

EDUCATION

B.S. Chemistry, May 1990.

Virginia Polytechnic Institute and State University, Blacksburg, VA.

Ph.D. Analytical Chemistry, August 1995.

University of Colorado, Boulder, CO.

Thesis Title: *The Measurement, Modeling and Applications of Metal β -Diketonate Complexes Dissolved in Supercritical Carbon Dioxide*, Advisor: Dr. Robert E. Sievers

Post-Doctoral Researcher, August 1995 – October 1998

National Institute of Standards and Technology (NIST), Boulder, CO

TEACHING AND RESEARCH APPOINTMENTS

Villanova University, Villanova, PA

Professor of Chemistry, September 2014 – present

Associate Professor of Chemistry, September 2010 – August 2014

Assistant Professor of Chemistry, June 2004 – August 2010

Courses Taught: Instrumental Analysis, Instrumental Analysis Laboratory, Quantitative Analysis Laboratory, Graduate Special Topics: Chromatography and Mass Spectrometry, General Chemistry, General Chemistry Laboratory, The Science of Art, The Science of Art Laboratory, Renaissance Art through the Lens of Science (Art History).

Service: Departmental Instrumentation Committee (2005-2013), Departmental Curriculum Committee (Chair, 2005-2015), Departmental Committee on Faculty (Chair, 2015-present), Departmental Search Committees (5 Chaired, 8 total), College Committee on Academic Programs (2012-2015), Natural Science Seat on the College Rank and Tenure Committee (2014-2017).

University of Delaware, Newark, DE

Adjunct Professor, Department of Art Conservation, August 2010 – present

National Science Foundation, Chemistry Collaborations, Workshops, and Community of Scholars (cWCWS). Instructor for *Advanced Chemistry and Art Workshop*. Workshop dates: June 21-26, 2009; June 2-7, 2010; June 6-11, 2012; June 8-13, 2014; July 31-August 4, 2017.

Penn State University, Worthington Scranton Campus, Dunmore, PA

Assistant Professor of Chemistry, August 2001 – August 2004

National Institute of Standards and Technology, Boulder, CO

Staff Chemist, October 1998 – August 2001; *Faculty Researcher Status*, August 2001-August 2011

Research: Initiated and led a diverse experimental and theoretical research program in solvent-solute intermolecular interactions of chlorofluorocarbon replacement solvent systems.

ACADEMIC SCHOLARSHIPS AND AWARDS

Villanova University Innovative Teaching Award, 2016.

University of Colorado/NIST Postdoctoral Fellowship, 1995-1998.

University of Colorado/NIST Graduate Fellowship, 1993-1995.

Cooperative Institute for Research in Environmental Studies Fellowship, 1991-1992.

Virginia Tech Department of Chemistry Undergraduate Research Scholarship, 1987-1990.

SOCIETIES AND AFFILIATIONS

Alpha Chi Sigma Chemistry Honor Society

Phi Eta Sigma National Honor Society

Golden Key National Honor Society

American Chemical Society, Analytical Chemistry Division

American Chemical Society, Chromatography Division

American Chemical Society, Philadelphia Local Section (Awards Committee)

The Society of Environmental Toxicology and Chemistry (SETAC)

American Institute of Conservation (AIC)

Delaware Valley Mass Spectrometry Discussion Group, Coordinator

FUNDING

- Villanova Institute for Teaching and Learning (VITAL) *Interdisciplinary Grant* "Italian Renaissance Art through the Lens of Science", (6/2015-6/2016) \$12,500.
- North American Maple Syrup Council (through the USDA) "Measuring Imidacloprid Contamination of Maple Sap and Syrup following Prescribed Asian Longhorned Beetle Quarantine Treatment" (1/2013-1/2015) \$12,136.
- Villanova Summer Research Fellowship "Scientific Analysis of Pietro da Cortona's *The Triumph of David*", (6/2014-9/2014) \$12,500.
- The Kress Foundation "Using Technical, Collaborative, and Digital Means to Promote the Conservation of Pietro da Cortona's *David and Goliath*", (9/2014-12/2015) \$24,000.
- National Science Foundation Award No. 1241473/1241469 "Collaborative Research: Materials Characterization toward Understanding the Cleaning and Preservation of Painted Modern Art Surfaces", (9/2012-9/2015) \$300,000 (\$210,000 Villanova, \$90,000 University of Delaware).
- National Park Service (through the University of Tennessee) "Hemlock Woolly Adelgid Insecticide Treatment Assessment in Great Smoky Mountains National Park" (10/2010-10/2013) \$189,000.
- National Science Foundation Award No. 0718530 "RUI: Development of alternative solvent extraction methods and tandem mass spectrometric analysis of polybrominated diphenyl ethers in automobile interior dust", (9/2007-9/2010) \$191,000.
- U.S. Department of Agriculture, U.S. Forest Service "Evaluation of imidacloprid and metabolites in hemlock treated with imidacloprid" (7/2004-6/2010) \$110,144.
- U.S. Department of Agriculture, U.S. Forest Service "Measurement of phytochemicals in *Tsuga* cultivars and an evaluation of their role in host resistance to the hemlock woolly adelgid (*Adelges tsugae*)" (7/2005-9/2007) \$75,000.
- National Science Foundation Award No. IOS-0720018 (role: co-investigator) "RIG: Chemical signaling, paternity, and the heritability of promiscuity: sexual selection in a polygamous moth", (9/2007-9/2009) \$146,007.
- National Science Foundation Award No. 0619394 "MRI: Acquisition of a Liquid Chromatograph/Mass Spectrometer", (8/2006-8/2009) \$329,236.
- Villanova Center for Undergraduate Research, CURF funding for summer research students (2005, 2006, 2008, 2011).
- Villanova Institute for Teaching and Learning (VITAL) "Addition of a Painting Authentication/Conservation Laboratory to the CHM3501 Instrumental Analysis Laboratory", (2006) \$6,000.
- U.S. Environmental Protection Agency "Pollution Prevention of Pharmaceutically Active Chemicals from University Dormitories and Municipal Wastewater Treatment Plants" (11/2005 – 10/2007) \$133,750.
- Penn State Undergraduate Research Equipment Grant "Purchase of a Milli-Q water purification system" (2003) \$8,000.
- U.S. Department of Agriculture, U.S. Forest Service "Measurement and function of terpenoids in *Adelges tsugae* infested *Tsuga*" (2002-2004) \$70,000.
- Penn State, Dr. Richard J. & Sally Matthews Award for Scholarly Activity, (2003) \$1,000.
- Greater Scranton Penn State Chapter Faculty Research Endowment (2003-2004) \$1,600.
- Penn State Research and Development Grant (2001-2004) \$7,500.

PUBLICATIONS

1. R.E. Sievers, S.B. Turnipseed, L. Huang and A.F. Lagalante "Volatile Barium β -Diketonates for Use as MOCVD Precursors" *Coordination Chemistry Reviews* **128(1-2)**, 285-291 (1993).
2. B.M. Hybertson, K.S. Rutledge, C.J. Beehler, J.E. Repine, A.F. Lagalante and R.E. Sievers "Pulmonary Drug Delivery of Fine Aerosol Particles from Supercritical Fluids" *Journal of Aerosol Medicine* **6(4)**, 275-283 (1993).
3. B.N. Hansen, A.F. Lagalante, T.J. Bruno and R.E. Sievers "High-Pressure Cell for Solubility Measurements in Supercritical Fluids" *Reviews of Scientific Instrumentation* **65(6)**, 2112-2114 (1994).
4. A.F. Lagalante, B.N. Hansen, T.J. Bruno and R.E. Sievers "Solubility of Copper(II) and Chromium(III) β -Diketonates in Supercritical Carbon Dioxide" *Inorganic Chemistry* **34(23)**, 5781-5785 (1995).
5. A.F. Lagalante, R.J. Jacobson and T.J. Bruno "UV/Vis Spectroscopic Evaluation of 4-Nitropyridine N-Oxide as a Solvatochromic Indicator for the Hydrogen-Bond Donor Ability of Solvents" *Journal of Organic Chemistry* **61(18)**, 6404-6406 (1996).
6. A.F. Lagalante and T.J. Bruno "Modeling the Water-Supercritical CO₂ Partition Coefficients of Organic Solutes using a Linear Solvation Energy Relationship" *Journal of Physical Chemistry, B* **102(6)**, 907-909 (1998).

7. A.F. Lagalante, R.L. Hall and T.J. Bruno "Kamlet-Taft Solvatochromic Parameters of the Sub- and Supercritical Fluorinated Ethane Solvents" *Journal of Physical Chemistry, B* **102(34)**, 6601-6604 (1998).
8. B.F. Graham, J.M. Harrowfield, R.D. Trengrove, A.F. Lagalante and T.J. Bruno "Solubility of p-t-Butylcalix[n]arenes (n=4,6,8) in Supercritical Carbon Dioxide: A Comparison of Static and Dynamic Measurement Techniques" *Fluid Phase Equilibria* **151(2)**, 829-838 (1998).
9. A.F. Lagalante, A.M. Clarke and T.J. Bruno "Modeling the Water-R134a Partition Coefficients of Organic Solutes using a Linear Solvation Energy Relationship" *Journal of Physical Chemistry, B* **102(44)**, 8889-8892 (1998).
10. A.F. Lagalante, C. Wood, A.M. Clarke and T.J. Bruno "The Kamlet-Taft Solvatochromic Parameters for 25 Glycol Ether Solvents and Glycol Ether Aqueous Solutions" *Journal of Solution Chemistry* **27(10)**, 887-900 (1998).
11. A.F. Lagalante, A.M. Clarke and T.J. Bruno "Modeling the Water-R143a Partition Coefficients of Organic Solutes using a Linear Solvation Energy Relationship" *Journal of Physical Chemistry, B* **103(34)**, 7319-7323 (1999).
12. A.F. Lagalante "Atomic Absorption Spectroscopy: A Tutorial Review" *Applied Spectroscopy Reviews* **34(3)**, 173-190 (1999).
13. A.F. Lagalante "Atomic Emission Spectroscopy: A Tutorial Review" *Applied Spectroscopy Reviews* **34(3)**, 191-207 (1999).
14. A.F. Lagalante, M. Spadi and T.J. Bruno "Kamlet-Taft Solvatochromic Parameters of Eight Alkanolamines" *Journal of Chemical and Engineering Data* **45(2)**, 382-385 (2000).
15. W.C. Andersen, R.E. Sievers, A.F. Lagalante, and T.J. Bruno "Solubilities of Cerium(IV), Terbium(III), and Iron(III) β -Diketonates in Supercritical Carbon Dioxide" *Journal of Chemical and Engineering Data* **46(5)**, 1045-1049 (2001).
16. B.F. Graham, J.M. Harrowfield, R.D. Trengrove, A.F. Lagalante and T.J. Bruno "Host:Guest Complex Formation Between Carbon Dioxide and the p-t-Butylcalixarenes" *Journal of Inclusion Phenomena* **43(3-4)**, 179-182 (2002).
17. A.F. Lagalante, A. Abdulagatov, and T.J. Bruno "Kamlet-Taft Thermosolvatochromic Parameters of Hydrofluoroethers and Hydrofluoroether Azeotropic Mixtures" *Journal of Chemical and Engineering Data* **47(1)**, 47-51 (2002).
18. A.F. Lagalante and M.E. Montgomery "Analysis of Terpenoids from Tsuga Species by Solid-Phase Microextraction/Gas Chromatography/Ion-Trap Mass Spectrometry" *Journal of Agricultural and Food Chemistry* **51(8)**, 2115-2120 (2003).
19. A.F. Lagalante and M.A. Felter "Silylation of acrylamide for analysis by solid-phase microextraction/gas chromatography/ion-trap mass spectrometry" *Journal of Agricultural and Food Chemistry* **52(12)**, 3744-3748 (2004).
20. A.F. Lagalante, N. Lewis, M.E. Montgomery and K.S. Shields "Temporal and Spatial Variation of Terpenoids in Eastern Hemlock (*Tsuga canadensis*) in Relation to Feeding by Adelges tsugae" *Journal of Chemical Ecology* **32(11)**, 2389-2403 (2006).
21. T. Rowhani and A.F. Lagalante "A Colorimetric Assay for the Determination of Polyhexamethylene Biguanide in Pool and Spa Water using Nickel-Nioxime" *Talanta* **71(2)**, 964-970 (2007).
22. A.F. Lagalante and P.W. Greenbacker "Flow injection analysis of imidacloprid in natural waters and agricultural matrixes by photochemical dissociation, chemical reduction, and nitric oxide chemiluminescence detection" *Analytica Chimica Acta* **590**, 151-158 (2007).
23. J. Tierney, N. Colasante, J. Eagles, S. Kelly, G. Lehmike, O. Lucas, C. Mannikarottu, O. Mehmood, M.D. Nguyen, V. Raj, J. Tsai, V. Koyfman, L.M. Mascavage, and A.F. Lagalante "A Comparison of Substituent Effects Using ^{13}C Chemical Shifts for a Series of Substituted 2-Phenyl-3-pyridyl-1,3-thiazolidin-4-ones Compared to Similarly Substituted 1,3-thiazolidin-4-ones" *Heterocyclic Communications* **13(6)**, 335-342 (2007).
24. A.F. Lagalante, M.E. Montgomery, F. Calvosa and M. Mirzabeigi "Characterization of Terpenoid Volatiles from Cultivars of Eastern Hemlock (*Tsuga canadensis*)" *Journal of Agricultural and Food Chemistry* **55(26)**, 10850-10856 (2007).
25. A.F. Lagalante and T.D. Oswald "Analysis of Polybrominated Diphenyl Ethers (PBDEs) by Liquid Chromatography with Negative-Ion Atmospheric Pressure Photoionization Tandem Mass Spectrometry (LC/NI-APPI/MS/MS): Application to House Dust" *Analytical and Bioanalytical Chemistry* **391(6)**, 2249-2256 (2008).
26. J. Tierney, V. Koyfman, K. Cannon, L.M. Mascavage, and A.F. Lagalante "A Second Study – Predicting the ^{13}C Chemical Shifts For a Series of Substituted-3-(4-methoxyphenyl)-2-phenyl-1,3-thiazolidin-4-ones" *Heterocyclic Communications* **14(6)**, 452-460 (2008).

27. A.F. Lagalante T.D. Oswald, and F.C. Calvosa "Polybrominated Diphenyl Ether (PBDE) Levels in Dust from Previously Owned Automobiles at United States Dealerships" *Environment International* **35(3)**, 539-544 (2009).
28. A.M. Grannas and A.F. Lagalante "So These Numbers Really Mean Something? A Role Playing Scenario-Based Approach to the Undergraduate Instrumental Analysis Laboratory" *Journal of Chemical Education* **87(4)**, 416-418 (2010).
29. F.C. Calvosa and A.F. Lagalante "Supercritical Fluid Extraction of Polybrominated Diphenyl Ether (PBDE) Levels from House Dust with 1,1,1,2-Tetrafluoroethane (R134a)" *Talanta* **80(3)**, 1116-1120 (2010).
30. M. Eisenback, S.M. Salom, L.T. Kok and A.F. Lagalante "Lethal and sublethal effects of imidacloprid on hemlock woolly adelgid (*Adelges tsugae*, Hemiptera: Adelgidae) and two introduced predator species in the laboratory" *Journal of Economic Entomology* **103(4)**, 1222-1234 (2010).
31. A.F. Lagalante, C.S. Shedden, and P.W. Greenbacker "Levels of Polybrominated Diphenyl Ethers (PBDEs) in Dust from Personal Automobiles in Conjunction with Studies on the Photochemical Degradation of Decabromodiphenyl Ether (BDE-209)" *Environment International* **37(5)**, 899-906 (2011).
32. C.A. Kelly, A.J. Norbutus, A.F. Lagalante and V.K. Iyengar "Male courtship pheromones are indicators of genetic quality in an arctiid moth (*Utetheisa ornatrix*)" *Behavioral Ecology* **23(5)**, 1009-1014 (2012).
33. R.C. Wolbers, A. Norbutus and A. Lagalante "Cleaning of Acrylic Emulsion Paints: Preliminary Extractive Studies with Two Commercial Paint Systems", New Insights into the Cleaning of Paintings: Proceedings from the Cleaning 2010 International Conference, Universidad Politécnic de Valencia and Museum Conservation Institute, Eds. Marion F. Mecklenburg, A. Elena Charola, and Robert J. Koestler, *Smithsonian Contributions to Museum Conservation*, no. 3 (2013).
34. K. Cannon, L. Mascavage, J. Tierney, K. Kistler, H. Yennawar, A. Lagalante and P. Sonnett "An Experimental and Theoretical Conformational Study of a Series of Substituted 3-cyclohexyl-2-phenyl-1,3-thiazolidin-4-ones" *International Journal of Chemistry* **5(3)**, 1-11 (2013).
35. L.J. Silverberg, E.R. Bear, K.N. Foose, K.A. Kirkland, R.R. McElvaney, K. Cannon, J. Tierney, S. Lascio, K. Mesfin, D. Mitchell, S. Sharkey, L. So, J. Treichel, M. Waxman, A.F. Lagalante "Verifying the predictability of the ¹³C chemical shifts for a series of substituted-2-(4-chlorophenyl)-3-phenyl-1,3-thiazolidin-4-ones" *International Journal of Chemistry* **5(4)**, 120-127 (2013).
36. C.E. Dillon, A.F. Lagalante and R.C. Wolbers "Aqueous cleaning of acrylic emulsion paint films. The effect of solution pH, conductivity and ionic strength on film swelling and surfactant removal" *Studies in Conservation* **57(1)**, 52-62 (2014).
37. B.M. Eisenback, S.M. Salom, L.T. Kok and A.F. Lagalante "Impacts of Trunk and Soil Injections of Low Rates of Imidacloprid on Hemlock Woolly Adelgid (Hemiptera: Adelgidae) and Eastern Hemlock (Pinales: Pinaceae) Health" *Journal of Economic Entomology* **107(1)**, 250-258 (2014).
38. T.P. Umile, P.J. McLaughlin, K.R. Johnson, S. Honarvar; A.L. Blackman, E.A. Burnynski, R.W. Davis, T.L. Teotonio, G.W. Hearn, C.A. Hughey, A.F. Lagalante, and K.P.C. Minbiole "Nonlethal Amphibian Skin Swabbing of Cutaneous Natural Products for HPLC Fingerprinting" *Analytical Methods* **6**, 3277-3284 (2014).
39. D. McGarity, J. Tierney and A. Lagalante "An Anomalous Hammett Correlation for a Series of Substituted 3-Benzyl-2-phenyl-1,3-thiazolidin-4-ones" *International Journal of Chemistry* **6(4)**, 1-7 (2014).
40. R.S. Cowles, A. Lagalante and K. Lombard "Imidacloprid contamination of maple sap following Asian longhorned beetle quarantine treatment" *Maple Syrup Digest* **26A(3)**, 22-27 (2014).
41. M. Rotella, A. Briegel, J. Hull, A. Lagalante and R. Giuliano "Synthesis and antibacterial activity of antibiotic-functionalized graphite nanofibers" *Journal of Nanomaterials* **2015**, 1-10 (2015).
42. K. Cannon, D. Gandla, S. Lauro, L. Mascavage, L. Silverberg, J. Tierney and A. Lagalante "Selective Synthesis of Ortho-substituted 3-Cyclohexyl-2-phenyl-1,3-thiazolidin-4-one Sulfoxides and Sulfones by S-Oxidation with Oxone" *International Journal of Chemistry* **7(2)**, 73-84 (2015).
43. L.J. Silverberg, C.N. Pacheco, A. Lagalante, K.C. Cannon, J.T. Bachert, Y. Xie, L. Baker and J.A. Bayliff "Synthesis and Spectroscopic Properties of 2,3-Diphenyl-1,3-thiaza-4-one Heterocycles" *International Journal of Chemistry* **7(2)**, 150-162 (2015).
44. E.P. Benton, J.F. Grant, R.J. Webster, R.J. Nichols, R.S. Cowles, A.F. Lagalante and C.I. Coots "Assessment of Imidacloprid and Its Metabolites in Foliage of Eastern Hemlock Multiple Years Following Treatment for Hemlock Woolly Adelgid, *Adelges tsugae*, in Forested Conditions" *Journal of Economic Entomology* **108(6)**, 2672-2682 (2015).
45. L.J. Silverberg, K.A. Kistler, K.A. Brobst, H. Yennawar, A.F. Lagalante, G. He, K. Ali, A. Blatt, S.B. Foster, D.B. Grossman, S. Hegel, M.J. Minehan, D. M. Valinsky and J.G. Yeasted "Reactions of the

- halonium ions of carenes and pinenes: an experimental and theoretical study" *European Journal of Chemistry* **6(4)**, 430-443 (2015).
46. I. Ziraldo, K. Watts, A. Luk, A.F. Lagalante and R.C. Wolbers "The influence of temperature and humidity on swelling and surfactant migration in acrylic emulsion paint films" *Studies in Conservation* **61(4)**, 209-221 (2016).
 47. A.F. Lagalante and R.C. Wolbers, "The Cleaning of Acrylic Paintings. New Particle-Based Water-in-Oil Emulsifiers" in *Dall'olio all'acrilico, dall'impressionismo all'arte contemporanea. Studi, ricerche, indagini scientifiche ed interventi conservativi*, Proceedings of VII Congresso Internazionale Colore e Conservazione (CESMAR7), il prato Publishing, Milan (2016) p. 163-176.
 48. E.P. Benton, J.F. Grant, R.S. Cowles, R.J. Webster, R.J. Nichols, A.F. Lagalante and C.I. Coots "Assessing relationships between tree diameter and long-term persistence of imidacloprid and olefin to optimize imidacloprid treatments on eastern hemlock" *Forest Ecology and Management* **370**, 12-23, (2016).
 49. E.P. Benton, J.F. Grant, R.J. Webster, R.S. Cowles, R.J. Nichols, A.F. Lagalante, and C.I. Coots "Hemlock Woolly Adelgid and Hemlock Canopy Health Numerous Years after Imidacloprid Basal Drench Treatments: Implications for Management Programs" *Journal of Economic Entomology* **109(5)**, 2125-2136 (2016).
 50. C. Mannikarottu, J. Tierney, K. Cannon, L. Mascavage and A. Lagalante "A Study of 13C Chemical Shifts for a Series of 2-(4-methoxyphenyl)-substituted-3-phenyl-1,3-thiazolidin-4-ones" *International Journal of Chemistry* **8(2)**, 43-50 (2016).
 51. L.J. Silverberg, C. Pacheco, A. Lagalante, J. Tierney, J.T. Bachert, J.A. Bayliff, R.V. Bendinsky, A.S. Cali, L. Chen, A.D. Cooper, M.J. Minehan, C.R. Mroz, D.J. Noble, A.K. Weisbeck, Y. Xie and Z. Yanga "Synthesis and spectroscopic properties of a series of novel 2-aryl-3-phenyl-2,3-dihydro-4H-1,3-benzothiazin-4-ones" *ARKIVOK* **accepted** (2016).
 52. R. Turcotte, A. Lagalante, J. Jones, T. Elliot, A. Billings and Y. Park "Spatial and Temporal Distribution of Imidacloprid within the Crown of Eastern Hemlock" *Journal of Insect Science* **17(1)**, 1-7 (2017).
 53. A.F. Lagalante and R.C. Wolbers, "Particle-Based Silicone Cleaning Emulsions. Studies in Model Paint Systems for the Cleaning of Water Sensitive Artworks" in *GELS in CONSERVATION*, Eds. Richard Wolbers, Bronwyn Ormsby, and James Black, Archetype Publications: London (to be published Fall 2017).

PATENTS

WO 2000008117 A1 "Process for the Removal of Carbonyl Sulfide from Liquefied Petroleum Gas" T.J. Bruno, A.F. Lagalante (January 1, 2002).

WO 2014143705 A1, CA 2906617 A1 "Protective water reversible clear coating for substrates" R.C. Wolbers, A.F. Lagalante (March 14, 2014).