge province, in Kastning, E.H., and Kastning, K.M, eds., *Appalachian Karst: Proceedings of the Appalachian Karst Symposium*, Radford, Virginia: National Speleological Society, Huntsville, p. 237-239.
- HAYNES, J.T., 1991, Stratigraphy of the Waynesboro Formation (Lower and Middle Cambrian) near Buchanan, Botetourt County, Virginia: *Virginia Division of Mineral Resources Publication* 116, 22 p.
- HAYNES, J.T., 1992, Reinterpretation of Rocklandian (Upper Ordovician) K-bentonite stratigraphy in southwest Virginia, southeast West Virginia, and northeast Tennessee, with discussion of the conglomeratic sandstones in the Bays and Moccasin Formations: *Virginia Division of Mineral Resources Publication* 126, 58 p.
- HAYNES, J.T., and GOGGIN, K.E., 1993, Field guide to the Ordovician Walker Mountain Sandstone Member: Proposed type section and other exposures: *Virginia Minerals*, v. 39, p. 25-36.
- HAYNES, J.T., 1994, The Ordovician Deicke and Millbrig K-bentonite Beds of the Cincinnati Arch and the southern Valley and Ridge province: *Geological Society of America Special Paper* 290, 80 p.
- HAYNES, J.T., and GOGGIN, K.E., 1994, K-bentonites, conglomerates, and unconformities in the Ordovician of southwestern Virginia, in Schultz, A., and Henika, W., eds., *Field guides to southern Appalachian structure, stratigraphy, and engineering geology*, Virginia Tech Department of Geological Sciences Guidebook Number 10: Blacksburg, Virginia Tech, p. 65-93.
- HAYNES, J.T., MELSON, W.G., and KUNK, M.J., 1995, Composition of biotite phenocrysts in Ordovician tephra casts doubt on the proposed trans-Atlantic correlation of the Millbrig K-bentonite (U.S.A.) and the Kinnekulle K-bentonite (Sweden): *Geology*, v. 23, p. 847-850.
- HAYNES, J.T., MELSON, W.G., and GOGGIN, K.E., 1996, Biotite phenocryst composition shows that the two K-bentonites in the Little Oak Limestone (Ordovician) at the Old North Ragland quarry, Alabama, are the same structurally repeated tephra layer: *Southeastern Geology*; v. 36, p. 85-98.
- HAYNES, J.T., and MELSON, W.G., 1997, SEM and EMX study of titaniferous minerals in the Ordovician Deicke K-bentonite of southwestern Virginia: *Virginia Minerals*, v. 43, p. 1-7.
- HAYNES, J.T., MELSON, W.G., O'HEARN, T., GOGGIN, K.E., and HUBBELL, R., 1998, A high potassium mid-Ordovician shale of the central Appalachian foredeep: Implications for reconstructing Taconian explosive volcanism, in Schieber, J., ed., *Shales and Mudstones*, Vol. 2: Stuttgart, E. Schweizerbart'sche, p. 129-141.
- MELSON, W.G., HAYNES, J.T., O'HEARN, T., HUBBELL, R., GOGGIN, K.E., LOCKE, D., and ROSS, D., 1998, K-shales of the central Appalachian Paleozoic: properties and origin, in Schieber, J., ed., *Shales and Mudstones*, Vol. 2: Stuttgart, E. Schweizerbart'sche, p. 143-159.
- VERHOECKX-BRIGGS, G.A., HAYNES, J.T., ELLIOTT, W.C., and VANKO, D.A., 2001, A study of plagioclase-hosted melt inclusions in the Ordovician Deicke and Millbrig K-bentonites, southern Appalachian basin: *Southeastern Geology*, v. 40, p. 273-284.
- ELLIOTT, W.C., and HAYNES, J.T., 2002, The chemical character of fluids forming diagenetic illite in the Southern Appalachian basin: *American Mineralogist*, v. 87, p. 1519-1527.
- HAYNES, J.T., 2006, Fire: Its ecological role, and economic and political consequences, in Wells, E., and others, eds., *AP Instructor's Guide for Miller's Living in the Environment*, 14th ed.: Pacific Grove, Brooks Cole, p. 4.1-4.8.

Abstracts

- HAYNES, J.T., HUFF, W.D., and HAY, R.L., 1987, Compositional variations in the Middle Ordovician Deicke (T-3) and Millbrig (T-4) K-bentonites in the southeastern United States: *Geol. Soc. of America Abstracts with Programs*, v. 19, NC section p. 203.
- HAYNES, J.T., HUFF, W.D., and KOLATA, D.R., 1988, The Upper Ordovician Millbrig K-bentonite Bed of the southern Appalachians: a marker bed in clastic and carbonate facies: *Abstracts volume*, Vth International Symposium on the Ordovician System, St. Johns, Newfoundland, p. 27.
- HAYNES, J.T., and HUFF, W.D., 1989, The usefulness of K-bentonites as chronostratigraphic markers in Rocklandian (Upper Ordovician) strata of the southeastern United States: *Geol. Soc. of America Abstracts with Programs*, v. 21, p. A-133.
- HAYNES, J.T., and SICHELSTIEL, K.D., 1990, Geologic investigation of Quaternary sediments, the Patuxent Formation (Cretaceous), and the Baltimore Gneiss (Precambrian) at a former industrial site in the Inner Harbor of Baltimore, Maryland: *Geol. Soc. of America Abstracts with Programs*, v. 22, NE section, p. 23.
- HAYNES, J.T., 1991, Carbonate and clastic sedimentation in a restricted shelf setting: The Waynesboro Formation (Cambrian) of west-central Virginia: *Geol. Soc. of America Abstracts with Programs*, v. 23, NE-SE section, p. 43.
- HAYNES, J.T., 1992, Post-Knox Ordovician stratigraphic sequences and the significance of the Rocklandia K-bentonites, eastern United States: *Geol. Soc. of America Abstracts with Programs*, v. 24, p. A-197.
- GOGGIN, K.E., and HAYNES, J.T., 1994, Stratigraphic significance and provenance of the Ordovician Walker Mountain Sandstone Member, Virginia-Tennessee: *Geol. Soc. of America Abstracts with Programs*, v. 26, SE section, p. 16.
- GOGGIN, K.E., and HAYNES, J.T., 1995, Mohawkian clastic wedges in the central and southern Appalachians: Early signatures of the Taconic Orogeny?: *Geol. Soc. of America Abstracts with Programs*, v. 27, SE section, p. 58.
- HAYNES, J.T., and MELSON, W.G., 1995, Biotite composition indicates that the two Ordovician K-bentonites at the Old North Ragland Quarry, Alabama, are the same structurally repeated tephra layer: *Geol. Soc. of America Abstracts with Programs*, v. 27, SE section, p. 61.
- HAYNES, J.T., MELSON, W.G., O'HEARN, T., and HUBBELL, R., 1995, Evidence for a significant influx of pyroclastic material into the central Appalachian foredeep during the early stages of the Taconic Orogeny: *Geol. Soc. of America Abstracts with Programs*, v. 27, p. A-223.
- MELSON, W.G., HAYNES, J.T., O'HEARN, T., and HUBBELL, R., 1995, K-shales of the central Appalachian Paleozoic: *Geol. Soc. of America Abstracts with Programs*, v. 27, p. A-462
- KREKELER, M.P.S., McVEY, D.E., JONES, R., RAPIEN, M., HUFF, W.D., and HAYNES, J.T., 1995, Differential distribution of feldspar minerals in Middle Ordovician K-bentonites in the eastern mid-continent and central Appalachians: *Geol. Soc. of America Abstracts with Programs*, v. 27, NE section, p. 62.
- LOCKE, D.R., MELSON, W.G., GOGGIN, K.E., HAYNES, J.T., O'HEARN, T., and HUBBELL, R., 1996, Appalachian calcareous Ordovician K-bentonites: properties and origin: *Geol. Soc. of America Abstracts with Programs*, v. 28, p. A-366.
- LOCKE, D.R., MELSON, W.G., HAYNES, J.T., GOGGIN, K.E., and O'HEARN, T., 1997, Air-fall tephra incorporated in shale of the Middle Ordovician Edinburg Formation at the classic Tumbling Run section: The mineralogical record of Early Taconic volcanism in the central Appalachians: *Geol. Soc. of America Abstracts with Programs*, v. 28, p. A-351.
- BRIGGS, G.A., ELLIOTT, W.C., VANKO, D.A., AND HAYNES, J.T., 1998, Plagioclase-hosted rhyolite glass inclusions in Ordovician K-bentonites in the southern Appalachian basin: *Geol. Soc. of America Abstracts with Programs*, v. 30, SE section, p. 5.

- HAYNES, J.T., and DIECCHIO, R.J., 1998, Systems tract development along Taconic collisional margin at the level of the second-order cycle, Virginia Appalachians: *Geol. Soc. of America Abstracts with Programs*, v. 30, SE section, p. 17.
- HAYNES, J.T., MELSON, W.G., and O'HEARN, T., 1999, Geochemical trends in Central Appalachian Paleozoic mudrocks from electron microprobe analyses of major elements (Si, Al, Fe, Mg, Ca, K, Na, Mn, S) in polished whole-rock samples: *Geol. Soc. of America Abstracts with Programs*, v. 31, SE section, p. 15.
- ELLIOTT, W.C., WAMPLER, J.M., and HAYNES, J.T., 2001, Evidence from illite for the flow of warm fluids in the southern Appalachian basin due to the Alleghenian Orogeny: *Clay Mineral Soc. Program and Abstracts*, 38th Annual Mtg., p. 55.
- HAYNES, J.T., MELSON, W.G., and O'HEARN, T., 2004, Variability in biotite composition among four Ordovician tephros, and comparison with Cenozoic volcanic biotites to constrain tectonomagmatic setting: *Geol. Soc. of America Abstracts with Programs*, v. 36, Annual meeting, p. 246
- HAYNES, J.T., MELSON, W.G., and GOGGIN, K.E., 2005, Petrology and significance of quartz arenites and conglomerates in the Ordovician Blount molasse from Virginia to Alabama, southern Appalachians: *Geol. Soc. of America Abstracts with Programs*, v. 37, NE section, p. 18.
- MEYER, E.E., ARONSON, J., and HAYNES, J.T., 2005, K-Ar dating of Blue Ridge thrusting and of its influence on sediment input to two Pennsylvanian-age depocenters in the Appalachian basin: *Geol. Soc. of America Abstracts with Programs*, v. 37, NE section, p. 73.
- MEYER, E.E., ARONSON, J., and HAYNES, J.T., 2005, K-Ar dating of Ordovician K-bentonites illitized by Blue Ridge overthrusting during the Alleghanian Orogeny: *Clay Mineral Soc. Program and Abstracts*, 42nd Annual Mtg., p. 81.
- VLACK, Y.A., ORTIZ, J.D., HAYNES, J.T., CURRY, B.B., CARLSON, E.H., and GRANT, N.K., 2008, Identifying clays in sedimentary sequences utilizing a new clay mixture spectral library developed with diffuse spectral reflectance: *Abstract accepted for presentation, Geol. Soc. of America Northeastern Section Meeting*, Buffalo, NY, March 2008.
- THOMPSON, A., WALKER, S.R., and HAYNES, J.T., 2008, Stratigraphy and structure of the Cowpasture River, a major karst feature in Highland County, Virginia: *Abstract accepted for presentation, Geol. Soc. of America Southeastern Section Meeting*, Charlotte, NC, April 2008.
- VLACK, Y.A., ORTIZ, J.D., CURRY, B.B., HAYNES, J.T., GRANT, N.K., and CARLSON, E.H., 2008, Applicability of diffuse spectral reflectance for clay mineral identification in sedimentary sequences: *Abstract control ID no. 409900, accepted for presentation, AAPG Annual Mtg.*, San Antonio, TX, April 2008.

Miscellaneous publications

In May, 2002, I was listed as a contributor to the preliminary geologic map of the Snowy Mountain (W.Va – Va.) 7.5' quad, which the West Virginia Geological Survey mapped in July 2001 as part of the EDMAP program; I joined the mapping crew in the field for several days to help them learn and understand the stratigraphy of the Ordovician sequence in the Hightown and Germany Valley anticlines

FIELD TRIPS: LEADER

- 2006 Karst Geology in the Field: 1-credit field course for University of Connecticut undergraduates (Geology 299, field trip to Virginia and West Virginia), March 23-26
- 1998 Geology and environmental aspects of the caves and karst of Highland County, Virginia: McDonogh School Alumni Program, May 23-25
- 1996 Ancient volcanism in the Blue Ridge Mountains of the Shenandoah National Park, Virginia: Smithsonian Associates Field Excursions Program, November 16

- 1995-96 Geology of the Great Falls area, Maryland: Smithsonian Associates Field Excursions Program, October 21 and 28, 1995; October 5, 1996
- 1995-96 Environmental Geology of the Shenandoah Valley of northern Virginia: Smithsonian Associates Field Excursions Program, March 18, 1995; July 6 and November 16, 1996.
- 1994 K-bentonites, conglomerates, and unconformities in the Ordovician of southwestern Virginia (sponsored by the Southeastern Section of SEPM): Geological Society of America, Southeastern Section, Blacksburg, VA, April 4-6.