

Elizabeth J. O. Atkinson

Professor of Chemistry
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Research Objective or Personal profile:

My scientific interests include both organic and analytical chemistry to investigating novel molecular and advanced materials using Atomic Force Microscopy, UV-vis, Fluorescence and Surface Enhanced Raman Spectroscopy (SERS) and electrochemistry. Each summer, I collaborate with students on paid internships at Linfield to design and carryout original experiments so that we can present our novel scientific results are local, regional and national conferences each year.

Education:

University of Arizona, Tucson, Arizona, Chemistry, Ph.D. 1995

Dissertation: *Supramolecular Assemblies of Octasubstituted Phthalocyanines: Synthesis and Characterization.*

Creighton University, Omaha, Nebraska, Major: Chemistry, Minor: Mathematics, B.S. 1988

Professional Appointments:

- Department Chair, Professor, Linfield College, 2016-present
- Professor, Linfield College, 2015-present
- Associate Dean of Faculty, Linfield College, 2005-2010
- Associate Professor, Linfield College, 2003-present
- Assistant Professor, Linfield College, 1998-2003
- Visiting Professor, Linfield College, 1997-1998
- ASEE/ONR Post-doctoral Fellow, Naval Research Laboratory, 1996-1997
- Adjunct Faculty, Pima Community College, 1994-1995
- Graduate Student Researcher at University of Arizona, 1989-1995

Publications:

Atkinson, E.J.O., Gilbert, B.D., *Carlson, E., "Detection of 4',6-diamidino-2-phenylindole within silver-doped silica sol- and aerogels using surface-enhanced Raman spectroscopy." *Journal of Non-Crystalline Solids*, **2014**, *405*, 16-20.

Murray, J.L., **Atkinson, E.J.O.**, Gilbert, B.D., Kruchten, A.E., "A Novel Interdisciplinary Science Experience for Undergraduates Across Introductory Biology, Chemistry, and Physics Courses," *Journal of College Science Teaching*, *43*, **2014**, 46-51.

Chambers, R.C., **Osburn Atkinson, E.J.**, *McAdams, D.H., *Hayden, E.J., *Ankeny-Brown, D.J., "Creating monolayers and thin films of a novel polyoxotungstate, $\{[\text{CH}_3(\text{CH}_2)_{11}\text{Si}]_2\text{OSiW}_{11}\text{O}_{39}\}^{4-}$ using the Langmuir-Blodgett technique," *Chem. Comm.*, **2004**, 2456-2457.

*Qadir, L.R., **Osburn-Atkinson, E.J.**, Swider-Lyons, K.E., Cepak, V.M., Rolison, D.R., "Sonochemically Induced Decomposition of Energetic Materials in Aqueous Media," *Chemosphere*, **2002**.

*Morris, C.A., Rolison, D.R., Swider-Lyons, K.E., **Osburn-Atkinson, E.J.**, Merzbacher, C.I., "Modifying Nanoscale Silica with Itself: A Method to Control Surface Properties of Silica Aerogels Independently of Bulk Structure," *Journal of Non-Crystalline Solids*, **2001**, 285,29-36.

Smolenyak, P., **Osburn, E.J.**, Chen, S-Y., Chau, L-K., O'Brien, D.F., Armstrong, N.R., "Spectroscopic and Electrochemical Characterization of Langmuir-Blodgett Films of (2,3,9,10,16,17,23,24-Octakis-((2-benzyloxy) ethoxy)phthalocyaninato)copper and its Metal Free Analogue," *Langmuir* **1997**, 13, 6568-6576.

Osburn, E.J., Schmidt, A., Chau, L-K., Chen, S-Y., Smolenyak, P., Armstrong, N.R. and O'Brien, D.F., "Supramolecular Fibers From a Liquid Crystalline Octasubstituted Copper Phthalocyanine," *Advanced Materials*, **1996**, 8, 926.

Osburn, E.J., Chau, L-K., Chen, S-Y., Collins, N., O'Brien, D.F. and Armstrong, N.R., "Novel Amphiphilic Phthalocyanines: Formation of Langmuir-Blodgett and Cast Thin Films," *Langmuir*, **1996**, 12, 4784-4796.

Chau, L-K., **Osburn, E.J.**, Armstrong, N.R., O'Brien, D.F., and Parkinson, B.A. "Dye Sensitization with Octa Substituted Liquid Crystalline Phthalocyanines," *Langmuir*, **1994**, 10, 351-353.

Nebesny, K.W., Collins, G.E., Lee, P.A., Chau, L-K., Danziger, J., **Osburn, E.**, Armstrong, N.R. "Organic/Inorganic—Molecular Beam Epitaxy (O/I-MBE): Formation of an Ordered Phthalocyanine/SnS₂ Heterojunction," *Chem. Mater.* **1991**, 3, 829-838.

Grants and Fellowships:

NSF 15-504 DMR-Major Research Instrumentation Grant, MRI: Acquisition of an atomic force microscope to advance interdisciplinary research and training, PI-Jennifer Heath, co-PI with David Altman (Willamette University) and Michael Crosser (Linfield College), \$286,769, 2018, Funded.

NSF-Travel Grant, Chemistry Leadership COACH Workshop \$800, 2008. Funded.

NSF-Travel Grant, Chemistry Leadership COACH Workshop \$800, 2006. Funded.

Murdock Charitable Trust-Science Division Grant, co-PI with Paul Davis, \$175K, 2000-2003. Funded.

Undergraduate Cooperative Access to Information Resources (UCAIR) Grant-\$20K, co-PI with Carol McCulley, Library grant for access to ACS Journals online, 1999-2003. Funded

Conferences with students:

Perez, Luis; Atkinson, E., "Plasmon-free surface-enhanced Raman spectroscopy on TiO₂-graphene oxide inverse opal substrates," National Meeting of the American Chemical Society, Orlando, FL, March 31, 2019.

Perez, Luis; Atkinson, E., "Investigation of silica/titania composite materials doped with graphene oxide (GO) as substrates for plasmon-free surface enhanced Raman spectroscopy and analysis of GO defect density after thermal reduction" National Meeting of the American Chemical Society, New Orleans, LA, March 19, 2018.

Mason, D., Atkinson, E., "Stabilization of 4',6-Diamidino-2-Phenylindole (DAPI) in base-catalyzed sol-gels containing silver nanoparticles vs. solution using Surface Enhanced Raman

- Spectroscopy (SERS)," National Meeting of the American Chemical Society, San Francisco, CA, April 2-6, 2017.
- Wyatt, B. Atkinson, E., "SERS detection of graphene oxide in acid-catalyzed sol-gels," National Meeting of the American Chemical Society, San Francisco, CA, April 2-6, 2017.
- Perryman, J.T.; Atkinson, E.J.O., "Physical Characterization of Organically Modified Polyoxometalates Through Langmuir-Blodgett Deposition and Fluorescence Microscopy," National Meeting of the American Chemical Society, San Diego, CA, March 13-17, 2016.
- Corrado, T., Atkinson, E.J.O., Gilbert, B.D. "Examination of acid- and base-catalyzed silica sol-gels, xerogels, and aerogels containing silver nanoparticles and 4-mercaptobenzoic acid using surface-enhanced Raman spectroscopy," National Meeting of the American Chemical Society, San Diego, CA, March 13-17, 2016.
- Trujillo, N.; Atkinson, E.J.O., Gilbert, B.D. "Examination of 4',6-diamidino-2-phenylindole in Silica Sol-gels Gels through Surface-Enhanced Raman Spectroscopy and Fluorometry," National Meeting of the American Chemical Society, San Diego, CA, March 13-17, 2016.
- Perryman, J.T.; Atkinson, E.J.O., Chambers, R.C., "Investigating a hybrid organosilyl class of Dawson-Wells polyoxometalates through Langmuir-Blodgett," National Meeting of the American Chemical Society, Denver, CO, March 22-26, 2015.
- Carlson, E.; Atkinson, E.J.O.; Gilbert, B.D. "Silica sol-gels containing calcein blue as surface-enhanced Raman spectroscopy (SERS) sensors for metal ions," National Meeting of the American Chemical Society, Denver, CO, March 22-26, 2015.
- Mason, D., Atkinson, E., "Stabilization of 4',6-Diamidino-2-Phenylindole (DAPI) in base-catalyzed sol-gels containing silver nanoparticles vs. solution using Surface Enhanced Raman Spectroscopy (SERS)," National Meeting of the American Chemical Society, San Francisco, CA, April 2-6, 2017.
- Wyatt, B. Atkinson, E., "SERS detection of graphene oxide in acid-catalyzed sol-gels," National Meeting of the American Chemical Society, San Francisco, CA, April 2-6, 2017.
- Perryman, J.T.; Atkinson, E.J.O., "Physical Characterization of Organically Modified Polyoxometalates Through Langmuir-Blodgett Deposition and Fluorescence Microscopy," National Meeting of the American Chemical Society, San Diego, CA, March 13-17, 2016.
- Corrado, T., Atkinson, E.J.O., Gilbert, B.D. "Examination of acid- and base-catalyzed silica sol-gels, xerogels, and aerogels containing silver nanoparticles and 4-mercaptobenzoic acid using surface-enhanced Raman spectroscopy," National Meeting of the American Chemical Society, San Diego, CA, March 13-17, 2016.
- Trujillo, N.; Atkinson, E.J.O., Gilbert, B.D. "Examination of 4',6-diamidino-2-phenylindole in Silica Sol-gels Gels through Surface-Enhanced Raman Spectroscopy and Fluorometry," National Meeting of the American Chemical Society, San Diego, CA, March 13-17, 2016.
- Perryman, J.T.; Atkinson, E.J.O., Chambers, R.C., "Investigating a hybrid organosilyl class of Dawson-Wells polyoxometalates through Langmuir-Blodgett," National Meeting of the American Chemical Society, Denver, CO, March 22-26, 2015.

- Carlson, E.; Atkinson, E.J.O.; Gilbert, B.D. "Silica sol-gels containing calcein blue as surface-enhanced Raman spectroscopy (SERS) sensors for metal ions," National Meeting of the American Chemical Society, Denver, CO, March 22-26, 2015.
- Corrado, T., Atkinson, E.J.O., Gilbert, B.D. "Examination of silica sol-gels and aerogels containing silver nanoparticles and 4-mercaptobenzoic acid using surface-enhanced Raman spectroscopy," National Meeting of the American Chemical Society, Denver, CO, March 22-26, 2015.
- Romero, K.; Diamond, J.J.; Atkinson, E.J.O. "Chemical characteristics of precursors to (+)-JQ1: A computational study," 247th National Meeting of the American Chemical Society, Dallas, TX, March 16-20, **2014**. (Published Abstracts).
- Nason, M.M.; Atkinson, E.J.O. "Characterization of silica aerogel-gold nanoparticle modified carbon paste electrodes with ferrocene by electrochemical methods," 247th National Meeting of the American Chemical Society, Dallas, TX, March 16-20, **2014**. (Published Abstracts).
- Carlson, E.; Atkinson, E.J.O.; Gilbert, B.D. "Detection of calcein blue in silver-doped silica sol-gels using surface-enhanced Raman spectroscopy," 247th National Meeting of the American Chemical Society, Dallas, TX, March 16-20, **2014**. (Published Abstracts).
- Carlson, E.; Atkinson, E.J.O.; Gilbert, B.D. "Surface-enhanced Raman spectroscopy (SERS) based detection of 4',6-diamidino-2-phenylindole (DAPI) using silver doped silica sol- and aerogel substrates," Oregon Academy of Science, University of Oregon, February 2014, Published in *Proceedings of the Oregon Academy of Science LXXIII* **2014**.
- Cunningham, A.; Atkinson, E.J.O.; Gilbert, B.D. "Surface-enhanced Raman spectroscopy of 4-mercaptobenzoic acid in sol gels, xerogels, and aerogels," 245th National Meeting of the American Chemical Society, New Orleans, LA, April 7-11, **2013**. (Published Abstracts).
- Hillyer, J.T.; Scheafer, D.R.; Atkinson, E.J.O. "Synthesis of (2-amino-4,5-dimethylthiophen-3-yl)(4-chlorophenyl)methanone (S2) and ongoing synthesis of selective bromodomain inhibitor (+)-JQ," 245th National Meeting of the American Chemical Society, New Orleans, LA, April 7-11, **2013**. (Published Abstracts).
- Lemieux, E.; Atkinson, E.J.O.; Chambers, R.C. "Langmuir-Blodgett studies of organosilyl derivatized Dawson polyoxotungstates," 245th National Meeting of the American Chemical Society, New Orleans, LA, April 7-11, **2013**. (Published Abstracts).
- Carlson, E.; Atkinson, E.J.O.; Gilbert, B.D. " Investigation of the surface-enhanced Raman scattering of 4', 6-diamidino-2-phenylindole in silver-doped silica sol-gel," 245th National Meeting of the American Chemical Society, New Orleans, LA, April 7-11, **2013**. (Published Abstracts).
- Diamond, J.J.; Atkinson, E.J.O.; Romero, K.J. "Theoretical studies of several small-ring precursors to (+)-JQ1," 245th National Meeting of the American Chemical Society, New Orleans, LA, April 7-11, **2013**. (Published Abstracts).
- Scheafer, D.; Lemieux, E.; Hillyer, J.; Atkinson, E.J.O. "Synthesis of (2-amino-4,5-dimethylthiophen-3-yl)(4-chlorophenyl) methanone (S); A precursor to selective bromodomain

- inhibitor, JQ1," Oregon Academy of Science, Willamette University, February 2014, Published in *Proceedings of the Oregon Academy of Science LXXII* **2013**.
- Cunningham, A.; Atkinson, E.J.O.; Gilbert, B. D. "Surface-enhanced Raman Spectroscopy of 4-mercaptobenzoic acid in SiO₂-Ag colloid substrates," Oregon Academy of Science, Willamette University, February 2014, Published in *Proceedings of the Oregon Academy of Science LXXII* **2013**.
- Romero, K.; Diamond, J.J.; Atkinson, E.J.O. "Theoretical study of chemical characteristics of the synthetic precursors to (+) JQ1," Oregon Academy of Science, Willamette University, February 2014, Published in *Proceedings of the Oregon Academy of Science LXXII* **2013**.
- Carlson, E.; Osburn Atkinson, E.J.; Gilbert, B. D. "Detection of 4'6-diamidino-2-phenylindole adsorbed to silver colloid in silica sol gels using surfaced-enhanced Raman spectroscopy," Oregon Academy of Science, Willamette University, February 2014, Published in *Proceedings of the Oregon Academy of Science LXXII* **2013**.
- Cunningham, A.; Osburn Atkinson, E.J.; Gilbert, B. D. "Optimization of 4-mercaptobenzoic acid in SiO₂-Ag colloid sol-gels using surface-enhanced Raman spectroscopy," 243th National Meeting of the American Chemical Society, San Diego, CA, March 25-29, **2012**. (Published Abstracts).
- Cunningham, A.; Osburn Atkinson, E.J.; Gilbert, B. D. "Optimization of 4-mercaptobenzoic acid in SiO₂-Ag colloid sol-gels using surface-enhanced Raman spectroscopy," Oregon Academy of Science, PCC-Sylvania, Portland, OR, February 2012, Published in *Proceedings of the Oregon Academy of Science LXXI* **2012**.
- Cunningham, A.; Osburn Atkinson, E.J.; Gilbert, B. D. "Optimization of 4-mercaptobenzoic acid in SiO₂-Ag colloid aerogels using surface-enhanced Raman spectroscopy," M. J. Murdock Undergraduate Research Conference, Seattle University, Seattle, Wa, October **2011**.
- Edwards, M.; Osburn Atkinson, E.J.; Chambers, R.C. "Reduction Kinetics in Heteropoly Blue Species of Organically Modified Polyoxotungstates," Annual Linfield College Science Symposium and Creative Projects Symposium, May 2012.
- Edwards, M.; Osburn Atkinson, E.J.; Chambers, R.C. "Reduction Kinetics in Heteropoly Blue Species of Organically Modified Polyoxotungstates," 243th National Meeting of the American Chemical Society, San Diego, CA, March 25-29, **2012**. (Published Abstracts).
- Edwards, M.; Osburn Atkinson, E.J.; Chambers, R.C. "Reduction Kinetics in Heteropoly Blue Species of Organically Modified Polyoxotungstates," Oregon Academy of Science, PCC-Sylvania, Portland, OR, February 2012, Published in *Proceedings of the Oregon Academy of Science LXXI* **2012**.
- Carpenter, A.; Osburn Atkinson, E.J.; Chambers, R.C. "Characterization of Organically Modified Dawson-Wells Polyoxotungstates by Electrochemical and Langmuir-Blodgett Techniques," 241th National Meeting of the American Chemical Society, Anaheim, CA, March 27-31, **2011**. (Published Abstracts).
- Carpenter, A.; Osburn Atkinson, E.J.; Chambers, R.C. "Characterization of Organically Modified Dawson-Wells Polyoxotungstates by Langmuir-Blodgett and Electrochemical Techniques,"

- Oregon Academy of Science, PCC-Sylvania, Portland, OR, February 2011, Published in *Proceedings of the Oregon Academy of Science LXX* **2011**.
- Carpenter, A.; Osburn Atkinson, E.J.; Chambers, R.C. "Characterization of Three Novel Polyoxotungstates by Electrochemical Techniques," M. J. Murdock Undergraduate Research Conference, Linfield College, McMinnville, OR, October **2010**.
- Wong, M.; Osburn Atkinson, E.J.; Chambers, R.C. "Langmuir-Blodgett and electrochemical characterization of three novel alkyl substituted polyoxotungstates" 239th National Meeting of the American Chemical Society, San Francisco, CA, March 21-25, **2010**. (Published Abstracts).
- Wong, M.; Osburn Atkinson, E.J.; Chambers, R.C. "Characterization of Three Novel Polyoxotungstates by Langmuir-Blodgett and Electrochemical Techniques," Oregon Academy of Science, Concordia University, Portland, OR, February 2010, Published in *Proceedings of the Oregon Academy of Science LXIX* **2010**.
- Wong, M.; Osburn Atkinson, E.J.; Chambers, R.C. "Characterization of Three Novel Polyoxotungstates by Langmuir-Blodgett and Electrochemical Techniques," M. J. Murdock Undergraduate Research Conference, Gonzaga University, Spokane, WA, October **2009**.
- Sours, K.; Osburn Atkinson, E.J.; Gilbert, B.D. "Surface-enhanced Raman scattering of 4-mercaptobenzoic acid-functionalized silver-gold sol-gels" 237th National Meeting of the American Chemical Society, Salt Lake City, UT, March 22-26, **2009**. (Published Abstracts).
- Sours, K.; Osburn Atkinson, E.J.; Gilbert, B.D. "The Effect of Silver Colloids on Surface-Enhanced Raman Scattering of 4-Mercaptobenzoic Acid-Functionalized Sol-Gels," Oregon Academy of Science, Western Oregon University, Monmouth, OR, February 2009, Published in *Proceedings of the Oregon Academy of Science LXVIII* **2009**.
- Sours, K.; Osburn Atkinson, E.J.; Gilbert, B.D. "The Effect of Silver Colloids on Surface-Enhanced Raman Scattering of 4-Mercaptobenzoic Acid-Functionalized Sol-Gels," M. J. Murdock Undergraduate Research Conference, University of Puget Sound, Tacoma, WA, November **2008**.
- Lee, J.; McCann, T.; Osburn Atkinson, E.J. "Synthesis of polyaza macrocyclic hosts and characterization of fluorescent dye guest-host complexes," 235th National Meeting of the American Chemical Society, New Orleans, LA, April 6-10, **2008**. (Published Abstracts).
- Lee, J.; McCann, T.; Osburn Atkinson, E.J. "Fluorescent Dye Guest Complexes for Aqueous Detection of Pyrophosphates," M. J. Murdock Undergraduate Research Conference, Willamette University, Salem, OR October **2007**.
- Hong, Peter, Osburn Atkinson, E.J. "Synthesis of Macrocyclic Schiff Base Hosts," M. J. Murdock Undergraduate Research Conference, University of Portland, Portland, OR October **2006**.
- Nguyen, L.; Subban, C.; Osburn Atkinson, E.J. "Gratzel cell development using TiO₂ sol-gel copper octacarboxy- phthalocyanine dye methodology," 231th National Meeting of the American Chemical Society, Atlanta, GA, March 26-30, **2006**. (Published Abstracts).

- Chen, E.; Osburn Atkinson, E.J.; Chambers, R.C. "Cyclic voltammetry of novel organically tailed polyoxotungstate layers," 231th National Meeting of the American Chemical Society, Atlanta, GA, March 26-30, **2006**. (Published Abstracts).
- Nguyen, L.; Subban, C.; Osburn Atkinson, E.J. "Development of Gratzel cell using TiO₂ sol-gel copper octacarboxyphthalocyanine dye technique," Oregon Academy of Science, University of Oregon, Eugene, OR February 2006, Published in *Proceedings of the Oregon Academy of Science XLII* **2006**.
- Chen, E.; Osburn Atkinson, E.J.; Chambers, R.C. "Analysis of novel organically tailed polyoxotungstate layers using cyclic voltammetry," Oregon Academy of Science, University of Oregon, Eugene, OR February 2006, Published in *Proceedings of the Oregon Academy of Science XLII* **2006**.
- Nguyen, L.; Subban, C.; Osburn Atkinson, E.J. "Development of Gratzel cell using TiO₂ sol-gel copper octacarboxyphthalocyanine dye technique," M. J. Murdock Undergraduate Research Conference, Northwest Nazarene University, Nampa, ID, November **2005**.
- Chen, E.; Osburn Atkinson, E.J.; Chambers, R.C. "Analysis of novel organically tailed polyoxotungstate layers using cyclic voltammetry," M. J. Murdock Undergraduate Research Conference, Northwest Nazarene University, Nampa, ID, November **2005**.
- Corbari, M.; Arntz, H.; Osburn Atkinson, E.J. "Synthesis of a copper octacarboxylated phthalocyanine as a precursor in the formation of novel TiO₂ aerogel and xerogel materials," 229th National Meeting of the American Chemical Society, San Diego, CA, March 13-17, **2005**. (Published Abstracts).
- Osten, R.; Osburn Atkinson, E.J.; Chambers, R.C. "Electro- and photo-chemical reduction of novel organically tailed polyoxotungstates by cyclic voltammetry and uv-irradiation," 229th National Meeting of the American Chemical Society, San Diego, CA, March 13-17, **2005**. (Published Abstracts).
- Corbari, M.; Arntz, H.; Osburn Atkinson, E.J. "Synthesis of a copper octacarboxylated phthalocyanine as a precursor in the formation of novel TiO₂ aerogel and xerogel materials," Oregon Academy of Science, Oregon State University, Corvallis, OR February 2005, Published in *Proceedings of the Oregon Academy of Science XLI* **2005**.
- Osten, R.; Osburn Atkinson, E.J.; Chambers, R.C. "Electro- and photo-chemical reduction of novel organically tailed polyoxotungstates by cyclic voltammetry and uv-irradiation," Oregon Academy of Science, Oregon State University, Corvallis, OR February 2005, Published in *Proceedings of the Oregon Academy of Science XLI* **2005**.
- Corbari, M.; Arntz, H.; Osburn Atkinson, E.J. "Synthesis of a copper octacarboxylated phthalocyanine as a precursor in the formation of novel TiO₂ aerogel and xerogel materials," M. J. Murdock Undergraduate Research Conference, Lewis and Clark College, Portland, OR November **2004**.
- Osten, R.; Osburn Atkinson, E.J.; Chambers, R.C. "Electro- and photo-chemical reduction of novel organically tailed polyoxotungstates by cyclic voltammetry and uv-irradiation," M. J. Murdock Undergraduate Research Conference, Lewis and Clark College, Portland, OR November **2004**.

- Rivera, C.; Osburn Atkinson, E.J.; Chambers, R.C. "The Characterization of Novel Organically Tailed Polyoxotungstates by Cyclic Voltammetry," 227th National Meeting of the American Chemical Society, Anaheim, Ca, March 29, **2004**. (Published Abstracts).
- Kranak, V.; Osburn Atkinson, E.J. "Synthesis and UV Analysis of Liquid Crystalline Phthalocyanines," 227th National Meeting of the American Chemical Society, Anaheim, Ca, March 29, **2004**. (Published Abstracts).
- Rivera, C.; Osburn Atkinson, E.J.; Chambers, R.C. "The Characterization of Novel Organically Tailed Polyoxotungstates by Cyclic Voltammetry," Oregon Academy of Science, Portland State University, Portland, OR February 2004, Published in *Proceedings of the Oregon Academy of Science XL* **2004**.
- Kranak, V.; Osburn Atkinson, E.J. "Synthesis and UV Analysis of Liquid Crystalline Phthalocyanines," Oregon Academy of Science, Portland State University, Portland, OR February 2004, Published in *Proceedings of the Oregon Academy of Science XL* **2004**.
- Chambers, R.C.; Osburn Atkinson, E.J.; McAdams, D.H.; Hayden, E.J.; Ankeny-Brown, D.J. "Creating Langmuir-Blodgett monolayers and thin films of novel organic-derivatized polyoxotungstates," 225th National Meeting of the American Chemical Society, New Orleans, LA, March 23, **2003**" oral presentation, published abstracts.
- Rivera, C.; Osburn Atkinson, E.J.; Chambers, R.C. "The Characterization of Novel Organically Tailed Polyoxotungstates by Cyclic Voltammetry," M. J. Murdock Undergraduate Research Conference, Pacific Lutheran University, Tacoma, WA November **2003**.
- Kranak, V.; Osburn Atkinson, E.J. "Synthesis and UV Analysis of Liquid Crystalline Phthalocyanines M. J. Murdock Undergraduate Research Conference, Pacific Lutheran University, Tacoma, WA November **2003**.
- Danskey, K.; Hidalgo, D.; Osburn Atkinson, E.J.; Murray, J. "Effect of methyl viologen in dye solutions during sonoluminescence," 225th National Meeting of the American Chemical Society, New Orleans, LA, March 23, **2003**. (Published Abstracts).
- McAdams, D.; Osburn Atkinson, E.J.; Chambers, R.C. "Analysis by Langmuir-Blodgett techniques of Three Novel Amphiphilic Polyoxotungstates," 225th National Meeting of the American Chemical Society, New Orleans, LA, March 23, **2003**. (Published Abstracts).
- Rivera, C.; Osburn Atkinson, E.J. "Novel Octa-Substituted Copper Phthalocyanines Containing n-Ethoxy-ethanol Side Chains," 225th National Meeting of the American Chemical Society, New Orleans, LA, March 23, **2003**. (Published Abstracts).
- Stender, C.; Osburn Atkinson, E.J. "Photo-efficiencies of different octasubstituted phthalocyanine dyes and temperature dependence of TiO₂ surface preparation," 225th National Meeting of the American Chemical Society, New Orleans, LA, March 23, **2003**. (Published Abstracts).
- McAdams, D.; Osburn Atkinson, E.J.; Chambers, R.C. "Analysis by Langmuir-Blodgett techniques of Three Novel Amphiphilic Polyoxotungstates," Oregon Academy of Science, Linfield College, McMinnville, OR February 2003, Published in *Proceedings of the Oregon Academy of Science XXXIX* **2003**.

- Rivera, C.; Osburn Atkinson, E.J. "NOVEL Octa-Substituted Copper Phthalocyanines Containing n-Ethoxy-ethanol Side Chains," Oregon Academy of Science, Linfield College, McMinnville, OR February 2003, Published in *Proceedings of the Oregon Academy of Science XXXIX* **2003**.
- Stender, C.; Osburn Atkinson, E.J. "Photo efficiencies of Different Octa-Substituted Pthalocyanine Dyes," Oregon Academy of Science, Linfield College, McMinnville, OR February 2003, Published in *Proceedings of the Oregon Academy of Science XXXIX* **2003**.
- McAdams, D.; Osburn Atkinson, E.J.; Chambers, R.C. "Analysis by Langmuir-Blodgett techniques of Three Novel Amphiphilic Polyoxotungstates," M. J. Murdock Undergraduate Research Conference, Whittman University, Walla Walla, WA November **2002**.
- Danskey, K.; Hidalgo, D.; Osburn Atkinson, E.J.; Murray, J. "Effect of methyl viologen in dye solutions during sonoluminescence," M. J. Murdock Undergraduate Research Conference, Whittman University, Walla Walla, WA November **2002**.
- Stender, C.; Osburn Atkinson, E.J. "Photo efficiencies of Different Octa-Substituted Pthalocyanine Dyes," M. J. Murdock Undergraduate Research Conference, Whittman University, Walla Walla, WA November **2002**.
- Atkinson, E.J.O.; Scott, J.F.; Chow, L.; Hartzell, B. "Photo Efficiencies of Novel Copper Octa-substituted Phthalocyanines as Sensitizing Dye in Grätzel Style Solar Cells, 223rd National Meeting of the American Chemical Society, Orlando, FL, April 8, **2002**. (Published Abstracts).
- Hayden, E.; Osburn Atkinson, E.J.; Chambers, R.C. "Creating Monolayers and Thin Films of Novel Polyoxotungstenates Using the Langmuir-Blodgett Technique," 223rd National Meeting of the American Chemical Society, Orlando, FL, April 8, **2002**. (Published Abstracts).
- Pappas, B.; Scott, J.; Osburn Atkinson, E.J. "Copper Octa-substituted Phthalocyanine as Sensitizing Dyes for Use in Photovoltaic Devices," 223rd National Meeting of the American Chemical Society, Orlando, FL, April 8, **2002**. (Published Abstracts).
- Oar, M.; Osburn Atkinson, E.J. "Synthesis of Octa-substituted Phthalocyanines as Potential Photovoltaic Sensitizing Dyes," 223rd National Meeting of the American Chemical Society, Orlando, FL, April 8, **2002**. (Published Abstracts).
- Voreis, J.; Hildago, D.; McDaniel, S.; Osburn Atkinson, E.J.; Schnitzler, D.; Murray, J. "Sonoluminescence and Its Applications: Fluorescing Dyes and Initiating Polymerization of Acrylates," 223rd National Meeting of the American Chemical Society, Orlando, FL, April 8, **2002**. (Published Abstracts).
- Scott, J.; Pappas, B.; Osburn Atkinson, E.J. "Effects of a Co-Facial Inhibitor on the Photo Efficiencies of Novel Octa-substituted Phthalocyanines in a Photovoltaic Cell," Oregon Academy of Science, Pacific University, Forest Grove, OR February 2002, Published in *Proceedings of the Oregon Academy of Science XXXVIII* **2002**.
- Voreis, J.; Hildago, D.; McDaniel, S.; Osburn Atkinson, E.J.; Schnitzler, D.; Murray, J. "Sonoluminescence and Its Applications: Fluorescing Dyes and Initiating Polymerization in Acrylates," Oregon Academy of Science, Pacific University, Forest Grove, OR February 2002, Published in *Proceedings of the Oregon Academy of Science XXXVIII* **2002**.

- Oar, M.; Osburn Atkinson, E.J. "Synthesis of Octa-substituted Phthalocyanines as Potential Photovoltaic Sensitizing Dyes," Oregon Academy of Science, Pacific University, Forest Grove, OR February 2002, Published in *Proceedings of the Oregon Academy of Science XXXVIII* **2002**.
- Voreis, J.; Hildago, D.; McDaniel, S.; Osburn Atkinson, E.J.; Schnitzler, D.; Murray, J. "Dye Sensitization and Polymerization using Single Bubble Sonoluminescence," M. J. Murdock Undergraduate Research Conference, Gonzaga University, Spokane, WA November **2001**.
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Teaching Experience:

Linfield College: 1997 to date

Pima Community College: 1994-95

University of Arizona: 1988-1994

Research Experience:

Linfield College: 1997 to date (Synthesis and Characterization of molecular and advanced materials using spectroscopy and electrochemistry)

Naval Research Laboratories: 1995-97 (decomposition of hazardous compounds using electrified micro-heterogeneous catalysis)

University of Arizona: 1988-1995 (Synthesis and Characterization of Octa-substituted Phthalocyanines)

Student-Faculty Collaborative Research Students and Life After Linfield:

Webster 2020 to date

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Wyatt 2016 to date Optometry School

Mason 2016 to date Ph.D. Candidate, U of Arizona

Trujillo 2015 to date Pharmacy Candidate, Western University of Health Sciences, Pomona CA

Corrado 2014 to date Ph.D. Candidate, Department of Chemical and Biomolecular Engineering, University of Notre Dame,

Perryman 2014 to date Ph.D. Candidate, University of California, Davis,

Carlson 2012 to date Scientist, Lonza, Bend Oregon

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Scheafer 2012 – 2014 M.D. Candidate, OHSU

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Hatley	2004 – 2005	Pharmacist, Grand Ronde Hospital
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Stender	2001 – 2003	Microlink Devices, Inc., Senior Process Engineer, Ph.D., Northwestern Un.
Singh	2000 – 2003	Saint-Gobain Performance Plastics, Ph.D., MIT
Danskey	2001 – 2002	Pharmacist
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Hayden	2001	Boise State University, Professor, Biological Sciences, Ph.D. PSU
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Scott	1999 – 2001	Vienna, Austria
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Nnanabu	2000	MS., Texas A&M
Brumbach	1999 – 2000	Sandia Corporation, PhD, UofA
Rathbun	1999 – 2000	American Red Cross
Hartzell	1998 – 2000	Criminalist, Nevada's Washoe County Sheriff's Office, PhD., OU
McQuaw	1998 – 2000	Schrodinger, LLC, PhD., Penn State
Watney	1998 – 1999	Schrodinger, LLC, PhD., Penn State
Feng	1997 – 1999	Augsburg College, Professor of Chemistry, PhD. U of Illinois, CU