**Charles M. SharplesS**

Associate Professor of Chemistry, College of Arts and Sciences

University of Mary Washington, 1301 College Ave., Fredericksburg, VA 22401

Phone: 540.654.1405 Fax: 540.654.1081 Email: csharple@umw.edu

# Personal Born: July 1, 1967. Princeton, NJ, USA.

 Status: Married with two children

# Education

Ph.D. Chemistry (Analytical), Duke University, Durham, NC. December, 1999

 Dissertation Title: *Studies of the Relationship Between Humic Acid Fluorescence, Physical Properties, and the Effects of Metal Complexation*.

Advisor: Linda B. McGown

B.A. Natural Sciences, The Johns Hopkins University, Baltimore, MD. May, 1989

Appointments

University of Mary Washington, College of Arts & Sciences, Fredericksburg, VA

**Associate Professor**: Department of Chemistry 2009-present

**Assistant Professor**: Department of Chemistry 2004-2009

* *Research*: Environmental photochemistry of natural organic matter and aquatic pollutants
* *Teaching*: General, Environmental, and Analytical Chemistry, Instrumental Methods

Swiss Federal Institute of Technology (ETH Zurich), Zurich, Switzerland

**Visiting Professor**: Institute for Biogeochemistry & Pollutant Dynamics 2011-2012

* Prof. Kristopher McNeill research group
* *Research*: Photochemistry and photodynamics of natural organic matter

Woods Hole Oceanographic Institution, Falmouth, MA.

**Guest Investigator**: Department of Marine Chemistry and Geochemistry 2006

* Senior Scientist Christopher Reddy research group
* *Research*: Modeling polycyclic aromatic hydrocarbon photolysis in oil spill films

Duke University, Durham, NC

**Asst. Research Professor**: Dept. of Civil and Environmental Engineering 2002-2004

**Postdoctoral Research Associate**: Dept. of Civil and Environmental Engineering 2000-2002

**Lecturer:** Nicholas School of the Environment and Earth Sciences 2001-2004

* *Research*: Photochemical methods for pollutant removal from drinking water
* *Teaching*: Environmental Aquatic Chemistry, Environmental Chemistry & Toxicology, Chemistry and Microbiology for Environmental Engineers

Harvard School of Public Health, Boston, MA

**Research Assistant.**: Dept. of Respiratory Biology 1990-1992

* *Research*: Physiological and biochemical studies of tachykinins’ role in asthma development

**Consulting**

Ondeo-Degremont (Ozonia R&D), Richmond, VA

**Consulting Scientist.**: Ondeo-Degremont (Ozonia) 2001-2010

* Measurements and oversight of aging tests for mercury lamps and quartz sleeves used in UV water treatment reactors.

**Courses Taught**

Fall 2004-present Instructor. General Chemistry with Lab (Chem111-112); Analytical Chemistry (Chem252); Chemical Analysis II (Chem254); Environmental Chemistry (Chem331); Environmental Chemistry Lab (Chem332); Instrumental Analysis (Chem392); Seminar (Chem453). University of Mary Washington.

Spring 2004 Instructor. Environmental Chemistry and Toxicology (ENV160). Nicholas School of the Environment and Earth Sciences, Duke University

2001-2003 Instructor. Environmental Aquatic Chemistry (ENV242/CE242). Nicholas School of the Environment and Earth Sciences, Duke University.

2001-2003 Assistant Lecturer. Chemistry and Microbiology for Environmental Engineers (CE120L). Department of Civil and Environmental Engineering, Duke University.

2001-2003 Assistant Lecturer. Physical and Chemical Treatment Processes (CE241). Department of Civil and Environmental Engineering, Duke University.

**Honors and Awards**

(2010) Jepson Fellowship. University of Mary Washington.

(2006) Faculty Achievement Award. University of Mary Washington.

(2006) UMW Division of Teaching and Learning Technologies Fellowship. Awarded to assist in design and implementation of projects to enhance teaching and learning in the general chemistry laboratory by using information technologies.

(2005) Professor’s Honorary Award. Awarded for extraordinary contributions and dedication to the students by the University of Mary Washington Academic Affairs Council on advice from the chemistry majors.

(2003) Award of Excellence for 2003 ACS National Meeting Presentation. Division of Environmental Chemistry, American Chemical Society.

(2002) Preparing Future Faculty Fellowship. Preparing Future Faculty National Program, Washington, D.C. and the Center for Teaching, Learning, and Writing at Duke University. August 2002-May 2003.

(1993) Elected to Alpha Pi Chapter of Phi Lambda Upsilon, National Honorary Chemical Society. August, 1993.

(1992) NIEHS Toxicology Fellowship, Integrated Toxicology Program. Duke University, Durham, NC. September 1992-August 1995.

**Professional Affiliations and Activities**

*Member:* American Chemical Society (analytical and environmental divisions), Association of Environmental Engineering and Science Professors, Virginia Academy of Sciences, Council on Undergraduate Research

*Reviewer:* Journals: Analytica Chimica Acta, Chemosphere, ASCE Journal of Environmental Engineering, Environmental Science & Technology, Environmental Science & Technology Letters, Ozone: Science & Engineering, Photochemistry and Photobiology, Water Research

 Proposals: Research Corporation, National Science Foundation

*Volunteer:* Session chair, Virginia Academy of Science Annual Meeting, 2006

Project Advisory Committee Member. American Water Works Association Research Foundation, 2001-2003

External member, third-year review committee for Professor Amanda Nienow, Gustavus Adolphus College, 2010

### Peer Reviewed Publications (\* denotes undergraduate researchers)

1. Bodhipaksha, L.; Sharpless, C.M.; Sander, M.; Chin, Y.-P.; Langston, W.K.\*; MacKay, A.A. Triplet Photochemistry of Effluent and Natural Organic Matter in Whole Water and Isolates from Effluent-Receiving Rivers. *Environ. Sci. Technol.* **2015,** 49, 3453-3463
2. Sharpless, C.M.; Blough, N.V. The importance of charge-transfer interactions in determining chromophoric dissolved organic matter (CDOM) optical and photochemical properties. (Invited Review), *Environ. Sci. Process. Impacts* **2014**,*16*, 654-671
3. Sharpless; C.M.; Aeschbacher, M.; Page, S.E.; Wenk, J.; Sander, M.; McNeill, K. Photooxidation-induced changes in optical, electrochemical and photochemical properties of humic substances. *Environ. Sci. Technol.* **2014**, *48*, 2688–2696
4. Lester, Y.; Sharpless, C.M.; Mamane, H.; Linden, K.G. Production of photooxidants by dissolved organic matter during UV water treatment. *Environ. Sci. Technol.* **2013**, *47*, 11726–11733
5. Sharpless, C.M. Lifetimes of triplet dissolved natural organic matter (DOM) and the effect of NaBH4 reduction on singlet oxygen quantum yields: implications for DOM photophysics. *Environ. Sci. Technol.* **2012**, *46*, 4466-4473
6. Dalrymple, R.M.\*; Carfagno, A.K.\*; Sharpless, C.M. Correlations between dissolved organic matter optical properties and quantum yields of singlet oxygen and hydrogen peroxide. *Environ. Sci. Technol,* **2010**, *44*, 5824-5829
7. Plata, D; Sharpless, C.M.; Reddy, C.M. Photochemical degradation of polycyclic aromatic hydrocarbons in oil films. *Environ. Sci. Technol.* **2008**, *42*, 2432-2438
8. Shemer, H.; Sharpless, C.M.; Elovitz, M.S.; Linden, K.G. Relative rate constants of contaminant candidate list pesticides with hydroxyl radicals. *Environ. Sci. Technol.* **2006**, *40*, 4460-4466
9. Chen, W.-R., Sharpless, C.M., Linden, K.G., Suffet, I. H. (Mel) Treatment of volatile organic chemicals (VOCs) on the EPA contaminant candidate list using ozonation and O3/H2O2 advanced oxidation process. *Environ. Sci. Technol.* **2006**, *40*, 2734-2739
10. Shemer, H.; Sharpless, C.M.; Linden, K.G. Photodegradation of 3,5,6-trichloro-2-pyridinol in aqueous solution. *Water, Air, Soil Poll.* **2005**, *168*, 145-155
11. Sharpless, C.M.; Linden, K.G. Interpreting collimated beam UV oxidation rate data in terms of electrical efficiency of treatment. *J. Environ. Eng. Sci.* **2005**, *4*(S1), S19-S26
12. Sharpless, C.M.; Seibold, D.A.\*; Linden, K.G. Nitrate photosensitized degradation of atrazine during UV water treatment. *Aquat. Sci.* **2003**, *65*, 359-366
13. Sharpless, C.M.; Page, M.A.\*; Linden, K.G. Impact of hydrogen peroxide on nitrite formation during UV disinfection. *Water Res.* **2003**, *37*, 4730-4736
14. Sharpless, C.M.; Linden, K.G. Experimental and model comparisons of low- and medium-pressure Hg lamps for the direct and H2O2 assisted UV photodegradation of N-nitrosodimethylamine in drinking water. *Environ. Sci. Technol.* **2003**, *37*, 1933-1940
15. Liu, W; Andrews, S.A.; ; Bolton, J.R.; Linden, K.G; Sharpless, C.M.; Stefan, M.I. Comparison of disinfection byproduct (DBP) formation from different UV technologies at the bench-scale. *Water Sci. Technol.: Water Supp.* **2002**, *2*(5/6), 515-521
16. Magnuson, M.L.; Kelty, C.A.; Sharpless, C.M.; Linden, K.G.; Fromme, W.; Metz, D.; Kashinkunti, R. Effect of UV irradiation on Ohio River natural organic matter studied through the use of electrospray mass spectrometry. *Environ. Sci. Technol.* **2002**, *36*, 5252-5260
17. Sharpless, C.M.; Linden, K.G. UV photolysis of nitrate: effects of natural organic matter and dissolved inorganic carbon and implications for UV water disinfection. *Environ. Sci. Technol.* **2001**, *35*, 2949-2955
18. Sharpless, C.M.; McGown, L.B. Effects of aluminum induced aggregation on the fluorescence of humic substances. *Environ. Sci. Technol.* **1999**, *33*, 3264-3270
19. Rosen, D.L.; Sharpless, C.M.; McGown, L.B. Bacterial spore detection and determination by use of terbium dipicolinate photoluminescence. *Anal. Chem.* **1997**, *69*, 1082-1085

**Articles**

Sharpless, C.M., “Weighted fluence-based parameters for assessing UV and UV/H2O2 performance and transferring bench-scale results to full-scale water treatment reactor models,” *International Ultraviolet Association News*, **2005**, 7(3), 13-19.

**Conference Proceedings and Reports (\* denotes undergraduate researchers)**

(2011) Sharpless, C.M. “Effect of Borohydride Reduction on Singlet Oxygen Quantum Yields from Aquatic Natural Organic Matter,” International Conference on Chemistry and the Environment (ICCE, European Association of Chemical and Molecular Sciences) 2011 Abstracts, TRANS P19, pg. 349.

(2011) Sharpless, C.M. “Organic Matter Photochemistry: Singlet Oxygen Precursor Lifetimes,”Goldschmidt Conference 2011 Abstracts, pg. 1849.

(2008) Plata, D.; Sharpless, C.M.; Reddy, C.M. “Photochemical Degradation of Polycyclic Aromatic Hydrocarbons in Oil Films,”Abstracts of papers of the American Chemical Society, 236: ENVR-102.

(2008) Carfagno, A.\*; Sharpless, C.M. “Predicting NOM Photosensitized Reaction Rates Using Spectroscopic Correlations,”Abstracts of papers of the American Chemical Society, 236: ENVR-75.

(2007) Dalrymple, R.\*; Carfagno, A.\*; Sharpless, C.M. “Spectroscopic Correlations Involving Humic Substance Photochemical Reaction Rates,”Abstracts of papers of the American Chemical Society, 234: ENVR-164.

(2006) IJpelaar, G.; Harmsen, D.; Sharpless, C.M.; Linden, K.G.; Kruithof, J.C. “Fluence Monitoring in UV Disinfection Systems: Development of a Fluence Meter,” Final Report, AwwaRF Project #2949; American Water Works Association Research Foundation, Denver, CO.

(2005) Shemer, Hilla; Sharpless, Charles M.; Suffet, I. H.; Elovitz, Michael S.; Linden, Karl G. “Relative reactivity of contaminant candidate list pesticides to OH radical oxidation,” Proceedings, Water Quality Technology Conference and Exposition, American Water Works Association, **Québec City, Québec, Canada***.*

(2005) Sharpless, C.M.; Cho, K.-D.; Linden, K.G.; IJpelaar, G.; Harmsen, D. “Development of an Online Dosimeter,” Proceedings, Water Quality and Technology Conference, American Water Works Association, **Québec City, Québec, Canada***.*

(2005) Schaefer, R.; Grapperhaus, M.; Linden, K.; Sharpless, C.M. “Innovative Disinfection and Contaminant Degradation in Water Using Sparker Technology,” Proceedings American Water Works Association Annual Meeting, San Fancisco.

(2004) Chen, W.R,; Sharpless, C.M.; Linden, K.G.; Suffet, I.H. “Kinetic studies of volatile organic chemicals on the EPA contaminant candidate list by advanced oxidation processes,” Abstracts of papers of the American Chemical Society, 228: ENVR-055.

(2003) Linden, K.G.; Sharpless, C.M.; Andrews, S.A.; Atasi, K.Z.; Koratgere, V.; Stefan, M.I.; Suffet, I.H. (Mel) “Innovative UV Technologies to Oxidize Organic and Organoleptic Chemicals,” Final Report, AwwaRF Project #2599; American Water Works Association Research Foundation, Denver, CO.

(2003) Sharpless, C.M.; Linden, K.G.; Siddqi, M.; Atasi, K. “UV Treatment of Atrazine: Effect of Water Quality,” Proceedings, Water Quality and Technology Conference, American Water Works Association, **Philadelphia, PA.**

(2003) Chen, W.R.; Sharpless C.; Linden, K.G.; Suffet. I. H. (Mel) “Treatment of Volatile Organic Chemicals (VOCs) on the EPA Contaminant Candidate List Using Ozonation,” Proceedings, 16th World Congress of the International Ozone Association, Las Vegas, NV.

(2003) Chen, W.R.; Sharpless C.; Linden, K.G.; Suffet. I. H. (Mel) “Treatment of Organophosphate Pesticides on the EPA Contaminant Candidate List Using Ozonation,” Proceedings, 16th World Congress of the International Ozone Association, Las Vegas, NV.

(2003) Sharpless, C.M.; Seibold, D.A.\*; Linden, K.G. “Nitrate Photosensitized Degradation of Atrazine During UV Water Treatment,” Abstracts of papers of the American Chemical Society, 225: ENVR-008.

(2003) Sharpless, C.M.; Linden, K.G.; Neofotistos, P. “Spectral Distribution of UV Light During Aging of Medium Pressure UV Lamps,” Proceedings International Ultraviolet Association, 2nd Annual Congress, Vienna, Austria.

(2002) Liu, W; Andrews, S.A.; Sharpless, C.M.; Stefan, M.I.; Linden, K.G.; Bolton, J.R. “Bench-Scale Investigations into Comparative Evaluation of DBP Formation from Different UV/H2O2 Technologies,” Proceedings Water Quality and Technology Conference, American Water Works Association, **Seattle, WA.**

(2001) Sharpless, C.M.; Chou, C.I.; Mofidi, A.A.; Linden, K.G. “N-Nitrosodimethylamine Removal From Drinking Water By UV-Treatment: A Direct Comparison of Different UV Technologies,” Proceedings Water Quality and Technology Conference, American Water Works Association, Nashville, TN.

(2001) Stefan, M.I.; Sharpless, C.; Linden, K.G.; Bolton, J.R. “Degradation of Atrazine in a Bench-scale Collimated Beam Apparatus using Low- and Medium-Pressure UV Lamps,” Proceedings Water Quality and Technology Conference, American Water Works Association, Nashville, TN.

(2001) Sharpless, C.M.; Bastow, T.L.\*; Linden, K.G. “Nitrite Production During Polychromatic UV Disinfection Of Drinking Water: Effect of pH And Natural Organic Matter,” Proceedings American Water Works Association Annual Meeting, Washington, DC.

(2001) Sharpless, C.M.; Linden, K.G. “A Comparison Of Monochromatic Versus Polychromatic Hg Lamps For Direct Photolysis and H2O2 Assisted UV Degradation Of N- Nitrosodimethylamine,” Proceedings International Ultraviolet Association, 1st Annual Congress, Washington, DC.

(1998) Christman, R.F; Shi, J.; Wagoner, D.; Sharpless, C.; Fischer, E.; Schupbach, J., “A New Method For Characterizing Aquatic Organic Matter,” Report No. 319 (November 1998) North Carolina Water Resources Research Institute.

**Invited Presentations**

(2015) “The Light at the End of the Outfall: Assessing the Photoreactivity of Treated Wastewater Effluent Organic Matter and its Potential to Impact Aquatic Contaminant Fate,” Seminar Series, Department of Environmental Engineering, Virginia Polytechnic Institute and State University, Blacksburg, VA.

(2011) “Photophysics of natural organic matter,” Seminar Series, Drinking Water Group, Eawag: Swiss Federal Institute of Aquatic Science and Technology, Dübendorf, Switzerland.

(2010) “Inside the Brown Box: Mechanistic Aspects of Aquatic Organic Matter Photochemistry,” Seminar Series, Department of Chemistry, George Mason University, VA.

(2008) “Photochemical Processing of Environmental Pollutants: Predicting Rates in Aqueous and Non-aqueous Systems,” Seminar Series, Department of Chemistry, University of Maryland, College Park.

(2005) “Experimental and Modeling Approaches to Assess UV based AOPs for Water Treatment,” Plenary presentation, 3rd Annual International Ultraviolet Association Congress, Whistler, Canada.

(2003) “Kinetic Screening of Candidate Contaminant List (CCL) Chemicals for Treatment by Advanced Oxidation Processes,” Water Quality and Technology Conference, American Water Works Association, **Philadelphia, PA.**

(2002) “UV-Based Oxidation of Water Contaminants” Plenary Lecture, First Asia Regional Conference on Ultraviolet Technologies for Water, Wastewater & Environmental Applications, Singapore.

(2002) “UV Driven Processes for Destroying Water Contaminants” North Carolina Drinking Water Research Center Symposium, University of North Carolina at Chapel Hill**.**

(1997) “Fluorescence Spectroscopy of Humic Substances” School of Public Health, University of North Carolina at Chapel Hill.

**Other Presentations and Posters (\* denotes undergraduate researchers)**

(2015) Sharpless, C.M. “Comparative triplet photochemistry of natural and treated effluent organic matter: Wavelength dependence of quantum yields for singlet oxygen and oxidizing triplets,” Talk presented at the 249th Annual Meeting of the American Chemical Society, Denver, CO. March, 2015.

(2015) Stewart, O.C.\*; Sharpless, C.M. “Effect of photochemical weathering on the composition and spectroscopic properties of crude oil,” Poster presented at the 249th Annual Meeting of the American Chemical Society, Denver, CO. March, 2015.

(2015) Laszakovits, J.R.\*; Sharpless, C.M. “Polychromatic method to determine the wavelength dependence of singlet oxygen quantum yields for natural and effluent organic matter,” Poster 356 presented at the 249th Annual Meeting of the American Chemical Society, Denver, CO. March, 2015.

(2015) Reddy, C.; Nelson, R.; Koolen, H.; Swarthout, R.; Aeppli, C.; Sharpless, C.; Stewart, O.\*; Radovic, J.; Valentine, D.; Hall, G.; O'Neil, G.; McKenna, A.; Chen, H.; Krajewski, L.; Rodgers, R. “The oxidation of Macondo well oil: An update and vision,” Presentation at the Gulf of Mexico Research Initiative’s 2015 Oil Spill and Ecosystem Science Conference, Houston, TX, February, 2015.

(2014) Stewart, O.C.\*; Sharpless, C.M. “Photochemical weathering of crude oil: Alterations in composition and optical properties,” Poster presented at the 66th Southeast Regional meeting of the American Chemical Society, Nashville, TN. October, 2014.

(2014) Laszakovits, J.R.\*; Sharpless, C.M. “Wavelength dependence of singlet oxygen quantum yields for natural and treated effluent organic matter,” Poster presented at the 66th Southeast Regional meeting of the American Chemical Society, Nashville, TN. October, 2014.

(2014) Coleman, K.L.\*; Odhiambo, B.K.; Sharpless, C.M.; Coxon, T.M.; Wieland, W.; Bunch, A. “Spatial and temporal distribution of polycyclic aromatic hydrocarbons (PAHs) within sediment and fish tissue of the lower Chesapeake Bay basin,” Poster presented at the 2014 meeting of the Geological Society of America, Vancouver, BC. October, 2014.

(2014) Sharpless, C.M. “Can optical properties of colored dissolved organic matter (CDOM) be used to accurately predict rates of environmental photochemical reactions?,” Poster presented at the 2014 Gordon Research Conference on Environmental Sciences: Water, Holderness, NH. June, 2014.

(2011) Graninger, D.M.\*; Sharpless, C.M. “The optical properties of reduced and oxidized natural organic matter,” Poster presented at the Virginia Section of the American Chemical Society meeting, University of Virginia, Charlottesville, VA. April, 2011.

(2011) Burruss, B.\*; Sharpless, C.M. “Physical and photochemical properties of soil and aquatic natural organic matter,” Poster presented at the Virginia Section of the American Chemical Society meeting, University of Virginia, Charlottesville, VA. April, 2011.

(2011) Williams, J.S.\* and Sharpless, C.M. “Investigating direct photolysis mechanisms of polycyclic aromatic hydrocarbons in non-polar solvents,” Poster presented at the Virginia Section of the American Chemical Society meeting, University of Virginia, Charlottesville, VA. April, 2011.

(2011) Burruss, B.\*; Sharpless, C.M. “Physical and photochemical properties of soil and aquatic natural organic matter,” Poster presented at the Southeastern Section of the Geological Society of America meeting, University of North Carolina, Wilmington, NC. March, 2010.

(2010) Burruss, B.\*; Sharpless, C.M. “Physical and photochemical properties of fractionated NOM,” Poster presented at the Virginia Section of the American Chemical Society meeting, University of Virginia, Charlottesville, VA. April, 2010.

(2010) Williams, J.S.\* and Sharpless, C.M. “Exploring direct photolysis mechanisms of PAHs in nonpolar solvents,” Poster presented at the Virginia Section of the American Chemical Society meeting, University of Virginia, Charlottesville, VA. April, 2010.

(2009) Williams, J.S.\* and Sharpless, C.M. “Exploring direct photolysis mechanisms of PAHs in nonpolar solvents,” Poster (CHED-195), 238th Annual Meeting of the American Chemical Society, Washington, DC, August, 2009.

(2009) Kamptner, E.\*; Whipkey, C.; Sharpless, C. “Soils at bridges and roadways as possible sources of polychlorinated biphenyls (PCBs) to Lake Anna waters and sediments,” Poster presented at the of the Geological Society of America, Northeastern Section, Portland, Maine, March 22-24, 2009.

(2008) Carfagno, A.K.\* and Sharpless, C.M. “Investigating the basis of natural organic matter photochemistry,” Annual meeting of the Virginia Academy of Science, Newport, VA, May 27-29, 2008.

(2008) Carfagno, A.K.\* and Sharpless, C.M. “Investigating the basis of natural organic matter photochemistry,” Poster presented at the Virginia Section of the American Chemical Society meeting, University of Virginia, Charlottesville, April 18th, 2008.

(2008) Pinney, J.\*; Shapiro, R.\*; Sharpless, C.; Kisila, B.O. “The effect of land use on the nutrients and organic contaminants in the water and sediment of the Rappahannock River,” Poster presented at the 57th annual meeting of the Geological Society of America, Southeastern Section, Charlotte, NC, April 10-11, 2008.

(2007) Dalrymple, R.M.\* and Sharpless, C.M. “Relating the Photochemistry of Humic Substances to Their Spectroscopic and Electrochemical Properties” Annual meeting of the Virginia Academy of Science, Harrisonburg, VA, May 24-26, 2007.

(2006) Studer, K.E.\* and Sharpless, C.M. “Direct UV Photolysis and Advanced Oxidation of Estrone with Byproduct Formation” Annual meeting of the Virginia Academy of Science, Blacksburg, VA, May 24-26, 2006.

(2006) Dalrymple, R.M.\* and Sharpless, C.M. “Predicting the Singlet Oxygen Quantum Yield of Humic Substances from Spectroscopic Properties” Annual meeting of the Virginia Academy of Science, Blacksburg, VA, May 24-26, 2006.

(2006) McKay, J.M.\* and Sharpless, C.M. “Synthesis and Charaterization of Peroxynitrite Preparations for Photochemical Studies” Poster presented at the annual meeting of the Virginia Academy of Science. Blacksburg, VA, May 24-26, 2006.

(2005) Walsh, P.\* and Sharpless, C.M. “Photochemistry of Humic Substances: Singlet Oxygen Quantum Yield” Poster presented at the Virginia Section of the American Chemical Society meeting, University of Virginia, Charlottesville, April 21st, 2005.

(2000) Linda B. McGown, Charles M. Sharpless, Joseph D. Hewitt “Fluorescence Spectral Characterization of Humic Substances and the Effects of Metal Cations,” 46th International Conference on Analytical Sciences and Spectroscopy (ICASS) Meeting, Winnipeg, Canada.

(1999) Sharpless, C.M. “Relationship of Humic Acid Physical Properties to Their Fluorescence Spectra: Implications for the Study of Metal Complexation by Natural Organic Ligands,” Duke University Integrated Toxicology Program Seminar Series.

(1995) Sharpless, C.M.; McGown, L.B., “Effects of Metal Induced Aggregation on Fluorescence Analysis of Metal Binding by Humic Materials,” Poster, International Humic Substances Society Meeting, Georgia Tech., Atlanta, GA.

(1995) Sharpless, C.M.; McGown, L.B., “Metal Induced Aggregation and Changes In Fluorescence Properties of a Commercial Humic Acid: How Are They Related?,” Pittsburgh Conference on Analytical Chemistry, New Orleans, LA.

(1994) Sharpless, C.M.; McGown, L.B., “Total Fluorescence Spectral and Lifetime Characterization of Aluminum Binding by a Commercial Humic Acid,” Rocky Mountain Conference on Analytical Chemistry, Denver, CO.

### External Research Funding

Collaborative Research: Oxygenation of Hydrocarbons in the Ocean (*National Science Foundation, OCE-1333026*); Budget: $106,763 to UMW (10/13 - 10/16); C.M. Sharpless, David Valentine (U.C. Santa Barbara), Christopher Reddy (Woods Hole Oceanographic Institution) (Co-PIs).

Collaborative Research: Role of Organic Matter Source in the Photodegradation of Pharmaceutical Compounds (*National Science Foundation, CBET-1132207*); Budget: $26,892 to UMW (9/11 - 9/14); C.M. Sharpless, Allison MacKay (U. Conn.), Yu-Ping Chin (Ohio St. U.) (Co-PIs).

Probing the Mechanism of Singlet Oxygen Production by Natural Organic Matter (*Virginia Academy of Science Gwathmey Chemistry Award*); Budget: $9,810 (5/09-12/10).

Probing the Origins of Natural Organic Matter Photochemistry Using Spectroscopic and Electrochemical Approaches (*Research Corporation*); Budget: $25,460 (5/07-12/09).

##### Photochemistry of Natural Organic Matter in the Rappahannock River (Virginia Academy of Science Small Project Research Funds); Budget: $1,000 (10/06-12/07).

##### UV Water Treatment with Surface Discharge UV Lamps (National Science Foundation, SBI); Budget: $81,000 (6/03-5/04); R. Schaefer (PI), K.G. Linden and C.M. Sharpless (Co-PIs).

Development of an On-Line Fluencemeter (*Kiwa Research and Consultancy & AWWA Research Foundation*); Budget: $80,000 (5/03-5/04); K.G. Linden (PI), C.M. Sharpless (Co-PI).

Advanced Oxidation Processes for the Treatment of Candidate Contaminant List (CCL) Chemicals (*US EPA*); Budget: $300,000 (10/01 - 10/04); K.G. Linden (PI), C.M. Sharpless and I.H. Suffet (Co-PIs).

##### **Internal Research Funding:** UMW Undergraduate Research Awards (total, $22,100).

2013 *A quantum yield study: using the old to verify the new*, M. Caceres (junior)

2011 *Photochemical and physical properties of soil and aquatic natural organic matter*, B. Burruss (senior).

2011 *Exploring direct photolysis mechanisms of polycyclic aromatic hydrocarbons in non- polar solvents*, J. Williams (senior).

2009 *Soils at bridges and roadways as possible sources of polychlorinated biphenyls (PCBs) to Lake Anna waters and sediments*, C. Hannoch (junior).

2009 *Comparative analysis of capsaicin in chili peppers using HPLC*, E. Lynch (sophomore).

2008 *Soils at bridges and roadways as possible sources of polychlorinated biphenyls (PCBs) to Lake Anna waters and sediments*, E. Kamptner (senior).

 *Examining the role of oxygen during photolysis of polycyclic aromatic hydrocarbons in nonpolar solvents,* J. Williams (sophomore).

 *The effect of land use on the nutrients and organic contaminants in the water and sediment of the Rappahannock River,* J. Pinney (junior) and R. Shapiro (sophomore).

2006 *Relating the photochemistry of humic substances to their spectroscopic and electrochemical properties*, R. Dalrymple (senior).

 *Examining the environmental photochemistry of biodiesel*, D. Hilton (sophomore).

 *Water and sediment quality testing for the Rappahannock River basin*, J. Brown (junior), K. Brown (senior), C. Funkey (senior), M. Slattery (junior).

2005 *Mineral-catalyzed degradation of hydroxynapthoic acids: effect of natural organic matter*, R. Caylor (senior).

 *UV photolysis and advanced oxidation of estrone: reaction kinetics and byproduct formation*, K. Studer (senior).

 *Predicting singlet oxygen quantum yields of humic substances from spectroscopic properties*, R. Dalrymple (junior).

2004 *Relating humic substance photochemistry and structure*, P. Walsh (sophomore).

 *Photochemical alterations of mineral adsorbed humic substances*, J. Leckey (junior).

 *Synthesis and photochemistry of peroxynitrite*, J. McKay (junior).

CV Current as of 3/22/12

### Honors Thesis and Dissertation Committee Service

Laleen Bohipaksha, Ph.D. in Chemistry (University of Connecticut), anticipated 2016.

Elyse Clark, Honors Thesis in Earth & Environmental Science (UMW), 2013 (advisor).

Jonathan Williams, Honors Thesis in Chemistry (UMW), 2010 (advisor).

Zachary Detweiler, Honors Thesis in Chemistry (UMW), 2010.

Erika Kamptner, Honors Thesis in Earth & Environmental Science (UMW), 2009 (advisor).

Paul Walsh, Honors Thesis in Chemistry (UMW), 2007.

Hadas Mamane-Gravetz, Ph.D. in Environmental Engineering (Duke University), 2005.

Erik Rosenfeldt, M.S. in Environmental Engineering (Duke University), 2003.

### University and Departmental Service

2015- Chair, Department of Chemistry (UMW)

2014- Member, Jepson Science Center Addition/Renovation Building Committee (UMW)

2011- Member, internal advisory board for NSF STEP project (UMW)

2005-2015 Outcomes Assessment Coordinator, Chemistry Department (UMW)

2012-2014 Chair, CAS Ad Hoc Committee on Faculty Governance (UMW)

2006-2014 Faculty Senator for the Chemistry Department (UMW)

2007-2013 First-Year Advisor (UMW)

2005-2011 Assistant Webmaster, Chemistry Department (UMW)

2009-2010 Member, search committee for Dean of the College of Arts & Sciences (UMW)

2008-2009 Member, strategic planning Sustainability Discussion Group (UMW)

2006-2009 Faculty Budget Committee (secretary, ‘07-‘09) (UMW)

2005-2006 Secretary, Bachelor of Liberal Studies Committee (UMW)

### Community Service

2013- Board of Trustees, Fredericksburg Academy

2011- Theater set construction, Fredericksburg Academy

2006-2012 Youth Soccer Coach, Fredericksburg Parks & Recreation

2009 Outreach, Colonial Forge High School Environmental Club biodiesel project

2001 Volunteer fundraiser, Durham Rape Crisis Center

1995-1997 Homebrewing section manager, Durham Food Co-Op

*CV current as of 8/18/2015*