

CURRICULUM VITAE

DHARNI VASUDEVAN

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PROFESSIONAL EXPERIENCE

- 2021-present Stanley F. Druckenmiller Professor of Chemistry and Environmental Studies, *Bowdoin College*.
- 2021-present Associate Dean for Faculty Development and Inclusion, *Bowdoin College*.
- 2012-2020 Professor of Chemistry and Environmental Studies, *Bowdoin College*.
(Joint appointment in Chemistry Department and Environmental Studies Program)
- 2014- 2018 Chair, Department of Chemistry, *Bowdoin College*
- 2013-2014 Visiting Scientist, Exposure, Epidemiology, and Risk Program, *Harvard School of Public Health*.
- 2004-2012 Associate Professor of Chemistry and Environmental Studies, *Bowdoin College*.
(Joint appointment in Chemistry Department and Environmental Studies Program)
- 1998-2003 Assistant Professor of Environmental Chemistry, *Duke University*.
Primary appointment: Nicholas School of the Environment.
Secondary appointments: Civil and Environmental Engineering (1999-2003).
Chemistry (2002-2003).
- 1995-1997 Science Policy Fellow, *American Chemical Society*,
Office of Legislative and Government Affairs.
- 1990-1995 Graduate Research Assistant, *The Johns Hopkins University*.

EDUCATION

- Ph.D. 1996 The Johns Hopkins University, Baltimore, Maryland.
Department of Geography and Environmental Engineering.
Area: Environmental Chemistry.
Thesis: "Adsorption of Aromatic Organic Ligands Possessing Oxygen- and Nitrogen-Donor Groups at Metal (Hydr)Oxide/Water Interface", *Professor Alan T. Stone, Advisor*.
- M.S.E. 1992 The Johns Hopkins University, Baltimore, Maryland.
Department of Geography and Environmental Engineering.
Area: Environmental Engineering.
- B.S. 1990 Massachusetts Institute of Technology, Cambridge, Massachusetts.
Major: Environmental Engineering Science.

AWARDS AND HONORS

- 2013-2014 Faculty Research Fellowship, Bowdoin College

2007-2008 Porter Fellowship, Bowdoin College
2000-2004 NSF Career Award.
1999-2000 Teacher of the Year, Nicholas School of the Environment, Duke University.
1995 Graduate Student Paper Award, Environmental Chemistry, American Chemical Society.
1992 Graduate Student Award, Environmental Chemistry, American Chemical Society.

PEER-REVIEWED PUBLICATIONS (*indicates corresponding author; undergraduate co-authors are underlined)

W.C. Jolin*, A. Richards, D. Vasudevan, J.A. Gascon, A.A. MacKay. **2020**. Aluminosilicate Mineralogy and the Sorption of Organic Cations: Interplay between Electrostatic Barriers and Compound Structural Features. *Environmental Science and Technology*, **54**, 3, 1623-1633.

W.C Jolin, R. Goyetche, K. Carter, J. Medina, D. Vasudevan*, A.A. MacKay*. **2017**. Predicting Organic Cation Sorption Coefficients: Accounting for Competition from Sorbed Inorganic Cations Using a Simple Probe Molecule. *Environmental Science and Technology*, **51**, 6193-6201.

W.C. Jolin, J. Sullivan, D. Vasudevan, A.A. MacKay* **2016**. Column chromatography to obtain organic cation sorption isotherms. *Environmental Science and Technology*, **50**, 8196-8204.

M. D'Alessio, D. Vasudevan, J. Lichwa, S. K. Mohanty, C. Ray* **2014**. Fate and transport of selected estrogen compounds in Hawaii soils: effect of soil type and macropores. *Journal of Contaminant Hydrology*, **166**, 1-10.

M. Samaraweera, W. Jolin, D. Vasudevan, A.A. MacKay*, J. Gascon*. **2014**. Atomistic prediction of sorption free energies of cationic aromatic amines on montmorillonite: A linear interaction energy method. *Environmental Science and Technology Letters*, **1**, 284-298.

D. Vasudevan*, T.A. Arey, D.R. Dickstein, M.H. Newman, T.Y. Zhang, H.M. Kinnear, and M.M. Bader. **2013**. Nonlinearity of cationic aromatic amine sorption to aluminosilicates and soils: Role of cation- π interactions, *Environmental Science and Technology*, **47**, 14119-14127.

A.A. MacKay* and D. Vasudevan*. **2012**. Polyfunctional ionogenic compound sorption: Challenges and new approaches to advance predictive models, *Environmental Science and Technology*, **46**, 9209-9223.

R.A. Figueroa-Diva, D. Vasudevan, and A.A. MacKay*. **2010**. Trends in soil sorption coefficients within common antimicrobial families. *Chemosphere*, **79**, 786-793.

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

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

A.J. Carrasquillo, 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.

- R.L. Fimmen*, T.D. Trouts, D.D. Richter, and D. Vasudevan. **2008a**. Improved speciation of dissolved organic nitrogen in natural waters: amide hydrolysis with fluorescence derivatization. *Journal of Environmental Sciences*, **20**, 1273-1280.
- R.L. Fimmen*, D.D. Richter Jr., D. Vasudevan, M.A. Williams, and L.T. West. **2008b**. Rhizogenic Fe-C redox cycling in deep upland soils: A hypothetical biogeochemical mechanism that drives crustal weathering. *Biogeochemistry*, **87**, 127-141.
- P. Trivedi and D. Vasudevan*. **2007**. Spectroscopic investigation of ciprofloxacin speciation at the goethite-water interface. *Environmental Science and Technology*, **41**, 3153-3158.
- A.D. Jones, G. L. Bruland, S.G. Agrawal, and D. Vasudevan*. **2005**. Factors influencing oxytetracycline sorption to soils. *Environmental Toxicology and Chemistry*, **24**, 761-770.
- D. Vasudevan* 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.
- L.F. Harrington, 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.
- D. Vasudevan*, 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.
- D. Vasudevan*, 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.
- D. Vasudevan*, 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.
- D. Sutton, 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.
- D. Vasudevan 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.
- D. Vasudevan and A.T. Stone*. **1998**. Adsorption of dissolved organic ligands onto (hydr)oxide minerals, In: Soil Chemistry and Ecosystem Health, SSSA Special Publication, **52**, 13-155, SSSA, Madison, WI.
- P.L. Miller, D. Vasudevan, P.M. Gschwend, and A.L. Roberts*. **1998**. Transformation of hexachloroethane in sulfidic lake water. *Environmental Science and Technology*, **32**, 1269-1275.
- D. Vasudevan 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.

A.T. Stone*, 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.

DOCUMENTARY/WORKS OF ART

Featured in **Thirteen Ways**, a 70 minute documentary directed and produced by Ian Cheney). In this feature, of scientists (and, for good measure, a few nonscientists) travel to a plot of Maine land they have never seen before. One-by-one, through all four seasons, they walk the land and describe what they see. What unfolds is an unusual meditation upon the human relationship to the natural world and the power of different ways of seeing. The film premiered at the Environmental Film Festival in **Washington DC, in March 2019**.

FUNDING

- 2016-2019 A. MacKay, D. Vasudevan, C. Johnston, (PIs): Collaborative Research: RUI: Novel Computational Tools to Predict Anionic Pesticide and Pharmaceutical Sorption to Soil Oxides, **National Science Foundation**, \$63, 759 to Bowdoin College
- 2014-2017 A. MacKay, J. Gascon, and D. Vasudevan (PIs). Collaborative Research: Cation Interactions with Soil Aluminosilicates: Structure-Sorption Relationships, **National Science Foundation**, \$106,000 to Bowdoin College
- 2013-2014 D. Vasudevan. Chemical Fate and Health Effects: Exploring Necessary Connections. **Bowdoin Faculty Research Fellowship**, \$10,000.
- 2011- 2013 E. Stemmler (PI), P. Dickinson (Co-PI), D. Dube (Co-PI), B. Gorske (Co-PI), D. Vasudevan (Co-PI). "MRI Consortium: Acquisition of LC-MS/MS instrumentation for undergraduate research and education", **National Science Foundation**, \$379,944.
- 2010-2013 E. Stemmler and M. Palopoli (PIs). "**Beckman Scholars Program**", Arnold and Mabel Beckman Foundation, \$77, 200. (One of 10 faculty selected as mentors for research students)
- 2010-2011 D. Vasudevan (PI). "Amine sorption to aluminosilicate clays". **Fletcher Fund, Bowdoin College**, \$4,000.
- 2009-2011 P. Dickinson, J.Lichter, E. Stemmler, D. Vasudevan, and P. Woodruff (PIs). "Cross Disciplinary Research in Chemistry and Biology", **Merck/AAAS Undergraduate Science Program**, \$60,000. (Lichter, Vasudevan and Woodruff sub-project - Source-sink dynamics of phosphorus and industrial metals in sediments of the Androscoggin River")
- 2006-2008 P.Dickinson, B. Kohorn, J. Lichter, E. Stemmler, and D. Vasudevan (PIs). "Cross Disciplinary Research in Chemistry and Biology", **Merck/AAAS Undergraduate Science Program**, \$60,000. (Lichter, Vasudevan, Kohorn sub-project - "Identification of microbial communities in estuarine sediments")
- 2003-2007 A. MacKay (PI), D. Vasudevan (Co-PI). "Pharmaceutical sorption to model soil components", **National Science Foundation**, \$196, 172- Vasudevan subcontract.

- 2002-2003 D. Vasudevan, M. Miranda, W. Thomann (PIs). “The missing lead link: Measuring lead in soil from historic mobile source deposition”, **Center for Environmental Solutions, Duke University**, \$10,000.
- 2002-2006 A. MacKay (PI), D. Vasudevan (Co-PI). “Factors influencing veterinary antibiotic sorption in soils”, **U.S. Department of Agriculture**, \$130,336-Vasudevan subcontract.
- 2000-2004 D. Vasudevan (PI). “CAREER: Interfacial processes impacting the chemical fate of organic compounds”, **National Science Foundation**, \$200,000.
- 2000-2005 R. DiGulio (Center Director). Duke Center on Superfund Chemicals Impact on Reproduction and Development, D. Vasudevan and A. Schuler (PIs for Project 5), “Fate and toxicity of Superfund chemicals and their metabolites”, **National Institute of Environmental Health Sciences**, \$420,000 (Project 5 budget)
- 2000-2001 D. Vasudevan (PI). “Influence of phosphorus on mobilization and attenuation of anionic herbicides in NC Piedmont soils: Implications for water quality”, **Water Resources Research Institute of NC**, \$40,000.
- 1999-2000 D. Vasudevan (PI). “Soil processes affecting groundwater quality in the NC Piedmont: Contamination by organic agrochemicals”, **Water Resources Research Institute of NC**, \$40,000

PRESENTATIONS AND POSTERS (* indicates presenter; undergraduate co-authors underlined)

At Conferences (2000-present)

S. Shaheen*, D.H. Freeman, J. Sullivan, and D. Vasudevan. Sorption of Pyridine Cations to Aluminosilicate Clays: Influence of Solid Phase Composition and Structure. *American Chemical Society National Meeting*, New Orleans, LA, March, **2018**

J. Gomez*, and D. Vasudevan. Evaluating phenyltrimethylammonium as a potential probe for heterocyclic amine sorption to soils. Society for Advancement of Chicanos/Hispanics and Native Americans in Science (SACNAS), The National Diversity in STEM conference. Salt Lake City, Utah, November, **2017**.

D.H. Freeman*, J. Sullivan, S. Shaheen, and D. Vasudevan. Building a mechanistic understanding of the sorption of substituted pyridines to aluminosilicate clays. *American Chemical Society National Meeting*, San Francisco, CA, April, **2017**

L. Alper, A. Lopez, and D. Vasudevan. Evaluation of Salicylic Acid and Hydratropic Acid as Probe Compounds for Structurally Complex Molecules. *American Chemical Society National Meeting*, San Francisco, CA, April, **2017**

D. Vasudevan*. Antibiotic interactions at the solid-water interface: Implications for understanding sorption to soils and passive sampling of natural waters. *American Chemical Society National Meeting*, Boston, MA, September, **2015**.

A. Lopez*, R. Goyetche, K. Carter, and D. Vasudevan. Evaluation of benzylamine and salicylic acid as probes for pharmaceutical sorption to soils *American Chemical Society National Meeting*, Boston, MA, September, **2015**. [poster]

J. Sullivan*, B. Stuyvesant, and D. Vasudevan. Structure based prediction of substituted pyridine cation exchange to soil aluminosilicates: Implications for antibiotics containing pyridine substructures. *American Chemical Society National Meeting*, Boston, MA, September, **2015**. [poster]

A. Lopez* and D. Vasudevan. Evaluation of salicylic acid as a probe for pharmaceutical sorption to soils. *SETAC North Atlantic Chapter Annual Meeting*, Freeport, ME, June **2015**. [poster]

J. Sullivan* and D. Vasudevan. The Environmental Fate of Avitrol. *SETAC North Atlantic Chapter Annual Meeting*, Freeport, ME, June **2015**. [poster]

D. Vasudevan*. Antibiotic Interactions at the solid-water interface: Implications for understanding of sorption to soils and passive sampling of natural waters, *The Antibiotics in Agroecosystems: State of the Science (ARASOS) Workshop*, Biosphere2 Conference Center, Oracle AZ August, **2014**.

D. Vasudevan*, T. Arey, and D. Dickstein. Nonlinearity of cationic aromatic amine sorption to aluminosilicates and soils: Role of intermolecular cation- Π interactions. *American Chemical Society National Meeting*, Dallas, TX, March **2014**.

B. Stuyvesant* and D. Vasudevan. Structure Based Prediction of Substituted Pyridine Cation Exchange to Ca-Montmorillonite. *American Chemical Society National Meeting*, New Orleans, LO, April **2013**. [poster]

D. Dickstein*, T. Arey, M. Newman, T. Zhang, H. Kinnear, M. Bader and D. Vasudevan. Effect of molecular structure and soil properties on nonlinear sorption of aromatic cationic amines. *American Chemical Society National Meeting*, New Orleans, LO, April **2013**. [poster]

P. Aron*, D. Vasudevan, and J. Lichter. Estuarine Sedimentary Sulfur as an Indicator of Drought in MidCoast Maine. *American Chemical Society National Meeting*, New Orleans, LO, April **2013**. [poster]

R. Goyetche* and D. Vasudevan. Evaluating Benzylamine as a Probe Compound for Quantifying Cation Exchange to Soil. *American Chemical Society National Meeting*, New Orleans, LO, April **2013**. [poster]

D. Vasudevan*, T. Arey, M. Newman, H. T. Zhang, D. Dickstein. Sorption of aromatic amines to soils and soil minerals: Role of intermolecular interactions. *Goldschmidt Geochemistry Conference*, Montreal Canada, June **2012**.

D. Vasudevan*, T. Arey, M. Newman, H. Kinnear, and T. Zhang. Sorption of aromatic amines to soils and soil minerals: Implications for the fate of emerging contaminants. *SETAC North America Annual Meeting*, Boston, MA, November **2011**.

D. Vasudevan*, T. Arey, and M. Newman. Sorption of aromatic amines to soils and soil minerals: Implications for the fate of emerging contaminants. *SETAC North Atlantic Chapter Annual Meeting*, Freeport, ME, June **2011**.

A. Cardamone* and D. Vasudevan. Phosphate sink-source dynamics in the Androscoggin River sediments. *SETAC North Atlantic Chapter Annual Meeting*, Freeport, ME, June **2011**.

T. Arey* and D. Vasudevan. Sorption of aromatic amines to montmorillonite: Role of cation-pi interactions. *SETAC North Atlantic Chapter Annual Meeting*, Freeport, ME, June **2011**. [poster]

T. Zhang* and D. Vasudevan. Effect of soil properties on cationic amine sorption to soils: Implications for groundwater transport. *American Chemical Society National Meeting*, Anaheim, CA, March **2011**. [poster]

A. Cardamone* and D. Vasudevan. Phosphate sink-source dynamics in the Androscoggin River sediments. *American Chemical Society National Meeting*, Anaheim, CA, March **2011**. [poster]

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

A. Cardamone* and D. Vasudevan. Phosphate source-sink dynamics in Androscoggin River sediments. *Maine Water Conference*, Augusta, ME, March **2011**. [poster]

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

A. Cardamone*, A. Hall, and D. Vasudevan. Phosphate source-sink dynamics in Androscoggin River sediments. *American Chemical Society National Meeting*, Boston, MA, August **2010**. [poster]

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

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

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

D. Vasudevan*, A. Carrasquillo, 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**.

D. Vasudevan*, A. Carrasquillo, 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**. [poster]

A. Carrasquillo* 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**. [poster]

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

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

A. Mackay* 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**.

D. Vasudevan*. 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**. [poster]

P. Trivedi* and D. Vasudevan. Multiscale analysis of ciprofloxacin interactions with solid and aqueous ferric species. *American Chemical Society National Meeting*, Washington, DC, August **2005**. [poster]

A. Jones*, G. Bruland, S.G. Agrawal, and D. Vasudevan. Factors influencing oxytetracycline sorption to soils. *American Chemical Society National Meeting*, Philadelphia, PA, August **2004**.

A. Jones*, G. Bruland, S.G. Agrawal, and D. Vasudevan. Factors influencing oxytetracycline sorption to soils. *Annual Meeting of Soil Science Society of America*, Denver, CO, November **2003**.

R. Fimmen*, D.D. Richter, and D. Vasudevan. Molecular scale investigation of SOM decomposition dynamics. *Annual Meeting of Soil Science Society of America*, Denver, CO, November **2003**.

R. Figueroa, A. Leonard, A.A. MacKay, and D. Vasudevan*. Veterinary antibiotic sorption to soil minerals. *Annual Meeting of Soil Science Society of America*, Denver, CO, November **2003**.

R. Fimmen*, E. Nixon, D. Richter, and D. Vasudevan. Mineral associations of organic matter in soils of variable iron oxides. Division of Environmental Chemistry, *American Chemical Society National Meeting*, New York, NY, September **2003**.

E. M. Cooper* and D. Vasudevan. Hydroxynaphthoic acid sorption to goethite: Batch and ATR-FTIR studies. Division of Environmental Chemistry, *American Chemical Society National Meeting*, New York, NY, September **2003**.

Y.T. Tang*, L.A. Leinesch, E.M. Cooper, D. Vasudevan, and J.N. Meyer, and R. T. Di Giulio. Identification of chemical classes contributing to the toxicity of sediments from a contaminated site on the Elizabeth River, VA. *Pollutant Responses in Marine Organisms, Eleventh International Symposium*. Safety Harbor, FL, May **2003**. [poster]

R.L. Fimmen*, D. Richter, and D. Vasudevan. Impact of source organic carbon molecular composition on soil organic matter dynamics. Division of Geochemistry, *American Chemical Society National Meeting*, New Orleans, LA, March **2003**.

R.L. Fimmen*, D. Richter, and D. Vasudevan. Determination of dissolved organic nitrogen speciation in soil extractions. Division of Geochemistry, *American Chemical Society National Meeting*, New Orleans, LA, March **2003**.

E. Ralston*, D. Vasudevan, E.M.Cooper, and R.J.Griffin. Kinetics of phosphate sorption to hematite. *Air & Waste Management Association South Atlantic States Section Meeting*, Raleigh, NC, December **2002**.

D. Vasudevan* and E.M. Cooper. Sorption of organic anions in iron oxide rich soils: Role of soil P and Al. Division of Geochemistry, *American Chemical Society National Meeting*, Orlando, FL, April **2002**.

L. Harrington*, D. Vasudevan and E.M. Cooper. Fluoride sorption and associated aluminum release. Division of Geochemistry, *American Chemical Society National Meeting*, Orlando, FL, April **2002**. [poster]

D. Vasudevan* and E.M. Cooper. Competition between 2,4-D and phosphate in southeastern Ultisols under varying landuse. *Annual Meeting of Soil Science Society of America*, Charlotte, NC, October **2001**.

R.L. Fimmen*, M.S. Hofmockel, D.D. Richter, and D. Vasudevan. Characterization of DOC from natural water samples and soil extractions. *Annual Meeting of Soil Science Society of America*, Charlotte, NC, October **2001**. [poster]

L. Harrington*, D. Vasudevan and E.M. Cooper. Fluoride sorption and associated aluminum release in Ultisols. *Annual Meeting of Soil Science Society of America*, Charlotte, NC, October **2001**. [poster]

W. Hwang* and D. Vasudevan. Sorption of the water tracer Rhodamine WT in iron-oxide rich soils. *Annual Meeting of Soil Science Society of America*, Charlotte, NC, October **2001**. [poster]

O.L.Van Exem* and D. Vasudevan. Chemometric exploration of polar/ionogenic pesticide sorption onto nc piedmont Ultisols. *Annual Meeting of Soil Science Society of America*, Charlotte, NC, October **2001**. [poster]

D. Vasudevan*, E.M. Cooper and O.L. Van Exem. Sorption-Desorption of polar and ionogenic compounds in iron-oxide rich soils. *Annual ACS Colloid and Surface Symposium*, Pittsburgh, PA, June **2001**.

D. Vasudevan* P.J. Dorley, and X. Zhuang. Organic ligand adsorption at the mineral-water interface: Role of tautomeric equilibrium. *Annual Goldschmidt Conference*, Hotsprings, VA, May **2001**.

D. Vasudevan*, R.L. Fimmen and A.B. Francisco. Influence of compound 3-D structure on adsorption at the mineral-water interface. *Annual Goldschmidt Conference*, Hotsprings, VA, May, **2001**.

D. Vasudevan*, E.M. Cooper and O.L. Van Exem. Retention of polar and ionogenic herbicides in iron-oxide rich NC piedmont soils. *Annual North Carolina Water Resources Research Conference*, Raleigh, NC, March **2001**.

R.L. Fimmen*, A.B. Francisco, D.J. Sutton, Z.J. Kabala, and D. Vasudevan. Groundwater tracer Rhodamine WT. *Superfund Basic Research Program Annual Meeting: Oxidative Processes – Stress to Remediation*, Chapel Hill, NC, December **2000**. [poster]

D. Vasudevan* and E.M. Cooper. Retention polar/ionogenic herbicides in iron oxide rich piedmont soils. *Soil Science Society of America*, Minneapolis, MN, November **2000**.

D. Vasudevan* and E.M. Cooper. Sorption and desorption of polar/ionogenic herbicides in iron oxide rich soils. Division of Environmental Chemistry, *American Chemical Society National Meeting*, Washington, DC, August **2000**.

D. Vasudevan*, P.J. Dorley, and X. Zhuang. Adsorption of hydroxy- pyridines and quinolines onto metal oxides. Symposium in honor of James J. Morgan, *American Chemical Society National Meeting*, Washington, DC, August **2000**.

D. Vasudevan* and E.M. Cooper. Retention of polar/ionogenic herbicides in iron oxide rich soils. *Environmental Sciences: Water, Gordon Research Conference*, New Hampton, NH, June **2000**. [poster]

D. Vasudevan* and E.M. Cooper. Chemical fate of polar/ionogenic pesticides in North Carolina Piedmont soils. *North Carolina Water Resources Research Conference: The Year of the Hurricanes*, Water Resources Research Institute of NC, Raleigh, NC, March **2000**.

D. J. Sutton*, Z.J. Kabala, D. Vasudevan and A. Francisco. Limitations and potential of the groundwater tracer Rhodamine WT. *North Carolina Water Resources Research Conference: The Year of the Hurricanes*, Water Resources Research Institute of NC, Raleigh, NC, March **2000**

D. Vasudevan*, A.B. Francisco, and R.L. Fimmen. Sorption characteristics of the tracer Rhodamine WT: Effect of subsurface composition. *American Chemical Society National Meeting*, San Francisco, CA, March, **2000**.

Invited talks at Universities and Colleges (2000-present)

Pharmaceutical interactions at the solid-water interface: Structure-sorption relationships and implications for predicting contaminant fate. *University of Delaware, Department of Civil and Environmental Engineering, Newark, DE, October 2018*.

Pharmaceutical interactions at the solid-water interface: Implications for predicting contaminant fate. *Williams College, Department of Chemistry, Williamstown, MA, November, 2017*

Pharmaceuticals and emerging contaminants in the Environment: Understanding how soils influence chemical fate and exposure risk. *Bowdoin College, Community Lecture, Brunswick, ME, March, 2016*.

Pharmaceutical interactions at the solid-water interface: Implications for predicting contaminant fate and passive sampling of natural waters. *Rice University, Department of Civil and Environmental Engineering, Houston, TX. March 2016*.

Pharmaceutical interactions at the solid-water interface: Implications for understanding sorption to soils and passive sampling of natural waters. *State University of New York - University at Buffalo, Department of Chemistry, Buffalo, NY, October 2015*.

Environmental Fate of Pharmaceuticals and related Chemicals: Role of Sorption to Soil Minerals. *University of New England, Department of Chemistry and Physics, Biddeford, ME, September 2015*.

Contaminants in the Environment: Factors influencing chemical fate, effects, and policies, *Bowdoin College, Faculty Seminar, Brunswick, ME, November, 2014*.

Soils: The nutrient bank for our food, *Bowdoin College, Organic Garden Talks, Brunswick, ME*, September, **2014**.

Environmental fate of pharmaceuticals and related chemicals: Role of sorption to soil minerals, *Wellesley College, Department of Geoscience, Wellesley, MA*, April **2014**.

Nonlinearity of cationic aromatic amine sorption to aluminosilicates and soils: Role of intermolecular cation- Π interactions. *Massachusetts Institute of Technology, Environmental Engineering, Cambridge, MA*, March **2014**.

Can we build an o-Gellyfish: Passive sampling of pharmaceutical compounds. *Harvard School of Public Health, Environmental Exposure and Risk - Water Group Meeting, Boston, MA*, March **2014**.

Sorption of Aromatic Amines to Soils and Soil Minerals: Role of Intermolecular Interactions, *Bates College, Chemistry Department, Lewiston, ME*, February **2013**.

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, Department of Civil and Environmental Engineering, Honolulu, HI*, February, **2008**.

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

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

Veterinary antibiotic sorption to soils and model soil components. *University of Maine at Orono, Civil and Environmental Engineering, 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**.

Sorption of polar/ionic organic compounds at the mineral-water interface: Implications of compound structure. *Department of Environmental Science and Engineering, Colorado School of Mines, Golden, CO*. April **2003**.

Environmental chemistry at the mineral-water interface: Implications for solute fate and transport. *Indian Institute of Science, Chemistry Department, Bangalore, India*, July, **2002**.

Chemistry at the mineral-water interface: Implications for solute fate and transport. *Duke University Marine Laboratory, Beaufort, NC*, April, **2002**.

Sorption of polar and ionic compounds at the mineral-water interface. *Department of Chemistry, Duke University, Durham, NC*, September **2001**.

Sorption of polar and ionic compounds at the mineral-water interface. *Department of Civil and Environmental Engineering Department, University of Connecticut, Storrs, CT*, October **2001**.

Sorption of polar and ionic compounds at the mineral-water interface. *Department of Civil and Environmental Engineering Department, Duke University, Durham, NC*, November **2001**.

Soil processes affecting groundwater quality in the NC piedmont: Contamination by organic agrochemicals, *Water Resources Research Institute, North Carolina State University, Raleigh, NC*, May **2000**.

INDEPENDENT STUDIES AND HONORS PROJECTS (Bowdoin College, 2004-present)

Summer 2021

Ben Cook	Evaluation of the Effectiveness of Probe Compounds at Predicting Anionic Pharmaceutical Sorption to Soils
Chess Cawley	Predicting Anionic Pharmaceutical Sorption to Soils Using Probe Compounds
Mariah McKenzie	Charge delocalization in heterocyclic amines and its impact on sorption mechanisms
Seamus Frey	Factors affecting the sorption isotherm of 3-ethylpyridine to Calcium Montmorillonite

Academic Year 2020-21

Ben Cook	Evaluation of the Effectiveness of Probe Compounds at Predicting Anionic Pharmaceutical Sorption to Soils
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Summer 2020

Lab Closure due to COVID-19

Academic Year 2019-20

Ben Cook	Effect of soil loading on heterocyclic amine sorption.
Rommel Rugama-Montenegro	Evaluating PTMA as a probe compound for quantifying heterocyclic amine cation exchange to soils.

Summer 2019

Sabbatical Leave

Academic Year 2018-19

Sabbatical Leave

Summer 2018

Alexander Ederer	Evaluating PTMA as a probe for determining the degree of sorption of polyfunctional ionogenic compounds (PIOCs) onto aluminosilicate soil
Chiamaka Oyoke	Predicting Anionic Polyfunctional Ionogenic Compounds Sorption: The Influence of the Carboxylic Acid Functionality
Rommel Rugama-Montenegro	Pharmaceuticals in Soil: Evaluating Sorption to Aluminosilicate Clays using Substituted Pyridine

Tyler Shonrock Sorption of Anionic Compounds to Soils and Soil Minerals

Academic Year 2017-18

- Jorge Gomez Evaluating phenyltrimethylammonium as a potential probe for heterocyclic amine sorption to soils
- Eric Guiang Predicting the Sorption of Anionic Pharmaceuticals Using Probe Compounds
- Sam Shaheen Predicting pyridine sorption to aluminosilicate clays: Influence of solid phase composition and structure

Summer 2017

- Leah Alper Prediction sorption of anionic compounds to soils: An evaluation of probe compounds
- Jorge Gomez Evaluating phenyltrimethylammonium as a potential probe for heterocyclic amine sorption to soil
- Eric Guiang Predicting the Sorption of Anionic Pharmaceuticals Using Probe Compounds
- Emma Landes Sorption Isotherms of Anionic Pharmaceuticals and Probe Compounds
- Sam Shaheen Predicting pyridine sorption to aluminosilicate clays: Influence of solid phase composition and structure

Academic Year 2016-17

- Leah Alper Prediction sorption of anionic compounds to soils: An evaluation of probe compounds (*honors*)
- Danielle Freeman Predicting the sorption of substituted pyridines to aluminosilicate clays (*honors*)

Summer 2016

- Leah Alper Prediction Sorption of Anionic Compounds to Soils: An Evaluation of Probe Compounds
- Danielle Freeman Predicting the sorption of heterocyclic amines to aluminosilicate clays
- Samuel Shaheen Predicting pyridine sorption to aluminosilicate clays: Influence of solid phase composition and structure

Academic Year 2015-2016

- Katherine Carter Determination of Benzylamine and Phenyltrimethylammonium as Probe Compounds of Sorption via Cation Exchange
- Gillian Kramer Quantifying and Comparing the Nutrient Input of Herring Gulls (*Larus argentatus*) and Leach's Storm-Petrels (*Oceanodroma leucorhoa*) on the Terrestrial Ecosystem of a Small Island in the Bay of Fundy
- Alandra Lopez (*honors*) Evaluation of Salicylic Acid as a Probe for Polyfunctional Ionogenic Compound Sorption via Surface Complexation and Cation Bridging Sorption
- James Sullivan (*honors*) Structure Based Prediction of Cation Exchange to Soil aluminosilicates

Summer 2015

Gillian Kramer	Quantifying and Comparing the Nutrient Input of Herring Gulls (<i>Larus argentatus</i>) and Leach's Storm-Petrels (<i>Oceanodroma leucorhoa</i>) on the Terrestrial Ecosystem of a Small Island in the Bay of Fundy
John Medina	Evaluation of Phenyltrimethylammonium as a Probe for Sorption of Cationic Organic Compounds to Soils and Sediments
James Sullivan	Structure based prediction of substituted pyridine cation exchange to soil aluminosilicates

Academic Year 2014-2015

Malik McKnight	Monitoring Polar and Ionic Organic Pharmaceutical Chemicals in Aquatic Ecosystems using an Equilibrium Passive Sampler
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Summer 2014

Katherine Carter	The analysis of benzylamine and salicylic acid as potential probe compounds for the development of soil sorption predictive methods
Alandra Lopez	Evaluation of Salicylic Acid as a Probe Compound to Quantify Surface Complexation and Cation Bridging Sorption to Soils
Malik McKnight	Monitoring Polar and Ionic Organic Pharmaceutical Chemicals in Aquatic Ecosystems using an Equilibrium Passive Sampler
James Sullivan	Environmental Fate of the Toxic Bird-Pesticide Avitrol and Implications on Human and Ecosystem Health

Academic Year 2013-2014 – Vasudevan on sabbatical leave

Reaha Goyetche	Evaluation of the use of probe compounds to quantify cation exchange and surface complexation to soils.
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Academic Year 2012-2013

Phoebe Aron	<i>(honors)</i> An investigation of sedimentary pyrite as an indicator of dourgh tin mid-coast Maine
Daniel Dickstein	<i>(honors)</i> The quantification of non-linear sorption of cationic amines to soils and soil minerals
Reaha Goyetche	Evaluation of the use of probe compounds to quantify cation exchange to soils.
Basyl Stuyvesant	<i>(honors)</i> Structure-Activity Relationships for Pyridine Cation Exchange

Summer 2012

Phoebe Aron	An investigation of sedimentary pyrite as an indicator of dourgh tin mid-coast Maine
Daniel Dickstein	The quantification of nonlinear sorption of cationic amines to soils and soil minerals
Reaha Goyetche	Evaluation of the use of probe compounds to quantify cation exchange to soils.
Basyl Stuyvesant	Quantitative prediction of cation exchange from compound structure

Academic Year 2011-2012

Heather Kinnear	<i>(honors)</i> Methylamino-L-aniline sediment sorption dynamics. (Fall, Spring)
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Phoebe Aron Quantification of pyritic iron and sulfur in Merrymeeting Bay sediments. (Fall, Spring)

Summer 2011

Teresa Arey The effect of cation-pi interactions on the sorption of cationic amines to montmorillonite.

Amie Corso Exploring cation bridging as a potential mechanism of phosphate sorption to sediments.

Allison Dupont Investigating the effect of agricultural practices on soil carbon and nitrogen – *co-advised with P. Camill.*

Heather Kinnear Investigation of p-phenylene-diamine sorption to montmorillonite.

Academic Year 2010-2011

Teresa Arey (*honors*) The effect of cation-pi interactions on the sorption of cationic amines to montmorillonite. (Fall, Spring)

Andrew Cardamone (*honors*) Phosphorus sink-source dynamics in Androscoggin River sediments. (Fall, Spring)

Tina Zhang (*honors*) Effect of soil properties on cationic amine sorption. (Fall, Spring)

Summer 2010

Teresa Arey The effect of cation-pi interactions on the sorption of cationic amines to montmorillonite.

Andrew Cardamone Phosphorus sink-source dynamics in Androscoggin River sediments.

Allison Dupont Investigating non-linearity in aniline sorption to montmorillonite.

Tina Zhang Influence of structure on zwitterion sorption to aluminosilicate clays.

Academic Year 2009-2010

Mo Bader (*honors*) Mechanisms of cationic amine sorption to montmorillonite (Fall, Spring)

Summer 2009

Teresa Arey Non-linear sorption of cationic amines.

Andrew Cardamone Phosphorus sink-source dynamics in Merrymeeting Bay.

Adam Hall Nutrients dynamics in Merrymeeting Bay.

Academic Year 2008-2009

Adam Hall (*honors*) Retention of phosphorus by sediments in Merrymeeting Bay. (Fall, Spring)

Mark Newman (*honors*) Aromatic and aliphatic amine sorption to aluminosilicates. (Fall, Spring)

Summer 2008

Mark Newman Amine sorption to aluminosilicates clays.

Academic Year 2007-2008 – Vasudevan on sabbatical leave

Summer 2007

Anthony Carrasquillo Influence of molecular structure on sorption of cationic amines to aluminosilicate clay minerals.

Academic Year 2006-2007

Anthony Carrasquillo (*honors*) Influence of molecular structure on sorption of cationic amines to aluminosilicate clay minerals. (Fall, Spring)
 Kelly Rula Bioremediation: Principles and processes. (Fall)

Summer 2006

Anthony Carrasquillo Influence of molecular structure on sorption of cationic amines to aluminosilicate clay minerals.
 Elizabeth Onderko Retention and desorption of DNA to iron oxides and iron rich minerals.
 Kelly Pitts Analysis of biodiesel production by transesterification of a high free fatty acid feedstock – Use of waste oil from Bowdoin Dining.
 Brendan Torrance Probing the connections between wastewater contamination and marine animal health.

Academic Year 2005-2006

Anthony Carrasquillo Analysis of sorption of Oxytetracycline to soils through probe compound analysis. (Spring)
 Amber Davis (*honors*) Chemical analysis of activity residues at a Maya marketplace. (Fall, Spring)

Summer 2005

Anthony Carrasquillo Mechanisms of oxytetracycline sorption to model soil components.
 Amber Davis Chemical analysis of activity residues at a Maya marketplace.
 Adam Hall DNA quantification and sorption to iron oxides.
 Brendan Torrance Ciprofloxacin sorption to eastern US soils.

Academic Year 2004-2005

Kiersa Benson. A survey of the effects of the Sprague River Salt Marsh restoration. (Fall, Spring) – *co advised with L. Whitlow.*
 Tim Cashman Sorption of oxytetracycline substructures onto metal oxides and aluminosilicates. (Fall)
 Sarah Close A survey of the effects of the Sprague River Salt Marsh restoration. (Fall, Spring) – *co advised with L. Whitlow*
 Brendan Torrance Sorption of Ciprofloxacin onto soils of eastern United States. (Fall)
 Virginia Upchurch Development of a fluorescence based analytical technique for quantifying DNA concentration. (Fall)
 Virginia Upchurch Evaluation of the sorption and desorption of ciprofloxacin in soils of the eastern United States. (Spring)

Summer 2004

Kiersa Benson	A survey of the effects of the Sprague River Salt Marsh restoration – <i>co advised with L. Whitlow.</i>
Tim Cashman	Sorption of oxytetracycline substructures onto metal oxides and aluminosilicates.
Sarah Close	A survey of the effects of the Sprague River Salt Marsh restoration – <i>co advised with L. Whitlow.</i>
Amber Davis	DNA analysis, sorption, and desorption from soil iron oxides.
Brendan Torrance	Sorption of ciprofloxacin onto soils of eastern United States.

COURSES TAUGHT

Introduction to Environmental Studies, ES1101
 Perspectives in Environmental Science, ES2201/Chem1105/Bio1158
 Environmental Chemistry, Chem/ES/Geo 2050
 Environmental Fate of Organic Chemicals, Chem/ES 3050
 Transformation of Organic Compounds in the Environment, Chem/ES 3060

SERVICE TO BOWDOIN COLLEGE

2020-2021	Committee on Appointments, Promotion and Tenure (Chair, Fall 2020) Working Group of Self-Identified Faculty of Color and International Faculty – <i>ex officio</i>
2019-2020	Committee on Appointments, Promotion and Tenure (Chair, Spring 2020) Environmental Studies Committee
2018-2019	On sabbatical leave
2017-2018	Department Chair, Chemistry Environmental Studies Committee Search Committee, Senior Vice President for Diversity and Inclusion Search Committee, THRIVE Director
2016-2017	Department Chair, Chemistry Lectures and Concerts Committee Environmental Studies Committee Roux Program Committee
2015-2016	Department Chair, Chemistry Lectures and Concerts Committee Environmental Studies Committee Bowdoin Advising Program in Support of Academic Excellence Roux Program Committee
2014-2015	Department Chair, Chemistry Lectures and Concerts Committee Environmental Studies Committee Bowdoin Advising Program in Support of Academic Excellence
2013-2014	On sabbatical leave

- 2012-2013 Chemical Hygiene Committee
Claire Boothe Luce Scholarship Committee
Environmental Studies Committee
Gender and Women's Studies Committee
Working Group on Public Engagement
Bowdoin Advising Program in Support of Academic Excellence
- 2011-2012 Chemical Hygiene Committee
Claire Boothe Luce Scholarship Committee
Environmental Studies Committee
Gender and Women's Studies Committee
McKeen Center faculty fellow
- 2010-2011 Chemical Hygiene Committee
Claire Boothe Luce Scholarship Committee
Environmental Studies Committee
McKeen Center faculty fellow
- 2009-2010 Claire Boothe Luce Scholarship Committee
Committee on Appointments, Promotion and Tenure
Environmental Studies Committee
McKeen Center faculty fellow (one semester)
- 2008-2009 Claire Boothe Luce Committee
Committee on Appointments, Promotion and Tenure
Environmental Studies Committee
- 2007-2008 on sabbatical leave
- 2006-2007 Chemical Hygiene (one semester)
Committee on Curriculum and Educational Policy
Environmental Studies Committee
Gender and Women' Studies Committee
New Course Subcommittee
- 2005-2006 Committee on Curriculum and Educational Policy
Environmental Studies Committee
Gender and Women's Studies Committee
- 2004-2005 Environmental Studies Committee
Oversight Committee on Multicultural Affairs

PROFESSIONAL ACTIVITY

Co-convenor of Conference Symposia

- August 2016 "Aquatic Chemistry: Symposium in honor of Professor Alan T. Stone", American Chemical Society National Meeting, Philadelphia, PA, with C.Huang, B. Deng, and T. Strathmann.

- June 2012 “Interactions at the interface between organic components and minerals”, Goldschmidt Geochemistry Meeting, Montreal, Canada , with Patricia Maurice, Keisha Koehn and Per Persson
- Sept. 2003 “Chemistry of polar and ionic compounds at the mineral-water interface”, American Chemical Society National Meeting, New York, NY, with Allison MacKay.

Panel Participation

- July 2011 Starting off right: Navigating the early years of academia, AEESP Meeting, Tampa, FL.
- April 2007 Experience in straying from the academic path: Risks and benefits. , Preparing Future Faculty Seminar Series, Graduate School of Oceanography, University of Rhode Island, Kingston, RI

External Departmental Reviews

- March 2011 Chemistry/Biochemistry Department, Middlebury College, Middlebury, VT
- March 2017 Environmental Studies Program, Wellesley College, Wellesley, MA.

Reviewer of manuscripts

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

Book Reviewer

Wiley Interscience

Taylor and Francis

Reviewer of proposals

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