

Curriculum Vitae – Dharni Vasudevan

Bowdoin College

Chemistry and Environmental Studies
6600 College Station
Brunswick, ME 04011

Phone: 207-725-3548
Fax: 207-725-3017
Email: dvasudev@bowdoin.edu

PROFESSIONAL EXPERIENCE

Associate Professor of Chemistry and Environmental Studies, Bowdoin College, *2004 - present*

Assistant Professor of Environmental Chemistry, Nicholas School of the Environment (primary appointment), Duke University, *1998-2003*.

- Assistant Professor, Civil and Environmental Engineering (secondary appointment), *11/98-12/2003*.
- Assistant Professor, Chemistry (secondary appointment), *01/2002-12/2003*

Science Policy Fellow, Office of Legislative and Government Affairs,
American Chemical Society, *11/1995-11/1997*.

Graduate Research Assistant, Department of Geography and Environmental Engineering,
Johns Hopkins University, *1990- 1995*.

Research Assistant, Department of Civil and Environmental Engineering,
Massachusetts Institute of Technology, *1987- 1990*.

EDUCATION

Ph.D. Environmental Chemistry, Department of Geography and Environmental Engineering,
Johns Hopkins University, *1996*.

M.S.E. Environmental Engineering, Department of Geography and Environmental Engineering,
Johns Hopkins University, *1992*.

B.S. Environmental Engineering Science, Department of Civil and Environmental Engineering,
Massachusetts Institute of Technology, *1990*.

AWARDS AND HONORS

NSF Career Award. *06/01/00 – 06/01/04*.

NSOE Teacher of the Year, Nicholas School of the Environment, Duke University, *1999-2000*.

Graduate Student Paper Award, Environmental Chemistry, American Chemical Society, *1995*.

Graduate Student Award, Environmental Chemistry, American Chemical Society, *1992*.

FUNDED RESEARCH

Source-sink dynamics of phosphorus and industrial metals in sediments of the Androscoggin River (sub-project). Granting Agency: Merck/AAAS Undergraduate Science Program. *2009-2011*. Co-PIs: Dickinson, Lichter, Stemmler, Vasudevan, and Woodruff, \$60,000.

Identification of microbial communities in estuarine sediments (sub-project). Granting Agency: Merck/AAAS Undergraduate Science Program. *2006-2008*. Co-PIs: Dickinson, Kohorn, Lichter, Stemmler, and Vasudevan. \$60,000.

Pharmaceutical Sorption to Model Soil Components. Granting Agency: National Science Foundation. 04/01/03-04/01/07. PI: A. MacKay (University of Connecticut); Co-PI: D. Vasudevan. (\$196,172 - Vasudevan subcontract only).

Factors influencing veterinary antibiotic sorption in soils. Granting Agency: U.S. Department of Agriculture. 09/01/02-09/01/06. PI: A. MacKay (University of Connecticut); Co-PI: D. Vasudevan. (\$130,336 - Vasudevan subcontract only)

CAREER: Interfacial processes impacting the chemical fate of organic compounds. Granting Agency: National Science Foundation. 06/01/00 – 06/01/04. PI: D. Vasudevan. \$200,000.

Fate and toxicity of Superfund chemicals and their metabolites (Project 5). Granting Agency: National Institute of Environmental Health Sciences. 06/01/00 – 06/01/05. PI: D. Vasudevan; Co-PI: A. Schuler (One of seven projects of the Center on Superfund Chemicals Impact on Reproduction and Development, Director: R. Di Giulio). ~\$420,000 (Project 5 only)

The missing lead link: Measuring lead in soil from historic mobile source deposition. Granting Agency: Center for Environmental Solutions, Duke University. 06/01/02-06/01/03. PI: D. Vasudevan, M. Miranda, W. Thomann. \$10,000.

Influence of phosphorus on mobilization and attenuation of anionic herbicides in NC Piedmont soils: Implications for water quality. Granting Agency: Water Resources Research Institute of NC. 07/01/00 – 07/01/01. PI: D. Vasudevan. \$40,000.

Soil processes affecting groundwater quality in the NC Piedmont: Contamination by organic agrochemicals. Granting Agency: Water Resources Research Institute of NC. 07/01/99 – 07/01/00. PI: D. Vasudevan. \$40,000

PEER REVIEWED PUBLICATIONS (Names of undergraduate co-authors are underlined)

Figueroa-Diva, R.A., D. Vasudevan, A.A. MacKay. **2010.** Trends in Soil Sorption Coefficients Within Common Antimicrobial Families. *Chemosphere*, **79**, 786–793.

Vasudevan, D., G.L. Bruland, B.S. Torrance, V.G. Upchurch, A.A. MacKay. **2009.** pH-dependant Ciprofloxacin Sorption to Soils: Interaction mechanisms and soil factors influencing sorption. *Geoderma*, **151**, 68-76.

Cooper, E.M., and D. Vasudevan. **2009.** Hydroxynaphthoic acid isomer sorption to goethite. *Journal of Colloid and Interface Science*, **333**, 85–96.

Carrasquillo, A.J., G. L. Bruland, A. A. MacKay and D. Vasudevan. **2008.** Sorption of ciprofloxacin and oxytetracycline zwitterions to soils and soil minerals: Influence of compound structure. *Environmental Science and Technology*, **42**, 7634–7642.

Fimmen, R.L., D.D. Richter Jr., D. Vasudevan, M.A. Williams, L.T. West. **2008.** Rhizogenic Fe-C redox cycling in deep upland soils: A hypothetical biogeochemical mechanism that drives crustal weathering. *Biogeochemistry*, **87**, 127–141.

Fimmen, R.L., T.D. Trouts, D.D. Richter, D. Vasudevan. **2008.** Improved speciation of dissolved organic nitrogen in natural waters: amide hydrolysis with fluorescence derivatization. *Journal of Environmental Sciences*, **20**, 1273-1280.

- Trivedi, P. and D. Vasudevan. **2007**. Spectroscopic Investigation of Ciprofloxacin Speciation at the Goethite-Water Interface. *Environmental Science and Technology*, **41**, 3153-3158.
- Jones, A.D., G. L. Bruland, S.G. Agrawal, D. Vasudevan. **2005**. Factors influencing oxytetracycline sorption to soils. *Environmental Toxicology and Chemistry*, **24**, 761-770.
- Vasudevan, D. and E.M. Cooper. **2004**. 2,4-D Sorption in Iron-Oxide Rich Soils: Role of soil phosphate and exchangeable Al. *Environmental Science and Technology*, **38**, 163-170.
- Harrington, L.F., E.M. Cooper, and D. Vasudevan. **2003**. Fluoride sorption and related Al release in variable charge soils. *Journal of Colloid and Interface Science*, **267**, 302-313.
- Vasudevan, D., E.M. Cooper, and O.L. Van Exem. **2002**. Sorption-Desorption of ionogenic compounds at the mineral-water interface: A comparison of metal oxide rich soils and pure phase minerals. *Environmental Science and Technology*, **36**, 501-511.
- Vasudevan, D., R.L. Fimmen, and A.B. Francisco. **2001**. Tracer Grade Rhodamine WT: Structure of constituent isomers and their sorption behavior. *Environmental Science and Technology*, **35**, 4089-4096.
- Vasudevan, D., P. J. Dorley, and X. Zhuang. **2001**. Adsorption of hydroxy- pyridines and quinolines at the metal oxide-water interface: Role of tautomeric equilibrium. *Environmental Science and Technology*, **35**, 2006-3013.
- Sutton, D., Z.J. Kabala, A. B. Francisco, and D. Vasudevan. **2001**. Limitations and Potential of Commercially Available Rhodamine WT as a Groundwater Tracer. *Water Resources Research*, **37**, 6, 1641-1656
- Vasudevan D. and A.T. Stone. **1998**. Adsorption of Catechols, 2-Aminophenols and 1,2-Phenylenediamines at the Metal Oxide/Water Interface: Effect of Metal Oxide Structure. *Journal of Colloid and Interface Science*, **202**, 1, 1-19.
- Vasudevan, D. and A.T. Stone. **1998**. Adsorption of Dissolved Organic Ligands onto (Hydr)oxide Minerals, In: Soil Chemistry and Ecosystem Health, SSSA Special Publication, 52, SSSA, Madison, WI.
- Miller, P.L., D. Vasudevan, P.M. Gschwend, and A.L. Roberts. **1998**. Transformation of Hexachloroethane in Sulfidic Lake Water. *Environmental Science and Technology*, **32**, 1269-1275.
- Vasudevan, D. and A.T. Stone. **1996**. Adsorption of Catechols, 2-Aminophenols and 1,2-Phenylenediamines at the Metal (Hydr)Oxide/Water Interface: Effect of Ring Substituents on the Adsorption onto TiO₂, *Environmental Science and Technology*, **30**, 1604-1613.
- Stone, A.T., A. Torrents, J. Smolen, D. Vasudevan, and J. Hadley. **1993**. Adsorption of Organic Compounds Possessing Ligand Donor Groups at the Oxide/Water Interface, *Environmental Science and Technology*, **27**, 895-909.

PRESENTATIONS and POSTERS (2004- present)

*Names of undergraduate co-authors are underlined; **presenter** is in bold)*

Zhang, T., and D. Vasudevan. Effect of soil properties on cationic amine sorption to soils: Implications for groundwater transport. *Maine Water Conference*, Augusta, ME, March **2011**.

Cardamone, A. and D. Vasudevan. Phosphate Source-Sink Dynamics in Androscoggin River Sediments. *Maine Water Conference*, Augusta, ME, March **2011**.

Arey, T., M. Newman, A. Dupont, D. Vasudevan. Non-linear sorption of aromatic amines to aluminosilicate clays. *American Chemical Society National Conference*, Boston, MA, August, **2010**

Cardamone, A., A. Hall, and D. Vasudevan. Phosphate Source-Sink Dynamics in Androscoggin River Sediments. *American Chemical Society National Conference*, Boston, MA, August, **2010**

Vasudevan, D., M. Newman, T. Arey, M. Bader. Non-linear sorption of aromatic amines to aluminosilicates. *Environmental Sciences: Water, Gordon Research Conference*, Plymouth, NH, June **2010**.

Vasudevan, D., and A. Mackay. Sorption potential of existing and emerging organic contaminants: A qualitative schema. *American Chemical Society National Conference*, San Francisco, CA, March, **2010**.

A. Mackay and **D. Vasudevan**. Sorption potential of existing and emerging organic contaminants: Promise for Quantitative Predictors. *American Chemical Society National Conference*, San Francisco, CA, March, **2010**.

Vasudevan, D. [**invited**] Sorption of tetracyclines and fluoroquinolones to soils: Role of Soil Organic Matter. *American Chemical Society National Conference*, Washington DC, August **2009**

Vasudevan, D., A. Carassquillo and A. Mackay. [**invited**] Influence of tetracycline and fluoroquinolone zwitterions to soils and soil minerals: Influence of Compound Structure. *Northeast Regional Meeting of the American Chemical Society*, Environmental Chemistry, Burlington, VT, July **2008**.

Vasudevan, D., A. Carassquillo and A. Mackay. Influence of tetracycline and fluoroquinolone zwitterions to soils and soil minerals: Influence of Compound Structure. *Environmental Sciences: Water, Gordon Research Conference*, Plymouth, NH, June **2008**.

***Carrasquillo, A.** and D. Vasudevan Influence of compound structure on the sorption of veterinary antibiotics at the solid-water interface. *Maine Water Conference*, Augusta, ME, March **2007**.

***Carrasquillo, A.** and D. Vasudevan. Influence of compound structure on the sorption of cationic amines to mineral surfaces. *American Chemical Society National Conference*, Chicago, IL, March **2007**

Vasudevan, D and A. Mackay. Veterinary antibiotic sorption to soils and model soil components. *American Chemical Society National Conference*, San Francisco, CA, September **2006**.

Mackay, A., and **D. Vasudevan**. [**joint invited talk**] Towards Universal Descriptors of Sorption for Ionogenic Organic Compounds: Insights from Antibiotic Sorption to Model Sorbents and Many Soils. *Environmental Sciences: Water, Gordon Research Conference*, Plymouth, NH, June **2006**.

Vasudevan, D. Sorption of organic compounds with polar/ionic groups: Study of pure phase minerals and whole soils. *Environmental Sciences: Water, Gordon Research Conference*, Plymouth, NH, June 2004.

* presentations/posters by undergraduate students.

INVITED TALKS at Colleges and Universities (2004- present)

A framework for assessing the sorption potential of emerging contaminant chemicals in soil systems. *TERI University, New Delhi, India*. August, 2010.

Sorption of antibiotic zwitterions to soils and soil minerals: Influence of compound structure. *Colby College, Chemistry Department, Waterville, ME*, February 2009.

Sorption of antibiotic zwitterions to soils and soil minerals: Influence of compound structure. *Middlebury College, Chemistry Department, Middlebury, VT*. September 2008.

A framework for assessing the sorption potential of emerging organic contaminants in soil systems, *University of Hawaii, Honolulu, HI*, February, 2008.

Veterinary antibiotic sorption to soils and model soil components. *University of Hawaii, Honolulu, HI*, May 2007.

Veterinary antibiotic sorption to soils and model soil components. *University of Rhode Island, Kingston, RI*, April 2007.

Veterinary antibiotic sorption to soils and model soil components. *University of Maine at Orono, Orono, ME*, October 2006.

Environmental Fate of Veterinary Antibiotics: Retention and release from soil. Bryn Mawr College, Departments of Geology and Environmental Studies, Bryn Mawr, PA, February 2005.

Sorption of polar/ionic organic compounds at the mineral-water interface: Fate of Veterinary Antibiotics. Department of Civil and Environmental Engineering, University of New Hampshire, NH. October, 2004.

PROFESSIONAL ACTIVITY

Reviewer of manuscripts: Chemosphere, Contaminant Hydrology, Critical Reviews in Environmental Science and Technology, Environmental Science and Technology, Environmental Technology, Environmental Toxicology and Chemistry, Environmental Pollution, *Geochimica Cosmochimica Acta*, *Geoderma*, Industrial and Engineering Chemistry Research, Journal of Chemical and Engineering Data, Journal of Colloid and Interface Science, Journal of Environmental Quality, Journal of Physical Chemistry, Langmuir, Journal of Soils and Sediments, Soils and Sediment Contamination, Science of the Total Environment, Soil Science Society of America Journal.

Book Reviews: Wiley Interscience

Reviewer of proposals: National Science Foundation, Cotrell College Science Awards, Water Resources Research Institute of North Carolina, Georgia Water Resources Research Institute, Water Resources Research Institute, Maine, Water Resources Research Institute – Wisconsin, Kearney Foundation, CUNY Collaborative Incentive Research Grant Program, US Civilian Research and Development Foundation, Petroleum Research Fund (American Chemical Society), Ohio Sea Grant Program.