RICHARD A. O'BRIEN, Ph.D.

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University of South Alabama
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ACADEMIC EXPERIENCE

UNIVERSITY OF SOUTH ALABAMA Mobile, Alabama

2025-Present	Professor of Instruction
2023-2025	Associate Professor of Instruction
2018-2023	Associate Professor of Chemistry (Non-tenure track)
2012-2018	Assistant Professor of Chemistry (Non-tenure track)
2011-2012	Instructor- Chemistry Department
2008-2011	Adjunct Faculty- Chemistry Department
2008-2011	Postdoctoral Research Associate- Chemistry Department

- Research: (2008 – present)
  1- Synthesis, Characterization, and Application of Tetra (4-Thiaalkyl) Ammonium Salts (Thiaquat Salts) and Boronium-based ILs.
  2- Synthesis, Characterization, and Application of Lipid-Inspired ILs.
  3- Synthesis of Bio-Inspired / Lipid-Inspired ILs Utilizing Thiol-ene Photochemical Chemistry / Cyclopropanation Reactions for Fuels.
- Mentors: Professors James H. Davis, Jr., Arsalan Mirjafari, and Kevin N. West

- Teaching Focus: (2008 – present)
  1- CH101 Laboratory: Survey of Inorganic & Organic Chemistry
  2- CH131 and CH132 Laboratories: General Chemistry I / II
  3- CH131 and CH132 Lectures: General Chemistry I / II
  4- CH201L and CH202L Laboratories: Organic Chemistry I / II

- Academic Activities
  - Presented research at USA Research, Gordon, ACS, AIChE, and COIL conferences.
  - Taught graduate and undergraduate students' safety, analytical, and synthetic chemistry techniques during 2008-present. Mentored students in research activities.
  - Instrumentation Coordinator for JEOL 500 MHz NMR and JASCO 4000 FT-IRs.
  - Mentored Honors student during Senior Research Thesis project from 2010-2011.
  - Student awarded 2010 Goldwater Scholarship and 2011 NSF GRF award.
  - Recognized as a 2011 and 2021 "Top Prof" by the Azalea Chapter of Mortar Board Honor Society at the University of South Alabama.
  - Member of Master's Thesis Committees & Gen Ed. Sub-committee. (2011 – 2019)
  - Member of USA and Chemistry Curriculum Committees. (2013 – present)
  - Chair of USA Chemistry Safety & Stockroom Committee. (2019 – 2020)
  - Member of USA Lab Safety Committee. (2019 – present)
  - Nominated for 2014 Andy & Carol Denny National Alumni Excellence in Teaching.
  - Nominated for 2018-19 and 2023-24 Arts & Science Excellence in Teaching Award.

ITAWAMBA COMMUNITY COLLEGE Tupelo, Mississippi
2008-2011 Adjunct Faculty- Chemistry Department

- Taught web remote General Chemistry I lecture and laboratory courses.

INDUSTRIAL EXPERIENCE

ARIZONA CHEMICAL COMPANY (KRATON) Savannah, Georgia
2001-2007 Senior Research Scientist- Oleochemicals Division

- Provided technical support for bench top to commercialization for SYLVACLEAR® and SYLVAGEL® gellants for Personal Care, Air Care, and Industrial applications.
- Provided technical and manufacturing support for the UNICLEAR™, SYLVACLEAR®, SYLVAGEL® gellants and UNIREZ® phase change ink resins. Presented technical information to target customers. Technical lead for team that reduced cycle time by >20% and corrective actions with no out-of-specification products to customers. Implemented "Best Practices" into all manufacturing procedures. Product lines worth multi-millions in revenue during 2001- 2007. Utilized DoE, SPC, and Process Mapping during manufacturing improvements.
- Project leader for team that improved product quality in CENTURY® monomer fatty acid and SYLVACLEAR® polyamide gellants. Transferred technology and manufacturing practices to different US and European sites. Implemented "Best Practices" into all manufacturing procedures. Product lines worth multi-millions in revenue during 2001-2007.

HEXCEL CORPORATION Decatur, Alabama
1997-2001 Research Scientist- Research and Technology Division

- Synthesized polyacrylonitrile (PAN) polymers for new product development to improve fiber properties during spinning and carbonization. Identified two candidates for scale-up to production utilizing a bench top continuous polymerization reactor.
- Produced continuous tow carbon fibers from commercially available LLDPE fibers for automotive applications during DOE-sponsored LCCF program. Carbon fibers met LCCF targets of 400 Ksi tensile strength and 25 Msi modulus on research scale.
- Project leader for PAN fiber capacity improvements. Initial trials provided carbon fibers that doubled capacity and met target mechanical properties of 750 Ksi tensile strength & 35 Msi modulus with prototype extrusion equipment on a single tow line.
- Provided manufacturing support for polymerization, fiber extrusion, and polymer characterization. Solved problems related to raw materials, PAN molecular weights, process filtration, and polymer/solvent impurities.

TPL, INC. Albuquerque, New Mexico
1993-1997 Advanced Scientist- Advanced Materials Division

- Polymer Development Group Leader. Division awarded multiple Government contracts worth > $1.2MM in revenue. Led to the development of dielectric polymers for S-O-A high voltage film capacitors with energy densities of > 2.5 J/cc.
- Synthesized target molecules containing silyl ester, alkene, ester, halide, and carbonyl functional groups. Improved yield of two-step multi kg process to > 85%.
- Purified target organic compounds for dielectric polymers at > 99.99% purity using a spinning band distillation system. Led to improved polymer performance.
- Performed successful N-denitration of nitramines and HMX for Stage I DoE contract.

RIEKE METALS, INC. Lincoln, Nebraska

1992-1993 Research Scientist- Highly Reactive Metals®

- Product development and scaled-up synthesis of Regioregular and Regiorandom Alkyl-based polythiophenes for electronic applications. Investigated doping conducting polymers.
- Developed new product lines involving the utilization of Rieke® Highly Reactive Mg, Zn, and Cu for use in organic synthesis.

ACADEMIC AND INDUSTRIAL SKILLS

- Synthesis, photochemistry, application, and characterization of ionic liquids and thiaquat salts for GC, heat transfer, electrochemical, and PTC applications.
- Bench top to commercialization activities for polyamides and bio-based esters.
- Pilot scale operations and written procedures for polyamides and lubricant esters.
- Problem solving in polyamide and lubricant ester manufacturing. Formulation work with polyamides and lubricant esters. Technical support to targeted customers and toll manufacturers.
- Polyacrylonitriles, polythiophenes, polystyrenes, polyamides, and polysiloxanes.
- Problem solving and technical support in polyacrylonitrile manufacturing.
- Dimer acid, isostearic acid, ester, and fatty acid technologies and manufacturing practices. Problem solving activities involving the manufacture of these product lines. Technical support to targeted customers and manufacturers.
- GC, GPC, LC, DSC, TGA, FT-IR, NMR, and UV-Vis spectroscopy.
- General organic, organometallic, and polymer synthetic methods.
- Technical presentations, technical reports and disclosures, publications, and patents.

EDUCATION

1- University of Nebraska-Lincoln Degree: Ph.D. (1992)
Dissertation Advisor: Professor Reuben D. Rieke
Dissertation: Chemical Modification of Halogenated Polystyrene Resins Utilizing Highly Reactive Copper and Calcium and the Chemistry of Highly Reactive Copper Contained in a Polymer.
Award: DuPont Fellowship (1987-1988)

2- University of North Dakota Degree: M.S. (1987)
Master's Advisor: Professor James J. Worman
Master's Thesis: Synthesis, Mechanism of Formation, and Spectral Studies of N-(3)-Substituted Hydantoins.
Award: Dennison Award from N.D. Academy of Sciences (1987)

3- South Dakota State University Degree: B.S. (1985) Professional Chemistry
Undergraduate Advisor: Professor Harry Hecht ACS Degree
Award: Dobberstein Undergraduate Research Award (1984)

MEMBERSHIPS

National Society of Collegiate Scholars at the University of South Alabama

UNDERGRADUATE STUDENTS MENTORED (2008 – present)

1- Kaila Mattson – University of South Alabama, **Project:** *Lipid-Inspired Ionic Liquids*
2- Jessica Lacy – University of South Alabama, **Project:** *Protic Ionic Liquids*
3- Fatima Hamade – University of South Alabama, **Project:** *Thiol-ene Chemistry of Vinylphosphonic Acids and Synthesis of their Derivatives*
4- Paul Hixon – University of South Alabama, **Project:** *Boron-based Viologens*
5- Adam Lewis – University of South Alabama, **Project:** *Boron-based Viologens*
6- Kyle Gaines – University of South Alabama, **Project:** *Task-Specific Ionic Liquids*
7- Adela Benchea – University of South Alabama, **Project:** *High Temperature Phosphonium and Sulfoniun Salts and Ionic Liquids*
8- Forrest Edhegard – University of South Alabama, **Project:** *C2 Lipidic Ionic Liquids*
9- Matt Vo – University of South Alabama, **Project:** *Lipidic Ionic Liquids*
10- Davis Deifenderfer – University of South Alabama, **Project:** *Lipidic Ionic Liquids*
11- Caitlyn Butt – University of South Alabama, **Project:** *Boronium Ionic Liquids*
12- Maggie Crowley – University of South Alabama, **Project:** *Perovskite Synthesis*
13- Mollie Ballentine – University of South Alabama, **Project:** *Boronium Ionic Liquids*
14- Gabe Merchant – University of South Alabama, **Project:** *Boronium Ionic Liquids*
15- Alyssa Albers – University of South Alabama, **Project:** *Boronium Ionic Liquids*

RESEARCH COLLABORATIONS (2008 – present)

1-	Prof. James H. Davis, Jr.	University of South Alabama	Ionic Liquids
2-	Prof. Matthew Reichert	University of South Alabama	Ionic Liquids
3-	Prof. Kevin N. West	University of South Alabama	Ionic Liquids/DSC
4-	Dr. Christy Wheeler West	University of South Alabama	PTC/DSC
5-	Prof. Arsalan Mirjafari	SUNY at Oswego	Lipidic Ionic Liquids
6-	Dr. T. Grant Glover	University of South Alabama	Mesoporous Materials
7-	Dr. Terrence Ravine	University of South Alabama	Anti-microbial Agents

BOOK CHAPTERS

1- Mirjafari, A., **O'Brien, R.A.**, Murray, S. M., Mattson, K. M., Mobarrez, N., West, K. N., Davis, Jr., J. H. "Lipid-Inspired Ionic Liquids Containing Long-Chain Appendages: Novel Class of Biomaterials with Attractive Properties and Applications." *American Chemical Society Ionic Liquids: Science and Applications* **2012**, 199-216.

2- Mirjafari, A., **O'Brien, R.A.**, Davis Jr., J.H., "Synthesis and Properties of Lipid-Inspired Ionic Liquids." In: Xu, X., Guo, Z., Cheong, L-Z. (Eds.), *Ionic Liquids in Lipid Processing and Analysis: Opportunities and Challenges*, **2016**, 205–223.

BOOKS

Richard A. O'Brien and Milorad Stojanovic, **2022**. *Chemistry 101 Laboratory Manual*, Hayden-McNeil Publishing, 7th edition, 222 pp.

PUBLICATIONS

1- Musozoda, M., **O'Brien, R.A.**, Metott, Z.J., Jerdo, R.A., Butch, C.M., Zeller, M., Boyce, G.R., Hillesheim, P.C., Mirjafari, A. Lipid-Inspired Low Melting Ionic Liquids via Synergistic Cyclopropanation and Branching of Terpenoids *ACS Materials Au* **2025.** https://doi.org/10.1021/acsmaterialsau.5c00089

2- Crowley, M.E., Stachurski, C.D., Davis, Jr., J.H., Zeller, M., Merchant, G.A., Salter, E.A., Wierzbicki, A., **O'Brien, R.A.**, Trulove, P.C., Durkin, D.P. Salts of boronium (+3) ions with unprecedented hydrolytic stability. Design, synthesis, single-crystal X-ray structures, electrochemistry, and thermophysical properties. *RSC Advances*, **2025**, *15*, 19947-19953.

3- Stachurski, C.D., Davis, J.H., Jr., Cosby, T., Crowley, M.E., Larm, N.E., Ballentine, M.G., **O'Brien, R.A.**, Zeller, M., Salter, E.A., Wierzbicki, A., Trulove, P.C., Durkin, D.P., "Physical and Electrochemical Analysis of N-Alkyl Pyrrolidinium Substituted Boronium Ionic Liquids, *Inorg. Chem.*, **2023**, *62*, 18280-18289.

4- **O'Brien, R.A.**, Hillescheim, P., Soltani, M., Badilla-Nunez, K.J., Siu, B., Musozoda, M., West, K.N., Davis, J.H. Jr., Mirjafari, A. "Cyclopropane as an Unsaturation "Effect Isostere": Lowering the Melting Points in Lipid-like Ionic Liquids.", **2023**, *J. Phys. Chem. B.*, *127*, 1429-1442.

5- Lopansri, L.S., Letson, J.N., **O'Brien, R.A.**, Battiste, D.R., Forbes, D.C., "NMR Deconvolution: Quantitative Profiling of Isomeric Mixtures." *World Journal of Chemical Education*, **2022**, *10(2)*, 51.

6- Soltani, M., McGeehee, J.L., Stenson, A.C., **O'Brien, R.A.**, Duranty, E.R., Salter, E.A., Wierzbicki, A, Glover, T.G., Davis, J.H., Jr. "Ionic liquids of superior thermal stability. Validation of PPh_4^+ as an organic cation of impressive thermodynamic durability", *RSC Advances*, **2020**, *10*, 20521-20528.

7- Nan, H., Zhang, C., **O'Brien, R.A.**, Benchea, A., Davis, J.H., Jr. "Lipidic Ionic Liquid Phases for the Separation of Nonpolar Analytes by Comprehensive Two-dimensional Gas Chromatography", *J. of Chrom. A.*, **2017**, *1481*, 127-136.

8- Siu, B., Cassity, C.G., Wierzbicki, A., Sykora, R.E., Salter, E.A., **O'Brien, R.A.,** West, K.N., Davis, Jr., J.H. "Thermally robust: Triarylsulfoniun ionic liquids stable in air for 90 days at 300 ^oC", *RCS Advances*, **2017**, *7*, 7623-7630.

9- Thigpen, A.S., Nestor, S.T., **O'Brien, R.A.**, Minkowicz, S., Sheng, Y., Davis, Jr., J.H., West, K.N., Mirjafari, A. "Thioether-functionalized picolinium ionic liquids: click synthesis and thermophysical characterization for use as lubricants", *New J. Chem.*, **2017**, *41*, 1625-1630.

PUBLICATIONS

10- Langham, J.V., **O'Brien, R.A.**, Davis, Jr., J.H., West, K.N. "Solubility of CO_2 and NO_2 in an Imidazolium-Based Lipidic Ionic Liquid", *J. Phys. Chem. B.* **2016**, *120*, 10524-10530.

11- Huynh, T.L.Y., Poiroux, K., **O'Brien, R.A.**, West, K.N., Davis, Jr., J.H., Wheeler West, C. "Fusion and Thermal Degradation Behavior of Symmetric Sulfur-Containing Quaternary Ammonium Bromides", *J. Phys. Chem. B.*, **2016**, *120(7)*, 1330-1335.

12- **O'Brien, R.A.**, Zayas, M.S., Gaitor, J.C., Edhegard, F.A., Paul, L.M., Minkowicz, S., Sykora, R.E., Sheng, Y., Michael, S.F., Isern, S, Mirjafari, A. "Biomimetic Design of Lipidic Ionic Liquids with Enhanced Fluidity", *New. J. Chem.* **2016**, *40*, 7795-7803.

13- Green, B.D., Badini, A.J., **O'Brien, R.A.**, Davis, Jr. J.H., West, K.N. "Liquid-Liquid Equilibria of Binary Mixtures of a Lipidic Ionic Liquid with Hydrocarbons", *Ind. Eng. Chem. Res.*, **2015**, *54*, 5165-5171.

14- Gaitor, J.C., Zayas, M.S., Myrthil, D.J., White, F., Sykora, R.E., **O'Brien, R.A.**, Reilly, J.T., Mirjafari, M. "Crystal Structure of a Methimazole-Based Ionic Liquid", *Acta Crystallographica E*, **2015**, *71(12)*, o1008-o1009.

15- Ruckart, K.N., **O'Brien, R.A.**, Woodard, S.M., West, K.N., Glover, T.G. "Porous Solids Impregnated with Task-Specific Ionic Liquids as Composite Sorbents for CO_2 Capture", *J. Phys. Chem. C*, **2015**, *119(35)*, 20681-20697.

16- Green, B.D., **O'Brien, R.A.**, Davis, Jr., J.H., West, K.N. "Ethane and Ethylene Solubility in an Imidazolium-based Lipidic Ionic Liquid", *Ind. Eng. Chem. Res.*, **2015**, *54* (18), 5165–5171.

17- Braun, R.A., Bradfield, J.L., Lacy, J.N., Henderson, C.B., Mobarrez, N., Sheng, Y., **O'Brien, R.A.**, Davis, Jr., J.H., Mirjafari, A. "Click chemistry mediated synthesis of biologically-inspired phosphonyl-functionalized ionic liquids", *Green Chem.*, **2015**, *17*, 1259-1268.

18- Wheeler West, C.W., **O'Brien, R.A.**, Hollingsworth, B.E., Huynh, T., Sweat, R.E., Griffin, N.J., Salter, E.A., Weirzbicki, A., Davis, Jr., J.H. "Impact of Sulfur Heteroatoms on the Activity of Quaternary Ammonium Salts as Phase Transfer Catalysts for Nucleophilic Displacement Reactions", *J. Mol. Cat. A: Chemical*, **2015**, *398*, 282-288.

19- **O'Brien, R.A.**, Mirjafari, A., Mattson, K.M., Murray, S.M., Mobarrez, N., Salter, E.A., Wierzbicki, A., Davis, Jr., J.H., West, K.N. "The Effect of Sulfur Position on the Melting Points of Lipidic 1-Methyl-3-Thiaalkylimidazolium Ionic Liquids", *J. Phys. Chem. B.* **2014,** *118*, 10232-10239.

PUBLICATIONS

20- Chen, L., Mullen, G.E., Le Roch, M., Cassity, C.G., Gouault, N., Fadamiro, H.Y., Barletta, R.E., **O'Brien, R.A.**, Sykora, R.E., Stenson, A.C., West, K.N., Horne, H., Davis, Jr, J.H. "On the Formation in Nature of a Protic Ionic Liquid", *Angew. Chem.* **2014**, *126*, 30 and *Angew. Chem. Int. Ed.* **2014**, *53*, 30. (Featured in *Chemical & Engineering News*, July 28, 2014, Volume 92, Number 30, page 32, "Ant Battle Yields Ionic Liquid" and *Nature*, Research Highlights, July 31, 2014, Volume 511, "Fighting ants make rare fluid".)

21- Mirjafari, A., **O'Brien, R.A.**, West, K.N., Davis, Jr., J.H. "Synthesis of Novel Lipid- Inspired Ionic Liquids via Thiol-ene Chemistry: Profound Solvent Effect on Reaction Pathway", *Chem. Eur. J.* **2014**, *20(25)*, 7576-7580. (Featured in *Wiley-VCH Hot Topics for Click Chemistry*, 2014)

22- **O'Brien, R.A.**, Wheeler West, C., Hollingsworth, B.E., Stenson, A.C., Henderson, B., Mirjafari, A., Mobarrez, N., West, K.N. Mattson, K.M., Salter, E.A., Wierzbicki, A., Davis, Jr., J.H. "A Simple and Rapid Route to Novel Tetra(4-thiaalkyl)ammonium Bromides", *RSC Adv.* **2013**, *3*, 24612-24617.

23- Cassity, C.G., Mirjafari, A., Mobarrez, N., Strickland, K.J., **O'Brien, R.A.**, Davis, Jr., J.H. "Ionic Liquids of Superior Thermal Stability" *Chem. Commun.* **2013**, *49*, 7590-7592. (Featured in *Chemical & Engineering News*, August 12, 2013, Volume 91, Number 32, page 27, "Ionic Liquids at High Temps".)

24- Murray, S., Zimlich, T., Mirjafari, A., **O'Brien, R.A.**, Davis, Jr., J. H., West, K.N. "Thermophysical Properties of Imidazolium-Based Lipidic Ionic Liquids." *Journal of Chemistry and Engineering Data* **2013**, *58(6)*, 1516-1522.

25- Kwan, M-L, Mirjafari, A., McCabe, J.R., **O'Brien, R.A.**, Essi IV, D.F., Baum, L., West, K.N., Davis, Jr., J.H. "Synthesis and thermophysical properties of ionic liquids: Cyclopropyl moieties versus olefins as T_m-reducing elements in lipid-inspired ionic liquids" *Tetrahedron Lett*. **2013**, 54, 12-14.

26- Mirjafari, A., Murray, S.M., **O'Brien, R.A.**, Stenson, A.C., West, K.N., Davis, Jr., J.H., "Structure-based tuning of T_m in lipidic ionic liquids: Insights from Tf_2N-salts of gene transfection agents" *Chem. Commun.* **2012**, 48, 7522-7524.

27- **O'Brien, R.A.**, Mirjafari, A., Jajam, V., Capley, E.N., Stenson, S.C., West, K.N., Davis, Jr., J.H. "Functionalized ionic liquids with highly polar polyhydroxylated appendages and their rapid synthesis via thiol-ene click chemistry" *Tetrahedron Lett.* **2011**, *52*, 5173-5175.

PUBLICATIONS

28- Mirjafari, A., Mobarrez, N., Davis, Jr., J.H., **O'Brien, R.A.**, Noei, J. "Microwave-promoted one-pot conversion of alcohols to oximes using 1-methylimidazolium nitrate, [Hmim][NO_3], as a green promoter and medium" *C. R. Chimie* **2011**, *14(12)*, 1065-1070.

29- Dorman, S.C., **O'Brien, R.A.**, Lewis, A., Salter, E.A., Wierzbicki, A., Hixon, P.W., Sykora, R.E., Mirjafari, A., Davis, Jr., J.H. "A new building block for electroactive organic materials? Synthesis, cyclic voltammetry, single crystal X-ray structure, and DFT treatment of a unique boron-based viologen", *Chem. Commun.* **2011**, *47*, 9072-9074.

30- Murray, S.M., **O'Brien, R.A.**, Mattson, K.M., Ceccarelli, C., Sykora, R.E., West, K.N., Davis, Jr., J.H. "The Fluid-Mosiac Model, Homeoviscous Adaptation, and Ionic Liquids: Dramatic Lowering of the Melting Point by Side-Chain Unsaturation", *Angew. Chem. Intl. Ed.*, **2010**, *49*, 2755-2758. (Featured in *Chemical & Engineering News*, March 15, 2010, Volume 88, Number 11, page 11, "New Chains for Ionic Liquids".)

31- Soutullo, M.D., **O'Brien, R. A.**, Gaines, K.E., Davis, Jr., J.H. "Constitutional Dynamic Systems of Ionic and Molecular Liquids", *Chem. Commun.* **2009**, 2529-2531.

32- Chapman, R.D., **O'Brien, R.A.**, Kondracki, P.A. "N-Denitration of Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX) by Hydrazine Catalyzed by Palladium", *J. Energ. Mater.* **1998**, *16*, 147-171.

33- Chapman, R.D., **O'Brien, R.A.**, Kondracki, P.A. "N-Denitration of Nitramines by Dihydronicotinamides", *Tetrahedron* **1996**, *52*, 9655-9664.

34- Chen, T., **O'Brien, R.A.**, Rieke, R.D. "Use of Highly Reactive Zinc Leads to a New, Facile Synthesis for Polyarylenes", *Macromolecules* **1993**, *26*, 3462-3463. (Examples found in U.S. Patents 5,358,546 (1994) and 5,756,653 (1998))

35- **O'Brien, R.A.**, Chen, T., Rieke, R.D. "Chemical Modification of Halogenated Polystyrene Resins Utilizing Highly Reactive Calcium and the Formation of Calcium Cuprates in the Preparation of Highly Functionalized Polymers", *J. Org. Chem.* **1992**, *57*, 2667-2677. (Examples found in U.S. Patents 5,211,886 (1993); 5,211,889 (1993); 5,330,687 (1993) and 5,384,078 (1995))

36- **O'Brien, R.A.**, Gupta, A., Rieke, R.D., Shoemaker, R.K. "Phosphorus-31 NMR Studies of Polymer-Supported, Highly Reactive Copper Reagents", *Mag. Reson. Chem.* **1992**, *30*, 398-402.

37- **O'Brien, R.A.**, Chen, T., Rieke, R.D. "Functionalization of Halogenated Polystyrene Resins Utilizing Highly Reactive Calcium", *Inorg. and Organomet. Polym.* **1992**, *2(3)*, 345-356.

PUBLICATIONS

38-**O'Brien, R.A.**, Worman, J.J., Olson, E.S. "Carbon Dioxide in Organic Synthesis: Preparation and Mechanism of Formation of N-(3)-Substituted Hydantoins", *Synth. Commun.* **1992**, *22(6)*, 823-828.

39- **O'Brien, R.A.**, Rieke, R.D. "Direct Metalation of *p*-Bromopolystyrene Using Highly Reactive Copper and the Preparation of Highly Reactive Copper Bound to an Insoluble Polymer", *J. Org. Chem.* **1990**, *55*, 788-790.

PATENTS

1- "Aqueous Suspensions Containing Polymerized Fatty Acid-Based Polyamides", Pavlin, M.S., O'Brien, R.A. U.S. Patent 2003/0162938 A1 (2003).
2- "Aqueous Suspensions Containing Polymerized Fatty Acid-Based Polyamides", Pavlin, M.S., O'Brien, R.A. WO/20030162938 (2003).
3- "Aqueous Suspensions Containing Polymerized Fatty Acid-Based Polyamides", Pavlin, M.S., O'Brien, R.A. AU2002353318 A1 (2003).
4- "Aqueous Suspensions Containing Polymerized Fatty Acid-Based Polyamides", Pavlin, M.S., O'Brien, R.A. ES2331413T3 (2004).
5- "Aqueous Suspensions Containing Polymerized Fatty Acid-Based Polyamides", Pavlin, M.S., O'Brien, R.A. U.S. Patent 6,864,349 B2 (2005).
6- "Aqueous Suspensions Containing Polymerized Fatty Acid-Based Polyamides", Pavlin, M.S., O'Brien, R.A. PT1453885 E (2009).
7- "Aqueous Suspensions Containing Polymerized Fatty Acid-Based Polyamides", Pavlin, M.S., O'Brien, R.A. DK/EP 1453885 T3(2009).
8- "Aqueous Suspensions Containing Polymerized Fatty Acid-Based Polyamides", Pavlin, M.S., O'Brien, R.A. EP 14538855 B1 (2009).

TECHNICAL DISCLOSURES

1- *Gelled Compositions for Polymerizable Monomers*
Arizona Chemical Company (IPCOM000013107D)
2- *Gelled Compositions for Solvent-based Coatings*
Arizona Chemical Company (IPCOM000013108D)
3- *Gelled Compositions for Epoxy-based Systems*
Arizona Chemical Company (IPCOM000012463D)
4- *Gelled Compositions as Waxes and Polishes*
Arizona Chemical Company (IPCOM000009045D)
5- *Gelled Fiber Reinforced Plastics and Gel Coats*
Arizona Chemical Company (IPCOM000007401D)

FINAL REPORTS

" Novel Reagents for N-NO_2 Scission", Chapman, R.D., **O'Brien, R.A.**, Kondracki, P.A. WL-TR-1997-7010 for Contract FO8630-94-C-0011, U.S. Air Force (55 pp.).

GRANTS

Not Funded

1- West, K. N. (Principal), Davis, J. H. (Co-Principal), **O'Brien, R. A.** (Co-Principal), Shah, J. (Co-Principal), "SusChEM: Collaborative Research: *A Collaborative Research: A Unified Experimental and Molecular Simulation Bottoms- Up Approach to the Rational Design of Lipidic Ionic Liquids for Sulfur Removal*, Sponsored by NSF - CBET - IPT, Federal, $304,980.00. (October, 2015 – March, 2016).

2- West, K. N. (Principal), Davis, J. H. (Co-Principal), **O'Brien, R. A.** (Co-Principal), "SusChEM: Collaborative Research: *A Unified Experimental and Molecular Simulation Approach for Understanding Structure-Property Relationships and Solvation in Lipidic Ionic Liquids*, Sponsored by NSF - CBET - IPT, Federal, $305,804.00. (August, 2015 – March, 2015).

Funded

1- Glover, G.T., West, K.N., Ravine, T.J., **O'Brien, R.A.** (2021) *Development of a Biocidal Textile Treatment*, USARSDG, $25,000.

PRESENTATIONS AND POSTERS (Presenter or Co-author)

1- Delaney-Tucker, L., O'Brien, R., Stojanovic, M., Hamil, T., Howell, J., Olsen, T, Carr, P. (2024). *What's the next Step? Tales from a Lab Faculty Learning Community*. Poster presented at the 14th Annual CoTL Conference in Mobile, AL.

2- Merchant, G.A., Crowley, M.E., Albers, A.M., O'Brien, R.A., Ravine, T.J., Davis, J.H., Jr. (2024). *Synthesis of Novel Boronium Salts for Study as Antimicrobial Agents.* Poster presented at the ACS Spring National Meeting in New Orleans, LA.

3- Albers, A., O'Brien, R., Crowley, M., Davis, Jr., J., Whillock, N. (2024) *Delignified Wood as a Platform for Advanced Materials: Practical Applications.* Poster presented at the SURF Conference in Mobile, AL.

4- Albers, A.M., Crowley, M.E., O'Brien, R.A., Whillock, N.M. Davis, Jr., J.H. (2024) *Synthesis and Hydrogen Bonding Interactions in an Ionic Liquid of a Boronium-Urea Cation*. Poster presented at the ACS Spring National Meeting in New Orleans, LA.

5- O'Brien, R.A. *Motivation of Undergraduate Nursing and Stem Majors in a Laboratory Environment through Targeted Questions about their Majors and Careers.* (2024) Presentation given at the 14th Annual CoTL Conference in Mobile, AL.

PRESENTATIONS AND POSTERS (Presenter or Co-author)

6- Delaney-Tucker, L., **O'Brien, R.**, Olsen, T., Cochran, M., Howell, J., Jordan, K., Carr, P. *What's the next Step? Tales from a Lab Faculty Learning Community*, presented at the 13th Annual CoTL Meeting (2023).

7- Milter, J.W., West, K., Glover, G., Ravine, T., **O'Brien, R.** *Development of a Rechargeable, Antimicrobial, Reactive Textile Dye*, presented at the USA Graduate Research Forum (2022).

8- Miltner, J., Ravine, T., **O'Brien, R.**, Glover, T., West, K. *Synthesis of a Novel, Regenerable Anti-Microbial Dye for Cotton Textiles*, presented at the 22nd AlChE Meeting (2022).

9- Davis, J.H., West, K.N., Rabideau, B., **O'Brien, R.A.**, Soltani, M., Butt, C. M. *Like trying to build airplanes with rocks: The challenge of creating ionic liquids with high thermal stability*, presented at the 261st ACS National Meeting (2021).

10- Burton, R.D., **O'Brien, R.A**., Mirjafari, A. *Bio-based amphiphilic ionic liquids: Design, synthesis and study of their structure-property relationships*, presented at the 259th ACS National Meeting & Exposition (2020).

11- Garich, H., Liu, D.X., Inman, M., Taylor, E.J., Peng, T., Davis, J.H., **O'Brien, R.A.**, Tench, M. *Reversible Electrochemical Mirror Devices Using Space Compliant Ionic Liquid Electrolytes*, presented at the 234th ECS National Meeting (2019).

12- Garich, Holly, Hall, Tim, Inman, Maria, Taylor, E. Jennings, Peng, Thomas, Davis, James, Tench, Morgan, **O'Brien, Richard**, *Reversible Electrochemical Mirror Devices using Room Temperature Ionic Liquid Electrolyte*, presented at the 233rd ECS National Meeting (2018).

13- Davis, Jr., James H., West, Kevin N., Rabideau, Brooks, Sui, Benjamin, Soltani, Mohammad, Cassity, Cody, Vo, Matt, McCants, JaMichael, Salter, Edward A., **O'Brien, Richard A.**, Wierzbicki, Andrzej, Stenson, Alexandra C., McGheehee, Jimmie, *On the creation and chemistry of ionic liquids in air for months at 300 ºC*, presented at the 255th ACS National Meeting & Exposition (2018).

14 -Siu, Benjamin, Cassity, Cody G., Badini, Alexander, Davis, Jr., James H., West, Kevin N., **O'Brien, Richard A.**, Soltani, Mohammad, *Thermally Stable Peraryl Phosphonium Ionic Liquids and Molten Salts: Thermodynamic and Thermophysical Properties*, presented at the 18th Annual AlChE Meeting (2018).

PRESENTATIONS AND POSTERS (Presenter or Co-author)

15 - He Nan, Cheng Zhang, **Richard A. O'Brien**, Adela Benchea, James H. Davis, Jr., Amrit Venkatesh, Aaron J. Rossini, Jared L. Anderson, *Ionic liquid-based stationary phases for gas chromatographic separations*, presented at the Minnesota Chromatography Forum (2018).

16 - Kevin N. West, Benjamin Sui, James H. Davis Jr., **Richard A. O'Brien**, Cody G. Cassity, Alexander Badini, Mohammad Soltani. *Thermally Robust Molten Salts & Ionic Liquids: Thermodynamics, Properties, and Phase Behavior*, presented at the 17th Annual AlChE Meeting (2017).

17- West, K.N. Davis Jr., J.H., **O'Brien, R.A.**, Sui, Cassity, Cody G. *Thermal and Thermodynamic Properties of Ionic Liquids and Molten Salts with High Thermal Stability*, presented at the 16th Annual AlChE Meeting (2016).

18- Mirjafari, A., **O'Brien, R. A.**, Sykora, R., Sanchez Zayas, M., Sheng, Y. *Drug-based lipidic ionic liquids: A new class of biomaterials*, presented at the 251st ACS National Meeting & Exposition (2016).

19- West, K.N., Green, B.D., **O'Brien, R.A.**, Davis, Jr., J.H. *Solubility and Volumetric Behavior of Binary Mixtures of Lipidic Ionic Liquids and Molecular Solutes*, presented at the 15th Annual AIChE Meeting (2015).

20- West, C.W., **O'Brien, R.A.**, Hollingsworth, B.E., Huynh, T., Sweat, R.E., Griffin, N.J. *Impact of Sulfur Heteroatoms on the Activity of Quaternary Ammonium Salts as Phase Transfer Catalysts*, presented at the 15th Annual AIChE Meeting (2015).

21-West, K.N., Green, B.D., **O'Brien, R.A.**, Davis, Jr., J.H. *Binary Phase Behavior of Lipidic Ionic Liquids*, presented at the 14th Annual AIChE Meeting (2014).

22-Green, B.D., West, K.N., **O'Brien, R.A.**, Davis, Jr., J.H. *Solvent Properties of Lipidic Ionic Liquids*, presented at the 14th Annual AIChE Meeting (2014).

23-Mirjafari, A., Braun, R.A., Lacy, J.N., **O'Brien, R.A.**, Davis, Jr., J.H. *Synthesis of bio- inspired organophosphorus functionalized ionic liquids via "click" radical addition*, 247th ACS National Meeting & Exposition, Division of Industrial and Engineering Chemistry, Dallas, TX (2014).

24-Davis, J. H., Chen, L., Mullen, G. E., Le Roch, M., Cassity, C. G., Gouault, N., Fadamiro, H. Y., Barletta, R. E., **O'Brien, R. A.**, Sykora, R. E., Stenson, A. C., West, K. N., Horne, H. H., Hendrich, J. M., Rui, K., *Ionic Liquids, On the formation of a protic ionic liquid*, Gordon Research Conference, (2014).

PRESENTATIONS AND POSTERS (Presenter or Co-author)

25-Hollingsworth, B.E., West, C.W., **O'Brien, R.A.**, Davis, J.H., Jr. *Novel quaternary ammonium salts as phase-transfer catalysts*, presented at the 245th ACS National Meeting & Exposition (2013).

26-West, K.N., Davis, J.H., **O'Brien, R.A.**, Langham, J. *VLE of Lipidic Ionic Liquid Systems*, presented at the 13th Annual AIChE Meeting (2013).

27-Griffin, N., **O'Brien, R.A.**, Wheeler West, C., *Extraction of Platinum Employing Novel Thiaalkylammonium Salts*, presented at the University of South Alabama UCUR Symposium (2013).

28-**O'Brien, R.A.**, Wheeler West, C., Hollingsworth, B.E., Mirjafari, A., Mobarrez, N., West, K.N., Davis, J.H., *Synthesis of Novel Tetraalkylammonium Bromides and their Derivatives as a new class of Phase Transfer Catalysts*, presented at the USA Faculty Development Forum (2013).

29-West, K.N., Davis, J.H., **O'Brien, R.A.**, Zimlich, T.K., AL-Hashem, A., Langham, J.V., *Understanding the Thermophysical & Solvent Properties of Lipidic Ionic Liquids*, presented at the USA Graduate Research Symposium (2013).

30-West, K.N., Davis, J.H., McCabe, J.R., AL-Hashem, A., Zimlich, T.K., Mirjafari, A., **O'Brien, R.A.** *Pure and Mixture Thermophysical Properties and Phase Behavior of Lipidic Ionic Liquids*, presented at the 12th Annual AIChE Meeting (2012).

31-West, K.N., Murray, S.M., Mattson, K.M., **O'Brien, R.A.**, Mirjafari, A., Davis, Jr., J.H. *The Influence of Structural Variation on the Thermophysical Properties of Lipid-Inspired Ionic Liquids*, presented at the 12th Annual AIChE Meeting (2012).

32-West, C.W., **O'Brien, R.A.**, Davis, Jr., J.H., Mirjafari, A. *Kinetic Evaluation of Novel Sulfur-Containing Quaternary Ammonium Salts as Phase Transfer Catalysts*, presented at the 12th Annual AIChE Meeting (2012).

33-West, K. N., Murray, S. M., Thigpen, A. S., Zimlich, T. K., Mirjafari, A., **O'Brien, R. A.**, Davis, J. H., *Tuning the thermophysical properties of lipidic ionic liquids through structural variation*, presented at the 243rd ACS National Meeting & Exposition (2012).

34-Mirjafari, A., Mobarrez, N., **O'Brien, R.A.**, West, K.N. & Davis Jr., J.H. *A strategy for the synthesis of 2-fatty acid- substituted imidazolium-based ionic liquids*, presented at the 243rd ACS National Meeting & Exposition (2012).

PRESENTATIONS AND POSTERS (Presenter or Co-author)

35-West, K.N., Murray, S.M., Mattson, K.M., **O'Brien, R.A.**, Mirjafari, A. & Davis Jr., J.H. *The Influence of Structural Variation on the Thermophysical Properties of Lipid-Inspired Ionic Liquids*, presented at the 11th Annual AIChE Meeting (2011).

36-Davis, Jr., J.H., **O'Brien, R.A.**, Mirjafari, A., Murray, S.M., Mattson, K.M., Salter, E.A., West, K.N. & Wierzbicki, A. *Lipid Inspired Ionic Liquids: Significant Progress in the Systematic Control of Structure Property Relationships in ILs with Long Alkyl Appendages*, presented at the 4th Congress on Ionic Liquids (2011).

37-Davis, J.H., West, K.N., Mattson, K.M., MacDonald, J.L., **O'Brien, R.** *Lipid inspired ionic liquids: Highly lipophilic ILs with low melting points*, presented at the Pacifichem Conference (2010).

38-**O'Brien, R.** *Understanding Clear Technologies for Candles: What are They? What's New? and What You Need to Know to Create Safe and Innovative Products*, presented at the National Candle Association Meeting (2003).

39-Leon y Leon, C.A., **O'Brien, R.A.**, McHugh, J.J., Dasarathy, H., Schimpf, W. *Polyethylene and Polypropylene as Low-Cost Carbon Fiber (LCCF) Precursors*, presented at the 33rd International SAMPE Technical Conference (2001).

40- Leon y Leon, C., **O'Brien, R.**, Dasarathy, H., McHugh, J., Schimpf, W. *Development of Low Cost Carbon Fiber (LCCF) for Automotive and Non-Aerospace Applications*, presented at the SAMPE-ACC-DOE-SPE Midwest Advanced Materials and Process Conference (2000).

41-**O'Brien, R.A.**, Chen, T., Rieke, R.D. *Chemical Modification of Halogenated Polystyrene Resins Utilizing Highly Reactive Calcium*, presented at the 26th ACS Midwest Regional Meeting (1991).

42-Kevin N. West, **Richard A. O'Brien**, Katie J. Strickland, Cody A. Cassity, Adela Benchea, Matthew Vo, and James H. Davis, Jr. *Thermal Extremophiles: ILs that Have Superior High-Temperature Thermal Stability*, presented at the Gordon Research Conference (2016).

43-A. Mirjafari, **R.A. O'Brien**, M. Sanchez Zayas, S.T. Nestor, J.C. Gaitor, M.M. Reardon, and R.E. Sykora, *Biomimetic Strategy to Develop Ionic Liquids as Amphiphilic Self-Assembly Materials*, presented at the Gordon Research Conference (2016).

PRESENTATIONS AND POSTERS (Presenter or Co-author)

44-Braun, R.A., Bradfield, J.L, **O'Brien, R.A.**, Davis, Jr., J.H., Mirjafari, A. *Synthesis of Bio-Inspired Organophosphorus Functionalized Ionic Liquids via "Click" Radical Addition*, presented at the Gordon Research Conference (2014).

45-Hollingsworth, B.E., West Christy W., **O'Brien, R.A.**, Davis, J.H. *Novel quaternary ammonium salts as phase-transfer catalysts*, presented at the 245th ACS National Meeting & Exposition, Division of Industrial and Engineering Chemistry (2013).

46-**O'Brien, R.A.**, Hamade, F.A., Mirjafari, A., West, K.N., & Davis, Jr., J.H. *Thiol-ene Chemistry with Vinylphosphonic Acids: A new strategy for the Synthesis of Substituted Phosphonic Acids and their Derivatives*, presented at the 20th Annual University of South Alabama Research Forum (2013).

47-**O'Brien, R.A.**, Wheeler-West, C., Hollingsworth, B.E., Mirjafari, A., Mobarrez, N., West, K.N., & Davis, Jr. J.H. *Synthesis of Novel Tetraalkylammonium Bromides and their Derivatives as a new class of Phase Transfer Catalysts*, presented at the 20th Annual University of South Alabama Research Forum (2013).

48-Griffin, N., Wheeler-West, C., **O'Brien, R.A.** *Extraction of Platinum Employing Novel Thiaalkylammonium Salts*, presented at the University of South Alabama UCUR Symposium (2013).

49-Sweat, R., Wheeler-West, C., **O'Brien, R.A.** *Sulfur-Containing Quaternary Ammonium Salts as Phase Transfer Catalysts.*, presented at the University of South Alabama UCUR Symposium (2013).

50-**O'Brien, R.A.**, Mirjafari, A., Mobarrez, N., Murray, S.M., Salter, E.A., Weirzbicki, A., West, K.N., Davis, Jr., J.H. *Sulfur as an unsaturation 'effect isotere' in lipidic materials: Tm lowering in lipid-inspired ionic liquids and fatty acids*, presented at the 19th Annual University of South Alabama Research Forum (2012).

51-Mirjafari, A., **O'Brien, R.A.**, Mobarrez, M., Murray, S.M., Thigpen, A.S., West, K.N., Davis, Jr., J.H. *Thiol-ene "click" reactions as an efficient approach to synthesize structurally diverse pyridinium-based ionic liquids*, presented at the 19th Annual University of South Alabama Research Forum (2012).

52-Mobarrez, N., Mirjafari, A., **O'Brien, R.A.**, West, K.N., Davis, Jr., J.H. *Thiol-yne coupling reactions as a green protocol to synthesize structurally diverse ionic liquids*, presented at the 19th Annual University of South Alabama Research Forum (2012).

53-West, K.N., Murray, S.M., Thigpen, A.S., Zimlich, T.K., Mirjafari, A., **O'Brien, R. A.**, Davis Jr., J.H. *Tuning the thermophysical properties of lipidic ionic liquids through structural variation*, presented at the 243rd ACS National Meeting & Exposition, Division of Industrial and Engineering Chemistry (2012).

PRESENTATIONS AND POSTERS (Presenter or Co-author)

54-Mirjafari, A., Murray, S.M., **O'Brien, R.A.**, West, K.N., Davis, Jr., J.H. *Cationic lipids (transfection) as design tutors: insights into structure-property relationships in lipidic ionic liquids*, presented at the 243rd ACS National Meeting & Exposition, Division of Industrial and Engineering Chemistry (2012).

55-Mirjafari, A., Reynold, R., Mobarrez, N., **O'Brien, R.A.**, West, K.N., Davis, Jr., J.H. *Functionalized sucrose esters of fatty acids: Synthesis of novel bio-based compounds using SEFOSE® by oxymercuration-demercuration reactions*, presented at the 243rd ACS National Meeting & Exposition, Division of Cellulose and Renewable Materials (CELL) and Sci-Mix (2012).

56-Mirjafari, A., **O'Brien, R.A.**, Murray, S.M., Thigpen, A.S., West, K.N., Davis, Jr., J.H. *Thiol-ene click reactions as an efficient approach to synthesize structurally diverse pyridinium-based ionic liquids*, presented at the 243rd ACS National Meeting & Exposition, Division of Industrial and Engineering Chemistry (2012).

57-**O'Brien, R.A.**, Mirjafari, A., Mattson, K.M., Murray, S.M., West, K.N., Davis, Jr., J.H. *Sulfur as an unsaturation 'effect isostere' in lipidic materials: Tm lowering in lipid-inspired ionic liquids and fatty acids*, presented at the 243rd ACS National Meeting & Exposition, Division of Industrial and Engineering Chemistry (2012).

58-**O'Brien, R.A.**, Mattson, K.M., Mirjafari, A., Murray, S.M., West, K.N., Davis, Jr., J.H., *Preparation of Lipid-Inspired Ionic Liquids via Thiol-ene Reaction and the Study of the Sulfur Position in a C_{18} Alkyl Appendage on the Melting Points*, presented at the 4th Congress of Ionic Liquids (2011).

59-Murray, S.M., Mirjafari, A., **O'Brien, R.A.**, West, K.N., Davis, Jr., J.H. *Thermophysical Characterization of Novel Lipid-Inspired Ionic Liquids*, presented at the 4th Congress of Ionic Liquids (2011).

60-Mirjafari, A., **O'Brien, R.A.**, Murray, S.M., West, K.N., Davis, Jr., J.H. *Thiol-ene Coupling Reaction of an Oleyl-based Precursor: Synthesis of Novel Lipid-inspired Ionic Liquids*, presented at the 4th Congress of Ionic Liquids (2011).

61-**O'Brien, R.A.**, West, K.N., Davis, Jr., J.H. *Functionalized Ionic Liquids with Highly Polar Polyhydroxylated Appendages and their Rapid Synthesis via Thiol-ene Click Chemistry*, presented at the 4th Congress of Ionic Liquids (2011).

62-**O'Brien, R.A.**, Mattson, K.M., Mirjafari, A., Murray, S.M., West, K.N., Davis, Jr., J.H. *Synthesis of Lipid-like Ionic Liquids with Diverse Appendages via the Thiol-ene Reaction*, presented at the 4th Congress of Ionic Liquids (2011).

PRESENTATIONS AND POSTERS (Presenter or Co-author)

63-**O'Brien, R.A.**, Mattson, K.M., McDonald, L., Mirjafari, A., Murray, S.M., West, K.N., Davis, Jr., J.H. *Thiol-ene Coupling Reactions as a Method to Prepare Functionalized Ionic Liquids*, presented at the 4th Congress of Ionic Liquids (2011).

64-Mirjafari, A., **O'Brien, R.A.**, Murray, S.M., West, K.N., Davis, Jr., J.H. *Thiol-yne Coupling Reactions as a Tool to Prepare Structurally Diverse Ionic Liquids*, presented at the 4th Congress of Ionic Liquids (2011).

65-Davis, Jr., J.H., **O'Brien, R.A.**, Mirjafari, A., Mattson, K.M., Murray, S.M., Salter, A., West, K.N., Wierzbicki, A. *Lipid-inspired ionic liquids: significant progress in systematic control of structure-property relationships in ILs with long alkyl appendages*, presented at the 4th Congress of Ionic Liquids (2011).

66-Mirjafari, A., **O'Brien, R.A.**, Murray, S.M., West, K.N., Davis, Jr., J.H. *Transformation of DOTMA and DOTAP Liposomes into Lipid-based Ionic Liquids*, presented at the 4th Congress of Ionic Liquids (2011).

67-**O'Brien, R.A.**, West, K.N., Davis, Jr., J.H. *Functionalized Ionic Liquids with Highly Polar Polyhydroxylated Appendages and their Rapid Synthesis via Thiol-ene Click Chemistry*, presented at the 18th Annual University of South Alabama Research Forum (2011).

68-Murray, S.M., Mattson, K.M., **O'Brien, R.A.**, West, K.N., Davis, Jr., J.H. *Synthesis and Characterization of Lipid-Inspired Ionic Liquids*, presented at the 18th Annual University of South Alabama Research Forum (2011).

69-Davis, Jr., J.H., **O'Brien, R.A.**, Mattson, K.M., Gaines, K., Plash, B.B., Wierzbicki, A., Salter, E.A. *New Bronsted Acidic TSILs. From Computation-guided Design to Synthesis and Properties*, presented at the 236th ACS National Meeting & Exposition (2008).

70-Davis, Jr., J.H., **O'Brien, R.A.**, Gaines, K., Mattson, K.M. *New Amine Functionalized Ionic Liquids for Multimode Gas Capture*, presented at the 236th ACS National Meeting & Exposition (2008).

71-Gaines, K., Davis, Jr., J.H., **O'Brien, R.A.**, Mattson, K.M. *Designed to Decompose: Task-specific Ionic Liquids Incorporating N-Acylium and N-Sulfonylium Cations*, presented at the 236th ACS National Meeting & Exposition (2008).

72-Mattson, K.M., Davis, Jr., J.H., **O'Brien, R.A.**, Gaines, K. *Task-specific Ionic Liquids (TSILs) Based on Heterocyclic Cations with Directly Ring-attached Aldehyde and Benzoyl Groups: Hydrate and Acetal Formation*, presented at the 236 th ACS National Meeting & Exposition (2008).

SERVICE

1- Department of Chemistry

Committee Member: Search Committee for one-year, non-tenure track for Instructor/Assistant Professor positions. (2016, 2017, and 2018)
Instrumentation Committee. (2012 – present)
500 MHz JEOL NMR (CH201L/CH202L, faculty, graduate, and undergraduate research)
JASCO 4000 FT-IRs (CH201L/CH202L)
Buck Scientific Gas Chromatographs (310 and 910 Models)
Committee Chair: Safety & Stockroom Committee. (2019 – 2020)
Committee Chair: General Ed Sub Committee. (2013 – 2019)
Committee Member: General Education Curriculum Committee. (2020-present)

2- College of Arts & Sciences and the University of South Alabama

SAILL Member (2021 – present)
Committee Member: Undergraduate Scholarship Committee. (2015 – 2018)
Committee Member: Scientific Reasoning Subcommittee of the General Education Committee. (2018 – 2019)
Committee Member: Grade Grievance Committee. (2019 – 2020)
Committee Member: USA Academic Programs and Planning Committee. (2013– 2014)
Committee Member: University Lab Safety Committee. (2019 – present)
Committee Member: Museum Studies Committee. (2022 – 2023)
Committee Member: International Education Committee. (2023-2024)