CURRICULUM VITAE

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EDUCATION:

B.S.: Geology, Stanford University (graduated with distinction, 1980).
M.S.: Geological Oceanography, University of Washington (1983).
Ph.D.: Geological Oceanography, University of Washington (1989).
Thesis title: Physical and Chemical Controls on the Growth of Hydrothermal Vent Structures: a Model of Transport and Chemical Reaction (R.E. McDuff, J.R. Delaney, Advisors).

PROFESSIONAL EXPERIENCE:

Physical Science Technician/Geologic Field Asst, U.S.G.S, Office of Marine Geology (1979 to 1981).
Research and teaching assistant, University of Washington (1982 to 1988).
Post-Doctoral Scholar, Woods Hole Oceanographic Institution (1989).
Post-Doctoral Investigator, Woods Hole Oceanographic Institution (1990).
Assistant Scientist, Woods Hole Oceanographic Institution (1990 to 1994).
Associate Scientist, Woods Hole Oceanographic Institution (1994 to 1998).
Associate Scientist w/tenure, Woods Hole Oceanographic Institution (1999 to 2008).
Senior Scientist, Woods Hole Oceanographic Institution (2008 to present).
Institute Director, Deep Ocean Exploration Institute, WHOI (2008 to present).

PROFESSIONAL AFFILIATIONS:

Member, American Geophysical Union (1983 - present)
Member, Geochemical Society (1987 - present)

RESEARCH INTERESTS:

- Quantification of heat and mass transfer in hydrothermal systems.
- Field studies of active vent sites, including development and use of instrumentation at active vent sites.
- Examination of mineral textures, trace element distributions, and mineral precipitation processes in seafloor massive sulfide deposits.

PARTICIPATION IN EDUCATION PROGRAM:

Joint Committee on Chemical Oceanography (JCCO) 1996-2002; 2004-present
Chair of JCCO (Sept 1, 1999 – Aug. 31, 2002)
Education council (2000-2002, 2004-present)
Education Coordinator, Marine Chemistry and Geochemistry Department (2004-2008)

PUBLICATIONS IN REFEREED JOURNALS AND BOOKS:

Tivey, M.K. and J.R. Delaney (1985). Sulfide deposits from the Endeavour Segment of the Juan de Fuca Ridge. *Marine Mining*, **5**, 165-179.

Lupton, J.E., J.R. Delaney, H.P. Johnson and M.K. Tivey (1985). Entrainment and vertical transport of deep-ocean water by buoyant hydrothermal plumes. *Nature*, **316**, 621-623.

Tivey, M.K. and J.R. Delaney (1986). Growth of large sulfide structures on the Endeavour Segment of the Juan de Fuca Ridge. *Earth and Planetary Science Letters*, **77**, 303-317.

Koski, R., S.D. Scott, M.D. Hannington, J.R. Delaney and M.K. Tivey (1987). Hydrothermal processes and massive sulfide deposits on the Juan de Fuca Ridge and other northeast Pacific spreading axes. In: *Geology and Resource Potential of the Continental Margin of Western North America and Adjacent Ocean Basins --- Beaufort Sea to Baja California* (D.W. Scholl, A. Grantz and J.G. Vedder, eds.), Circum-Pacific Council for Energy and Mineral Resources, Earth sciences series volume 6, Houston, Texas, pp. 621-638.

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Tivey, M.K., L.O. Olson, V.W. Miller and R.D. Light (1990). Temperature measurements during initiation and growth of a black smoker chimney. *Nature*, **346**, 51-54.

Delaney, J.R., V. Robigou, R.E. McDuff and M.K. Tivey (1992). Geology of a vigorous hydrothermal system on the Endeavour segment, Juan de Fuca Ridge. *Journal of Geophysical Research*, **97**, 19663-19682.

Rona, P.A., M.D. Hannington, C.V. Raman, G. Thompson, M.K. Tivey, S.E. Humphris, C. Lalou, and S. Petersen (1993). Active and relict seafloor hydrothermal mineralization at the TAG hydrothermal field, Mid-Atlantic Ridge. *Economic Geology*, **88**, 1989-2017.

Zhu, C., H. Xu, E.S. Ilton, D.R. Veblen, D.J. Henry, M.K. Tivey, and G. Thompson (1994). TEM-AEM observations of Cl-rich amphibole and biotite and possible petrologic implications. *American Mineralogist*, **79**, 909-920.

Tivey, M.K. (1995a). The influence of hydrothermal fluid composition and advection rates on black smoker chimney mineralogy: Insights from modeling transport and reaction. *Geochim. Cosmochim. Acta*, **59**, 1933-1949.

Tivey, M.K (1995b). Modeling Chimney Growth and Associated Fluid Flow at Seafloor Hydrothermal Vent Sites. In: *Seafloor Hydrothermal Systems: Physical, Chemical, Biological, and Geological Interactions* (S. E. Humphris, R. A. Zierenberg, L. S. Mullineaux, and R. E. Thomson, eds.). AGU Monograph Series, No. 91. American Geophysical Union, Washington, DC, pp. 158-177.

Tivey, M.K., S.E. Humphris, G. Thompson, M.D. Hannington, and P.A. Rona (1995). Deducing patterns of fluid flow and mixing within the TAG active hydrothermal mound using mineralogical and geochemical data. *Journal of Geophysical Research*, **100**, 12,527-12,555.

Hannington, M.D., M.K. Tivey, A.C.L. Larocque, S. Petersen, and P.A. Rona (1995). The occurrence of gold in sulfide deposits of the TAG hydrothermal field, Mid-Atlantic Ridge. *Can. Mineralogist*, **33**, 1285-1310.

Fouquet, Y., H. Ondreas, J-L. Charlou, J-P. Donval, J. Radford-Knoery, I. Costa, N. Lourenco, and M.K. Tivey (1995). Atlantic lava lakes and hot vents. *Nature*, **377**, 201.

Humphris, S.E., P.M. Herzig, D.J Miller, J.C. Alt, K. Becker, D. Brown, G. Burgmann, H. Chiba, Y. Fouquet, J.B. Gemmell, G. Guerin, M.D. Hannington, N.G. Holm, J.J. Honnorez, G.J. Iturrino, R. Knott, R. Ludwig, K. Nakamura, S. Petersen, A-L. Reysenbach, P.A. Rona, S. Smith, A.A. Sturz, M.K. Tivey, and X. Zhao (1995). The internal structure of an active sea-floor massive sulphide deposit. *Nature*, **377**, 713-716.

Langmuir, C., S. Humphris, D. Fornari, C. Van Dover, K. Von Damm, M.K. Tivey, D. Colodner, J.-L. Charlou, D. Desonie, C. Wilson, Y. Fouquet, G. Klinkhammer, and H. Bougault (1997). Hydrothermal vents near a mantle hot spot: the Lucky Strike vent field at 37°N on the Mid-Atlantic Ridge. *Earth Planet. Sci. Lett.*, **148**, 69-91.

Tivey, M.K., and S. Singh (1997). Nondestructive imaging of fragile sea-floor vent deposit samples. *Geology*, **25**, 931-934.

Tivey, M.K. (1998). Documenting textures and mineral abundances in minicores from the TAG active hydrothermal mound using x-ray computed tomography. *In:* Herzig, P.M., S.E. Humphris, D.J. Miller, and R.A. Zierenberg (Eds.), Proc. ODP, Sci. Results, 158: College Station, TX (Ocean Drilling Program), 201-210.

Tivey, M.K., R.A. Mills and D.A.H. Teagle (1998). Temperature and salinity of fluid inclusions in anhydrite as indicators of seawater entrainment and heating in the TAG active mound. *In:* Herzig, P.M., S.E. Humphris, D.J. Miller, and R.A. Zierenberg (Eds.), Proc. ODP, Sci. Results, 158: College Station, TX (Ocean Drilling Program), 179-190.

Mills, R.A., D.A.H. Teagle, and M.K. Tivey (1998). Fluid mixing and anhydrite precipitation within the TAG mound. *In:* Herzig, P.M., S.E. Humphris, D.J. Miller, and R.A. Zierenberg (Eds.), Proc. ODP, Sci. Results, 158: College Station, TX (Ocean Drilling Program), 119-127.

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Tivey, M.K., D.S. Stakes, T.L. Cook, M.D. Hannington, and S. Petersen (1999). A model for growth of steep-sided vent structures on the Endeavour Segment of the Juan de Fuca Ridge: results of a petrologic and geochemical study. *J. Geophys. Res.*, 104, 22,859-22,883.

Humphris, S.E. and M.K. Tivey (2000), A synthesis of geological and geochemical investigations of the TAG Hydrothermal Field: Insights into fluid flow and mixing processes in a hydrothermal system, *In*: Y. Dilek, E. Moores, D. Elthon, A. Nicholas (eds.), *Ophiolites and Oceanic Crust: New Insights from Field Studies and the Ocean Drilling Program*: Boulder, Colorado, GSA Special Paper 349, p. 213-235.

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Tivey, M.K., A.M. Bradley, T.M. Joyce, and D. Kadko (2002). Insights into tide-related variability at seafloor hydrothermal vents from time-series temperature measurements. *Earth and Planet. Sci. Lett.* 202, 693-707.

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Kormas, K., M.K. Tivey, K.L. Von Damm, and A. Teske (2006). Bacterial and archaeal phylotypes associated with distinct mineralogical layers of a white smoker spire from a deep-sea hydrothermal vent site (9°N, East Pacific Rise), *Environmental microbiology*, 8(5), 909-920.

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Pagé, A., M.K. Tivey, D.S. Stakes, and A-L. Reysenbach (2008), Temporal and spatial archaeal colonization of hydrothermal vent deposits, *Environmental Microbiology*, doi:10.1111/j.1462-2920.2007.01505.x

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OTHER PUBLICATIONS:

Thompson, G., P. Rona, C. Beaverson, T. Miller, T. Nelsen, A. Campbell, J. Edmond, C. German, H. Elderfield, M. Greaves, M. Rudnicki, M. Hannington, S. Humphris, S. Molyneaux, M. Tivey, C. Wirsen and P. Taylor (1990). Mid-Atlantic ridge hydrothermal processes. *Eos*, **71**, 726-727.

Tivey, M.K. (1991). Hydrothermal vent systems. *Oceanus*, **34**, 68-74.

Tivey, M.K. (1992). Geochemical modeling used to quantify hydrothermal vent processes, WHOI 1992 Annual Report, p. 18.

Stakes, D., W.S. Moore, T. Tengdin, L. Holloway, M. Tivey, M. Hannington, J. Edmond and J.J. Todd (1992). Cores drilled into active smokers on Juan de Fuca Ridge. *Eos*, **73**, 273, 278-279, 283.

Cook, T., D. Stakes, and M. Tivey (1993). Initial results of drilling actively venting massive sulfide structures on the Endeavour Segment, Juan de Fuca Ridge, *InterRidge News*, Spring 1993.

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Humphris, S, P. Richardson, A. Bower, M. Grosenbaugh, S. Lentz, J. McDowell, and M.K. Tivey (2000). Report of the Gender Equity Review Committee, WHOI.

Tivey, M.K., Bemis, K., Bradley, A.M., Butterfield, J., Delaney, J.R., Ding, K., Dziak, R.P., Fisher, C., Fox, C.G., Hautala, S., Jackson, D., Jannasch, H.W., Johnson, H.P., Juniper, S.K., Kadko, D., Kelley, D.S., Lilley, M., McDuff, R.E., Rona, P., Sarrazin, J., Schultz, A., Seyfried, W.E., Jr., Thomson, R.E., Wheat, C.G., Wilcock, W., Wright, D., and Yoerger, D. (2000). The RIDGE Endeavour Segment seafloor observatory: Recent successes and an overview of coordinated experiments for Y2K. *RIDGE Events*, 11(1): 10-17.

Delaney, J.R., D.S. Kelley, E.A. Mathez, D.R. Yoerger, J. Baross, M.O. Schrenk, M.K. Tivey, J. Kaye, and V. Robigou (2001), "Edifice Rex" sulfide recovery project: analysis of submarine hydrothermal, microbial habitat, Eos, Trans., AGU 82, 67, 72-73.

Seyfried, W.E., K.S Johnson, and M.K. Tivey conveners (2001), In situ sensors: their development and application for the study of chemical, physical and biological systems at Mid-Ocean Ridges, RIDGE Workshop Report.

Williams, A.J. and M.K. Tivey (2001), Tidal currents at hydrothermal vents, Juan de Fuca Ridge, *Sea Technology* 42, 62-64.

Tivey, M.K. and R.E. McDuff (2001). RIDGE Endeavour Observatory Results Workshop, RIDGE Workshop Report, http://ridge2000.bio.psu.edu/wkshop_repts/Endeavourobservatory.pdf

Schofield, O., and M.K. Tivey (2004), Meeting Report: Building a Window to the Sea: Ocean Research Interactive Observatory Networks (ORION), Oceanography 17, no. 2, 113-120.

Tivey, M.K., 2004, The Remarkable Diversity of Seafloor Vents, Oceanus 42, no. 2, 60-65.

Schofield, O., and M.K. Tivey (2005), ORION Ocean Research Interactive Observatory Networks: a report of the workshop held January 4-8, 2004, San Juan, Puerto Rico, Geosciences Professional Services, Inc., 140 pp.

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