

Curriculum Vitae (1/10/2016)

Derek L. Patton, Ph.D.

Associate Professor, School of Polymers and High Performance Materials

University of Southern Mississippi

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I. EDUCATION

B.S. 2000, Chemistry, Jacksonville State University,
Magna cum laude and Honors in Chemistry

M.S. 2002, Chemistry, University of Alabama at Birmingham, Birmingham, AL

Ph.D. 2006, Chemistry, University of Houston, Houston, TX

Postdoctoral 2006-2008, NIST Polymers Division, Gaithersburg, MD

II. PROFESSIONAL EXPERIENCE

2015 – Present **Director**, NSF Research Traineeship (NRT): Training Next-Generation Scientists with Experimental, Theoretical, and Computational Competencies for Complex Interfaces (INTERFACE)

2015 – 2018 **Treasurer**, ACS Division of Polymer Chemistry (POLY)

2014 – Present **Associate Professor**, University of Southern Mississippi, School of Polymers and High Performance Materials, Hattiesburg, MS

2008 – 2014 **Assistant Professor**, University of Southern Mississippi, School of Polymers and High Performance Materials, Hattiesburg, MS

2006 – 2008 **National Research Council Postdoctoral Associate**, National Institute of Standards and Technology, Polymers Division, Gaithersburg, MD, Advisor: Kathryn Beers

2004 – 2006 **Welch Foundation Graduate Research Fellow**, University of Houston, Department of Chemistry, Birmingham, AL, Advisor: Rigoberto Advincula

Summer 2005 **Visiting Scientist**, Max Planck Institute for Polymer Research, Mainz, Germany, Advisor: Wolfgang Knoll

Summer 2003 **Visiting Scientist**, Tokyo Institute for Agriculture and Technology, Tokyo, Japan, Advisor: Hiroaki Usui

2000 – 2002 **NSF GK-12 Graduate Teaching Fellow**, University of Alabama at Birmingham, Department of Chemistry, Birmingham, AL, Advisor: Rigoberto Advincula

III. AWARDS AND HONORS

- 2015 USM College of Science and Technology Faculty Research Award
- Invited to participate in the 2015 RSC Polymer Chemistry Emerging Investigators Themed Issue

- Honors College Senior Thesis Advisement Award for College of Science and Technology, 2013
- 2011 University of Southern Mississippi Faculty Senate/University President Junior Faculty Research Award
- *National Science Foundation CAREER Award*, Division of Materials Research, Polymers Program, 2011 – 2016
- Articles featured as journal covers in *Polym. Chem.*, *Chem. Commun.*, and *Macromol. Rapid Commun.*
- PMSE Young Investigator Symposium Invitation, 2010
- QEP Faculty Development Fellowship: Finding a Voice Improving Oral and Writing Competencies in the Classroom, 2009
- National Research Council (NRC) Postdoctoral Research Associateship, 2006 – 2008
- Postdoctoral Outstanding Poster Presentation, Gordon Research Conference, Polymers, 2007
- UH Graduate Research Achievement Award, Sigma Xi Scientific Research Society, 2006
- Pennzoil Fellowship for Outstanding 5th Year Graduate Student, University of Houston, 2005
- Graduate Physical Sciences Poster Award, Sigma Xi Research Day, University of Houston, 2005
- Poster Award, ACS 2005, San Diego, Colloid and Surface Science Division, 2004
- Welch Foundation Research Fellowship, University of Houston, 2004 – 2006
- NSF GK-12 Graduate Teaching Fellow, University of Alabama at Birmingham, 2000 – 2002

IV. RESEARCH GROUP AWARDS AND ACHIEVEMENTS

2015

- Douglas Amato, 1st Place Winner in the Society of Plastics Engineers Polymer Modifiers and Additives Division Technical Writing Challenge, August 2015
- Douglas Amato, ACS Science Coaches Award, October 2014
- Cassandra Reese, Awarded a prestigious three year National Science Foundation Graduate Research Fellowship (NSF-GRFP), June 2015
- Laken Kendrick, Awarded a prestigious three year National Science Foundation Graduate Research Fellowship (NSF-GRFP), June 2015
- Dahlia Amato, Best Poster Award - ACS Division of Polymer Chemistry, Denver 2015
- Susan Walley, Top Rated Eagle SPUR Proposal (Funded at \$1,500)
- Laken Kendrick (1st) and Chase Tretbar (2nd), both senior undergraduate students in the Patton Research Group, won poster awards at the 2015 Waterborne Symposium.
- Dahlia Amato selected as a finalist for the prestigious Paul and Daisy Soros Fellowship for New Americans, January 2015

2014

- Brian Donovan Selected to participate in 16th National School on Neutron and X-ray Scattering
- Dahlia Amato, ACS Science Coaches Award, October 2014

- Dahlia Amato, NSF GK-12 Fellowship
- Catherine Barnier (REU Summer 2014), Best REU Paper Award

2013

- Ethan Hoff, Best Honors Thesis in College of Science and Technology, May 9, 2013
- Brian Donovan awarded a Department of Education Graduate Assistance in Areas of National Need Fellowship, 2013
- Austin Baranek, Best Oral Student Presentation – 2nd Place, Mississippi Academy of Sciences, Hattiesburg, MS Feb 22, 2013
- Austin Baranek, 1st Place Best Oral Student Presentation, Waterborne Symposium, New Orleans, LA Feb 7, 2013
- Emily Hoff, 1st Place Best Poster Award, Waterborne Symposium, New Orleans, LA Feb 7, 2013
- Li Xiong, 2nd Place Best Poster Award, Waterborne Symposium, New Orleans, LA Feb 7, 2013

2012

- Emily Hoff, Awarded a prestigious three year National Science Foundation Graduate Research Fellowship (NSF-GRFP), June 2012
- Bradley Sparks awarded a Department of Education Graduate Assistance in Areas of National Need Fellowship, 2012
- Ryan Hensarling, Selected to participate in 14th National School on Neutron and X-ray Scattering, 2012
- Bradley Sparks, RadTech Experience Scholarship, Full travel and accommodations to attend the RadTech Conference in Chicago, IL, 2012
- 1st Place Best Poster Award for Austin Baranek, Waterborne Symposium, New Orleans, LA Feb 16, 2012
- 3rd Place Best Poster Award for Emily Hoff, Waterborne Symposium, New Orleans, LA Feb 16, 2012
- Best Student Oral Presentation Finalist for Bradley Sparks, Waterborne Symposium, New Orleans, LA Feb 16, 2012

2011

- RSC *Polymer Chemistry* Best Poster Award for Ryan Hensarling, International Stimuli Responsive Symposium, Hattiesburg, MS October 25, 2011
- Best POLY Division Poster Award for Ryan Hensarling, ACS National Meeting, San Diego, CA August 30, 2011
- Timothy Kuchera, 1st Place Best Paper Award, USM School of Polymers REU Program, \$1,000 Travel Award to attend and present at the San Diego National ACS Meeting, August 2011
- Ryan Hensarling selected to participate in the POLY Excellence in Graduate Polymer Research Symposium, San Diego National ACS Meeting, March 25-29, 2013
- Ryan Hensarling's communication selected as a feature on the journal cover of *Polymer Chemistry* and highlighted as a "hot article" (*Polym. Chem.* **2011**, 2, 88-90.)
- Bradley Sparks' communication selected as a feature on the journal cover of *Chemical Communications* (*Chem. Commun.* **2011**, 47, 6245-6247.)
- Matthew Jungman awarded an NSF GK-12 Fellowship, 2011 – 2012

2010

- Austin Baranek awarded an NSF GK-12 Fellowship, 2010 – 2011
- Ryan Hensarling, 1st Place Best Poster Presentation, Waterborne Symposium, New Orleans, LA Feb 10 – 12, 2010
- Bradley Sparks, 2nd Place Best Poster Presentation, Waterborne Symposium, New Orleans, LA Feb 10 – 12, 2010
- Ryan Hensarling awarded a Department of Education Graduate Assistance in Areas of National Need Fellowship, 2009 – 2012

V. PUBLICATIONS

A. Publication Statistics (as of 12/27/2015, Source: Google Scholar)

H-Index: 20

Total Peer-Reviewed Publications: 49

B. Publications

Book Chapters

1. Donovan, B.; **Patton, D.*** "Step Polyaddition Polymerizations, an Overview" in *Encyclopedia of Polymeric Nanomaterials*, Springer-Verlag Berlin Heidelberg **2015**. (Invited Chapter)
2. Hensarling, R.; **Patton, D.*** "Surface Engineering with Thiol-Click Chemistry" in *Thiol-X Chemistries in Polymer and Materials Science*, Lowe, A.; Bowman, C. Eds.; RSC, **2013**. ISBN: 978-1-84973-660-2 (Invited Book Chapter)
3. Locklin, J.; **Patton, D.**; Advincula, R.* "Nanoscale Manipulation of Bolaform Amphiphiles." *Encyclopedia of Nanoscience and Nanotechnology*, **2003**, Marcel Dekker Publishers, invited chapter.

Refereed Journal Articles

1. Hoff, E.; Abel, B.; Tretbar, C.; McCormick, C.; Patton, D.* "RAFT polymerization of "splitters" and "cryptos": Exploiting azole-N-carboxamides as blocked isocyanates for ambient temperature post-polymerization modification" *Macromolecules* **2016**, ASAP
2. Sengupta, P.; Gloria, J.; Amato, D. N.; Amato, D. A.; Patton, D.; Murali, B.; Flynt, A.* "Utilizing Intrinsic Properties of Polyaniline to Detect Nucleic Acid Hybridization through Electrostatic Interaction." *Biomacromolecules* **2015**, *16*, 3217–3225.
3. Foster, S.; Hoff, E.; Curtzwiler, G.; Williams, E.; Davis, K.; Patton, D.; Rawlins, J.* "Chemorheology investigations of a glassy epoxy thermoset on tensile plastic flow and fracture morphology" *J. Polym. Sci. Part B: Polym. Phys.* **2015**, *53*, 1333-1344. **Featured on JPSB: Polym. Phys. Front Cover.**
4. Amato, D. N.; Amato, D. V.; Narayanan, J.; Donovan, B. R.; Douglas, J. R.; Walley, S. E.; Flynt, A.; Patton, D.* "Functional, composite polythioether nanoparticles via thiol-alkyne photopolymerization in miniemulsion" *Chem. Commun.* **2015**, *51*, 10910-10913.

5. Yager, K.;* Forrey, C.; Singh, G.; Satija, S.; Page, K.; Patton, D.; Douglas, J.; Jones, R.; Karim, A.* "Thermally-Induced Transition of Lamellae Orientation in Block-Copolymer Films on 'Neutral' Nanoparticle-Coated Substrates" *Soft Matter* **2015**, *11*, 5154-5167.
6. Amato, D. V.; Amato, D. N.; Flynt, A. S.; Patton, D.* "Functional, sub-100 nm polymer nanoparticles via thiol-ene miniemulsion photopolymerization" *Polym. Chem.* **2015**, Advance Article. DOI: 10.1039/C4PY01449A. **Featured in the 2015 RSC Polymer Chemistry Emerging Investigators Themed Issue.**
7. Donovan, B. R.; Cobb, J. S.; Hoff, E.F.T.; Patton, D.* "Thiol-ene Adhesives from Clove Oil Derivatives" *RSC Advances* **2014**, *4*, 61927-61935.
8. Arnold, R.; Patton, D.; Popik, V.; Locklin, J.* "A Dynamic Duo: Pairing Click Chemistry and Postpolymerization Modification to Design Complex Surfaces" *Acc. Chem. Res.* **2014**, *47*, 2999-3008. [Link](#)
9. Xiong, L.; Kendrick, L.; Heusser, H.; Webb, J.; Sparks, B.; Goetz, J.; Guo, W.; Stafford, C.; Blanton, M.; Nazarenko, S.; Patton, D.* "Spray-Deposition and Photopolymerization of Organic-Inorganic Thiol-ene Resins for Fabrication of Superamphiphobic Surfaces" *ACS Appl. Mater. Interfaces* **2014**, *6*, 10763-10774. [Link](#)
10. McNair, O.; Brent, D.; Sparks, B.; Patton, D.; Savin, D.* "Sequential Thiol Click Reactions: Formation of Ternary Thiourethane/Thiol-Ene Networks with Enhanced Thermal and Mechanical Properties" *ACS Appl. Mater. Interfaces* **2014**, *6*, 6088-6097. [Link](#)
11. Baranek, A.; Kendrick, L.; Trebar, C.; Patton, D.* "Solvent-free Copolymerization of Rigid and Flexible Bis-1,3-benzoxazines: Facile Tunability of Polybenzoxazine Network Properties" *Polymer* **2013**, *54*, 5553-5559. [Link](#)
12. McNair, O.; Sparks, B.; Janisse, A.; Brent, D.; Patton, D.; Savin, D.* "Highly Tunable Thiol-Ene Networks via Dual Thiol Addition" *Macromolecules* **2013**, *46*, 5614-5621. [Link](#)
13. Jungman, M.; Cobb, J.; Lawler, D.; Sholar, J.; Johnson, C.; Patton, D.* "Exploring the Effect of Maximum Cure Temperature on the Thermal and Thermomechanical Properties of Polybenzoxazine Networks" *Macromolecular Symposia* **2013**, *329*, 133-141. [Link](#)
14. Sparks, B.; Hoff, E.F.T.; Xiong, L.; Goetz, J.; Patton, D.* "Superhydrophobic Hybrid Inorganic-Organic Thiol-ene Surfaces Fabricated via Spray -Deposition and Photopolymerization" *ACS Appl. Mater. Interfaces* **2013**, *5*, 1811-1817. [Link](#)
15. Hensarling, R.; Hoff, E.; LeBlanc, A.; Guo, W.; Rahane, S.; Patton, D.* "Photocaged pendent thiol polymer brush surfaces for post-polymerization modifications via thiol-click chemistry" *J. Polym. Sci. Part A: Polym. Chem.* **2013**, *51*, 1079-1090. [Link](#)
16. Sparks, B.; Hoff, E. F.; Hayes, L.; Patton, D.* "Mussel-inspired Thiol-ene Polymer Networks: Influencing Network Properties and Adhesion with Catechol Functionality" *Chem. Mater.* **2012**, *24*, 3633-3642. [Link](#)
17. Baranek, A.; Kendrick, L.; Narayanan, J.; Tyson, G.; Wand, S.; Patton, D.* "Flexible aliphatic-bridged bisphenol-based polybenzoxazines" *Polym. Chem.* **2012**, *3*, 2892-2900. [Link](#)

18. Narayanan, J.; Jungman, M.; Patton, D.* "Hybrid dual-cure polymer networks via sequential thiol-ene photopolymerization and thermal ring-opening polymerization of benzoxazines" *React. Funct. Polym.* **2012**, *72*, 799-806 [Link](#)
19. Bapat, A.; Ray, J.; Savin, D.; Hoff, E.; Patton, D.; Sumerlin, B.* "Dynamic-covalent nanostructures prepared by Diels–Alder reactions of styrene-maleic anhydride-derived copolymers obtained by one-step cascade block copolymerization" *Polym. Chem.* **2012**, *3*, 3112-3120. [Link](#)
20. Guo, W.; Hensarling, R.; LeBlanc, A.; Hoff, E.; Baranek, A.; Patton, D.* "Rapid Synthesis of Polymer Brush Surfaces via Microwave-Assisted Surface-Initiated Radical Polymerization (μ W-SIP)" *Macromol. Rapid. Commun.* **2012**, *33*, 863-868. **Special Issue Invited Article: "Polymer Science – The Next Generation"**. [Link](#)
21. Ray, J.; Naik, S.; Hoff, E.; Johnson, A.; Ly, J.; Easterling, C.; Patton, D.; Savin, D.* "Stimuli-Responsive Peptide-Based ABA-Triblock Copolymers: Unique Morphology Transitions With pH" *Macromol. Rapid Commun.* **2012**, *33*, 819-826. **Featured on the cover of special issue: "Polymer Science – The Next Generation"**. [Link](#)
22. Patton, D.; Page, K.; Hoff, E.; Fasolka, M.; Beers, K.* "A Robust and High-Throughput Measurement Platform for Monomer Reactivity Ratios from Surface-Initiated Polymerization" *Polym. Chem.* **2012**, *3*, 1174-1181. [Link](#)
23. Sparks, B.; Kuchera, T.; Jungman, M.; Richardson, A.; Savin, D.; Hait, S.; Lichtenhan, J.; Striegel, M.; Patton, D.* "Cyclic Tetravinylsiloxanetetraols as Hybrid Inorganic-Organic Thiol-ene Networks" *J. Mater. Chem.* **2012**, *22*, 3817-3824. [Link](#)
24. Rahane, S.; Hensarling, R.; Sparks, B.; Stafford, C.; Patton, D.* "Synthesis of multifunctional polymer brush surfaces via sequential and orthogonal thiol-click reactions" *J. Mater. Chem.* **2012**, *22*, 932-943. [Link](#)
25. Deng, S., Fulghum, T.M., Krueger, G., Patton, D., Park, J.-Y., Advincula, R.C.* "Hybrid gold-nanoparticle-cored conjugated thiophene dendrimers: Synthesis, characterization, and energy-transfer studies" *Chemistry - A European Journal* **2011**, *17*, 8929-8940. [Link](#)
26. Sheppard, G.; Oseki, T.; Baba, A.; Patton, D.; Kaneko, F.; Mao, L.; Locklin, J.* "Thiolene-based microfluidic flow cells for surface plasmon resonance imaging" *Biomicrofluidics* **2011**, *2*, 26501-26507. [Link](#)
27. Sparks, B.; Ray, J.; Savin, D.; Stafford, C. Patton, D.* "Synthesis of Thiol-Clickable and Block Copolypeptide Brushes via Nickel-Mediated Surface Initiated Polymerization of α -Amino Acid N-Carboxyanhydrides (NCAs)" *Chem. Commun.* **2011**, *47*, 6245-6247. **Selected for Feature on the Inside Cover of Chemical Communications.** [Link](#)
28. Waenkaew, P.; Taranekar, P.; Jiang, G.; Huang, C.; Fulghum, T.; Patton, D.; Jayarathna, L.; Phanichphant, S.; Advincula, R.* "Nanostructured Interpenetrating Polymer Network (IPN) Precursor Ultrathin Film" *Macromol. Chem. Phys.* **2011**, *212*, 1039-1049. [Link](#)
29. Patton, D.; Knoll, W.; Advincula, R.* "Polymer Loops vs. Brushes on Surfaces: Adsorption, Kinetics, and Viscoelastic Behavior of Thiol Telechelics on Gold" *Macromol. Chem. Phys.* **2011**, *212*, 485-497. [Link](#) **Highlighted on the Front Cover of the Journal.**

30. Hensarling, R.; Rahane, S.; LeBlanc, A.; Sparks, B.; White, E.; Locklin, J.; Patton, D.* "Thiol-Isocyanate "Click" Reactions: Rapid Development of Functional Polymeric Surfaces" *Polym. Chem.* **2011**, *2*, 88-90. [Link](#) **Highlighted as a Hot Article in the Polymer Chemistry Blog and on the Inside Front Cover of the journal.**
31. Arges, C.; Kulkarni, S.; Baranek, A.; Pan, K.-J.; Jung, M.-S.; Patton, D.; Mauritz, K.A.; Ramani, V. "Quaternary ammonium and phosphonium based anion exchange membrane" *ECS Transactions* **2010**, *33*, 1903-1913. [Link](#)
32. Hensarling, R.; Doughty, V.; Chan, J.; Patton, D.* "Clicking Polymer Brushes with Thiol-Yne Chemistry: Inside and Out" *J. Am. Chem. Soc.* **2009**, *131*, 14673-14675. [Link](#)
33. Chan, E; Page, K.; Im, S.; Patton, D.; Huang, R.; Stafford, C. "Viscoelastic Properties of Confined Polymer Films Measured via Thermal Wrinkling" *Soft Matter* **2009**, *5*, 4638-4641. DOI: 10.1039/b916207k
34. Yager, K.G.; Berry, B.C.; Page, K.; Patton, D.; Karim, A.; Amis, E.J. "Disordered Nanoparticle Interfaces for Directed Self-assembly" *Soft Matter* **2009**, *5*, 622-628. [Link](#)
35. Patton, D.; Taranekar, P.; Fulghum, T.; Advincula, R. "Electrochemically Active Dendritic Linear Block Copolymers via RAFT Polymerization: Synthesis, Characterization, and Electrodeposition Properties" *Macromolecules*, **2008**, *41*, 6703-6713. [Link](#)
36. Patton, D.; Page, K.; Xu, C.; Genson, K.; Fasolka, M.; Beers, K. "Measurement of Reactivity Ratios in Surface-Initiated Radical Copolymerization" *Macromolecules* **2007**, *40*, 6017. [Link](#)
37. Taranekar, P.; Fulghum, T.; Patton, D.; Ponnepoti, R.; Clyde, G.; Advincula, R. "Investigating Carbazole Jacketed Precursor Dendrimers: Sonochemical Synthesis, Characterization, and Electrochemical Crosslinking Properties" *J. Am. Chem. Soc.* **2007**, *129*, 12537-12548. [Link](#)
38. Taranekar, P.; Fulghum, T.; Baba, A.; Patton, D.; Advincula, R. "Quantitative electrochemical and electrochromic behavior of terthiophene and carbazole containing conjugated polymer network film precursors: EC-QCM and EC-SPR" *Langmuir* **2007**, *23*, 908-917. [Link](#)
39. Patton, D.; Advincula, R. "A Versatile Synthetic Route to Macromonomers via RAFT Polymerization" *Macromolecules* **2006**, *39*, 8674. [Link](#)
40. Taranekar, P.; Park, J.; Patton, D.; Fulghum, T.; Ramon, J.; Advincula, R. "Conjugated Polymer Nanoparticles via Intramolecular Crosslinking of Dendrimeric Precursors" *Adv. Mat.* **2006**, *18*, 2461. [Link](#)
41. Fulghum, T.; Patton, D.; Advincula, R. "Fuzzy Ternary Particle Systems by Surface-initiated Atom Transfer Radical Polymerization from Layer-by-Layer Colloidal Core-Shell Macroinitiator Particles" *Langmuir* **2006**, *22*, 8397. [Link](#)
42. Taranekar, P.; Abdulbaki, M.; Waenkaew, P.; Patton, D.; Fulghum, T.; Advincula, R. "Synthesis and Properties of Poly(cyanofluorene-alt-o/m/p-phenylenevinylene)-based Alternating Copolymers for Light-Emitting Diode" *Chem. Mater.* **2006**, *39*, 3848. [Link](#)

43. Patton, D.; Mullings, M.; Advincula, R. "A Facile Synthesis Route to a,w-Functionalized Thiol Telechelics via Reversible Addition Fragmentation Chain Transfer (RAFT) Polymerization" *Macromolecules* 2005, 38, 8597. [Link](#)
44. Deng, S.; Locklin, J.; Patton, D.; Baba, A.; Advincula, R. C.; "Thiophene Dendron Jacketed Poly(amidoamine) Dendrimers: Nanoparticle Synthesis and Adsorption on Graphite" *J. Am. Chem. Soc.* 2005, 127(6), 1744. [Link](#)
45. Katsuki, K.; Bekku, H.; Kawakami, A.; Locklin, J.; Patton, D.; Tanaka, K.; Advincula, R.; Usui, H. "Preparation of carbazole polymer thin films chemically bound to substrate surface by physical vapor deposition combined with self-assembled monolayer" *Japanese Journal of Applied Physics Part 1*: 2005, 44(1B), 504.
46. Patton, D.; Locklin, J.; Meredith, M.; Xin, Y.; Advincula, R.; "Nanocomposite Hydrogen-Bonded Multilayer Ultrathin Films by Simultaneous Sexithiophene and Au Nanoparticle Formation" *Chem. Mater.* 2004, 16(24), 5063. [Link](#)
47. Locklin, J.; Patton, D.; Deng, S.; Baba, A.; Millan, M.; Advincula, R. C.; "Conjugated Oligothiophene-Dendron-Capped CdSe Nanoparticles: Synthesis and Energy Transfer" *Chem. Mater.* 2004, 16(24), 5187. [Link](#)
48. Patton, D.; Park, M.-K.; Wang, S.; Advincula, R. C.; "Evanescent Waveguide and Photochemical Characterization of Azobenzene-Functionalized Dendrimer Ultrathin Films" *Langmuir* 2002, 18(5), 1688. [Link](#)
49. Gryko, J.; McMillan, P.; Marzke, R.; Ramachandran, G.; Patton, D.; Deb, S.; Sankey, O. "Low-density framework form of crystalline silicon with a wide optical band gap" *Physical Review B: Condensed Matter and Materials Physics* 2000, 62(12), 7707. [Link](#)

VI. FUNDING

Total External Funding Awarded (PI + Co-PI)	\$19,809,053
• External Funding Awarded as PI	\$5,046,751
• External Funding Awarded as Co-PI	\$14,762,302

Funding Source Distribution (from PI/Co-PI Total)

Federal	\$17,409,053
State	\$2,400,000
Foundation	\$110,000
Industry	\$651,181

GRANT SUPPORT

Principle Investigator (Total: \$5,046,751 as of 8/1/2015)

\$49,560; Funding Agency: National Science Foundation

Duration: 1 years (8/15/2015 – 7/31/2016)

Title: NRT Supplement: Computational Competencies Mini-Tutorials

PI: Dr. Derek Patton, Co-PIs: Dr. Sarah Morgan, Dr. Ras Pandey (Physics), and Dr. Julie Cwikla (OVPR)

\$110,000; Funding Agency: American Chemical Society Petroleum Research Fund (PRF)

Duration: 2 years (9/1/2015 – 8/31/2017)

Title: Sterically-Driven Selectivity in Acyclic Diene Metathesis (ADMET) Polymerization of Asymmetric α , ω -Dienes for Sequence-Controlled Polyolefins

PI: Dr. Derek Patton, Co-PI: Dr. Jason Azoulay

\$131,088; Funding Agency: Boeing Co

Duration: 1 year (7/31/15 – 6/30/16)

Title: Industrial Contract

PI: Dr. Derek Patton

\$2,824,395; Funding Agency: National Science Foundation

Duration: 5 years (4/1/2015 – 3/31/2020)

Title: NRT: Training Next-Generation Scientists with Experimental, Theoretical, and Computational Competencies for Complex Interfaces (INTERFACE)

PI: Dr. Derek Patton, Co-PIs: Dr. Sarah Morgan, Dr. Ras Pandey (Physics), and Dr. Julie Cwikla (OVPR)

\$200,000; Funding Agency: Boeing Co

Duration: 1 year (1/1/14 – 11/30/14)

Title: Advanced Adhesion Promotion for Low Tg Aircraft Sealants

PI: Dr. Derek Patton (USM), Co-PI: Dr. Rob Storey (USM)

\$500,000; Funding Agency: National Science Foundation

Duration: 5 years (5/1/2011 – 4/30/2016)

Title: CAREER: Functional Polymer Surfaces and Networks via Thiol-Click Chemistry

PI: Dr. Derek Patton (USM)

\$360,000; Funding Agency: National Science Foundation

Duration: 3 years (10/1/2010 – 9/30/2013)

Title: SCIART: Modified POSS Polymers for Stone Conservation

PI: Dr. Derek Patton (USM); Non-funded Co-PIs: Dr. Mary Striegel (NCPTT), Dr. Joe Lichtenhan (Hybrid Plastics)

\$427,708; Funding Agency: NIST Measurement Science and Engineering Research Grant Program

Duration: 3 years (9/1/2012 – 8/31/15)

Title: Fundamental studies of copolymer brush chemistry and dilute polymer solution behavior at the brush copolymer interface

PI: Dr. Derek Patton

\$200,000; Funding Agency: Boeing Co

Duration: 1 year (4/26/13 – 4/25/14)

Title: Adhesion Promotion for Low Tg Aircraft Sealants, 4/26/13 – 4/25/14
PI: Dr. Derek Patton (USM), Co-PI: Dr. Rob Storey (USM)

\$85,000; Funding Agency: Boeing Co.
Duration: 4 months (11/1/12 – 3/28/13)
Title: Cure-On-Demand Aircraft Sealants
PI: Dr. Derek Patton (USM), Co-PI: Dr. Robson Storey
Patton Percent Contribution: 50%

\$72,000; Funding Agency: Office of Naval Research
Duration: 2 years (10/1/2009 – 9/30/2011)
Title: Polyphosphazenes as Flame Retardant Nanocomposite Additives and Coatings
PI: Dr. Derek Patton

\$70,000; Funding Agency: Office of Naval Research
Duration: 1 year (7/16/2008 – 7/15/2009)
Title: Polyphosphazenes as Flame Retardant Nanocomposite Coatings and Additives for Flame Retardant Polyurea Technology
PI: Dr. Derek Patton (USM)

Co-Principle Investigator

\$2,699,753 (Subcontract to USM: \$1,181,498); Funding Agency: NSF
Duration: 3 years (8/1/15-7/31/17)
Title: Track-2: The Smart MATerial Design, Analysis, and Processing (SMATDAP) consortium: Building next-generation polymers and the tools to accelerate cost-effective commercial production
PI: Dr. John Hamilton (MSU); Co-PIs: Dr. Derek Patton (USM), Dr. Sarah Morgan (USM), Dr. Keisha Walters (MSU), Dr. Santanu Kundu (MSU)

\$149,997; Funding Agency: U.S. Dept. of Energy SBIR
Duration: 9 months (11/15/12 – 8/14/13)
Title: Novel Low Cost Single Layer Outcoupling Solution for OLED lighting
Industrial Lead: \$119,997, Universal Display Corp. (PI: Dr. Ruiqing Ma, Co-PIs: Dr. Mike Hack, Dr. Sean Xia)
University Subcontracts: \$15,000, Univ. of Southern Mississippi (Co-PI: Dr. Derek Patton); \$15,000, University of Michigan (Co-PI: Dr. Stephen Forrest)

\$3,000,000; Funding Agency: U.S. Air Force Academy
Duration: 3 years (9/1/12 – 8/31/16)
Title: Research and Development Focused on Qualifying and Quantifying the Pre-macroscopic Corrosion Processes to Understand and Deliver DoD Technology Road Map Needs
PI: Dr. Shelby Thames, Co-PI: Dr. James Rawlins (USM) and Dr. Derek Patton (USM)

\$533,064; Funding Agency: U.S. Department of Education
Duration: 3 years (8/16/12 – 8/15/15)

Title: Polymer Science graduate Assistance in Areas of National Need (GAANN)
PI: Dr. Robert Lochhead (USM), Co-PIs: Dr. Derek Patton (USM) and Dr. Sarah Morgan (USM)

\$4,818,051; Funding Agency: Office of Naval Research

Duration: 3 years (10/1/10 – 7/31/13)

Title: Composite Materials Research and Development

Subproject Title: Molecular and Macromolecular Design of Polybenzoxazine Networks:

Candidates for High Temperature Matrices

PI: Dr. Shelby Thames, Co-PIs: Dr. James Rawlins, Dr. Derek Patton, Dr. Jeff Wiggins, Dr. Daniel Savin, Dr. Sarah Morgan, Dr. Sergei Nazarenko, and Dr. Brian Olson

\$599,715; Funding Agency: National Science Foundation

Duration: 3 years (8/1/2009 – 7/31/2013)

Title: Partnership for Innovation: A Multinational Partnership to Incite Innovation via New Generation Tailored Polymers for Interfaces

PI: Dr. Robert Lochhead; Co-PI: Dr. Sarah Morgan and Dr. Derek Patton

\$653,280; Funding Agency: U.S. Department of Education

Duration: 3 years (8/15/2009 – 8/14/2012)

Title: Graduate Assistance in Areas of National Need (GAANN) Fellowship Program in Polymer Science

PI: Dr. Robert Lochhead (USM); Co-PI: Dr. Derek Patton (USM) and Dr. Sarah Morgan (USM)

\$35,093; Boeing Co., 5/16/11 – 8/31/11

Duration: 4 months (5/16/2011 – 8/31/2011)

Title: Efficient Sealants – Cure on Demand Chemistry Development

PI: Dr. Rob Storey, Co-PI: Dr. Derek Patton

\$2,400,000; Funding Agency: Mississippi Development Authority

Duration: 2 years (3/11/2009 – 3/10/2011)

Title: Optimize Alternate Fan Abradable Project

PI: Dr. Shelby Thames; Co-PI: Dr. James Rawlins, Dr. Jeff Wiggins, Dr. Sarah Morgan, Dr. Sergei Nazarenko, and Dr. Derek Patton

SENIOR PERSONNEL GRANT SUPPORT

\$344,000; Funding Agency: National Science Foundation

Duration: 3 years (8/1/2009 – 7/31/2013)

Title: Sustainable Aerospace and Marine Polymer Composites

PI: Dr. Daniel Savin; Co-PI: Dr. Sarah Morgan

Senior Personnel: Dr. Derek Patton, Dr. Rob Storey, Dr. Jeffrey Wiggins, Dr. Sergei Nazarenko, Dr. Charles McCormick, Dr. James Rawlins

\$1,935,500; Funding Agency: Department of Energy

Duration: 3 years (8/1/2009 – 5/31/2012)

Title: Alternate Fuel Cell Membranes for Energy Independence

PI: Dr. Ken Mauritz, Co-PI: Dr. Rob Storey

Senior Personnel: Dr. Daniel Savin, and Dr. Derek Patton

USM INTERNAL GRANT SUPPORT

Principle Investigator

\$2,000; Funding Agency: USM Office of VPR Proposal Development Grant

Duration: 1 year (11/29/12 – 11/30/13)

Title: Probing the Diffusion and Mechanical Properties of Extracellular Barriers with Model “Mucin-Like” Polymer Surfaces

PI: Dr. Derek Patton (USM)

NATIONAL LAB USER FACILITY GRANT SUPPORT

Principle Investigator

72 h beam time; User Facility: ORNL Spallation Neutron Source

Duration: 3 days (4/19/13 – 4/22/13)

Title: A Novel Route to Gradient Block Copolymer Brush Architectures via Post-Polymerization Modification: Profiling Functional Group Distribution with Neutron Reflectometry

PI: Dr. Derek Patton (USM)

Graduate Student Participants: Wei Guo, Emily Hoff, and Brian Donovan

72 h beam time; User Facility: ORNL Spallation Neutron Source

Duration: 3 days (3/14/12 – 3/18/12)

Title: Investigating Post-Polymerization Modification of Thiol-Clickable Polymer Brushes via Neutron Reflectivity

PI: Dr. Derek Patton (USM)

Graduate Student Participants: Ryan Hensarling, Wei Guo, and Emily Hoff

VII. PRESENTATIONS

A. Invited Presentations

University of Southern Mississippi

International Conferences

- 2015, “Thiol-Mediated Macromolecular Engineering: From Functional Polymers to Nanoparticles” Fusion Functional Polymer Conference, Ascot, UK
- 2014, “Thiol-mediated Reactions: Routes to Functional Polymers, Networks, and Surfaces” Zing Polymer Chemistry Conference, Cancun, Mexico
- 2012, “Functional Polymer Surfaces via Thiol-Click Chemistry”, International Symposium on Organic Molecular Electronics, Tokyo Japan, June 7-8, 2012.

National and Regional Conferences

- 2015, “Polymer Scaffolds with Pendent Blocked Isocyanates for Sequential Postpolymerization Modification” 250th American Chemical Society National Meeting, Boston, MA, August 20, 2015.
- 2014, “Siloxane Precursors and Silica Nanoparticles: Routes to Hybrid Inorganic-Organic Thiol-ene Networks for Antiwetting Applications” San Diego, CA December 16, 2014.

- 2014, “Thiol-ene Photopolymerization: A Versatile Route to Superantwetting (SAW) Surfaces” Materials Research Society, Boston, MA December 4, 2014
- 2014, “Spray-Deposition and Photopolymerization of Organic–Inorganic Thiol–ene Resins for Fabrication of Superamphiphobic Surfaces”, ACS POLY Fluoropolymer Workshop, San Diego, CA October 15, 2014.
- 2014, “Thiol-ene Photopolymerization: A Versatile Route to Superantwetting (SAW) Surfaces”, American Chemical Society National Meeting, San Francisco, CA August 2014. Roy W. Tess Award Symposium in Honor of James Crivello
- 2014, American Coatings Conference, Atlanta, GA April 2014
- 2013, “Early Career Case Study: Investigating Postpolymerization Modification of Thiol-Clickable Polymer Brushes via Neutron Reflectometry”, 3rd Annual Neutron Scattering for Novices Workshop; Oak Ridge National Lab, Oak Ridge, TN June 17-18, 2013.
- 2013, Functional Films via Thiol-ene Photopolymerization: Tailoring Adhesion and Wettability via Bioinspired Design, Joint ACS PMSE/Chinese Chemical Society Polymers Division, Hattiesburg, MS, April 12, 2013.
- 2013, Functional Films and Materials via Thiol-ene Photopolymerization, 40th Annual Waterborne Symposium, New Orleans, LA, February 2013.
- 2012, Functional and Stimuli Responsive Surfaces via Postpolymerization Modification, International Symposium on Stimuli Responsive Materials, Santa Rosa, CA 2012
- 2012, Engineering Functional Polymer Surfaces via Thiol-Click Chemistry, 68th Southwest ACS Regional Meeting, Symposium: Functional Materials Based on Complex Macromolecular Architectures, Baton Rouge, LA Nov 4-7, 2012
- 2012, Flexible Bisphenol-Based Polybenzoxazine Networks: Design, Properties, and Potential Applications, Polymer Networks Group Meeting, Jackson Hole, WY August 12-16, 2012.
- 2012, Functional Polymer Surfaces via Thiol-Click Chemistry, NSF CAREER Awardee’s Symposium, 75th Annual Meeting Mississippi Academy of Sciences, Hattiesburg, MS, Feb. 23, 2012
- 2011, Modified POSS-Polymers for Stone Consolidation American Chemical Society National Meeting, Anaheim, CA 2011. NSF SCIART Symposium.
- 2011, Patton, D. Photopolymerization Fundamentals
- 2011, Surface Engineering with Thiol-Click Reactions, Waterborne Symposium, New Orleans, LA 2011.”
- 2010, Surface Engineering with Thiol-Click Reactions, American Chemical Society National Meeting, Boston, MA 2010. Thiol-X Symposium
- 2010, Thiol-Click Reactions: Versatile Synthetic Routes to Functional Polymer Surfaces, American Chemical Society National Meeting, San Francisco, CA 2010. PMSE Young Investigators Symposium.
- 2009, Thiol-Click Reactions: Versatile Synthetic Routes to Functional Polymer Surfaces, International Symposium on Stimuli Responsive Materials, Hattiesburg, MS 2009.

Departmental Colloquia

- 2015, “Thiol-X Chemistry: Multifaceted Routes to Macromolecular Engineering”, Chemistry and Biochemistry Department, California Polytechnic State University

- 2015, “Thiol-X Chemistry: Multifaceted Routes to Macromolecular Engineering”, Department of Chemical Engineering, Tulane University
- 2015, “Thiol-X Chemistry: Multifaceted Routes to Macromolecular Engineering”, Department of Chemistry, University of New Hampshire
- 2015, “Thiol-Mediated Reactions: Routes to Functional Polymer Networks, Surfaces, and Nanoparticles” Rensselaer Polytechnic Institute, Troy
- 2014, “Thiol-ene Photopolymerization: A Versatile Route to Functional Films and Materials”, College of Polymer Science and College of Polymer Engineering, University of Akron
- 2014, “Thiol-ene Photopolymerization: A Versatile Route to Functional Films and Materials”, Materials Measurement Laboratory, National Institute of Standards and Technology, Gaithersburg, MD
- 2013, “Functional Films via Thiol-ene Photopolymerization: Tailoring Adhesion and Wettability via Bioinspired Design”, Chemistry Departmental Seminar, University of North Carolina – Chapel Hill
- 2013, “Functional Films via Thiol-ene Photopolymerization: Tailoring Adhesion and Wettability via Bioinspired Design”, Chemistry Departmental Seminar, University of New Orleans
- 2012, “Engineering Functional Polymer Surfaces and Networks via Thiol-Click Chemistry”, Chemistry Departmental Seminar, University of Georgia, Nov. 14, 2012.
- 2012, “Engineering Functional Polymer Surfaces and Networks via Thiol-Click Chemistry”, Chemistry Departmental Seminar, Southern Methodist University
- 2012, “Surface Engineering and Hybrid Polymer Networks via Thiol-Click Chemistry”, Macromolecular Division Seminar, Louisiana State University, Jan. 27, 2012
- 2011, “Surface Engineering and Hybrid Polymer Networks via Thiol-Click Chemistry”, Chemistry Departmental Seminar, University of Alabama at Birmingham

Industry

- 2014, “Thiol-ene Photopolymerization: A Versatile Route to Superantwetting (SAW) Surfaces”, Behr Processing Co. Santa Ana, CA 2014.

B. Contributed Presentations

University of Southern Mississippi

- Dahlia Amato, Douglas Amato, Susan Walley, Derek L. Patton “Synthesis and Postpolymerization Modification of Polymer Nanoparticles Using Thiol-Mediated Reactions” 250th American Chemical Society National Meeting, Boston, MA, August 20, 2015.
- Brian Donovan, Jared Cobb, Laken Kendrick, and Derek Patton “Catechol-based monomers containing electron withdrawing substituents for improving interfacial adhesion” 250th American Chemical Society National Meeting, Boston, MA, August 20, 2015. (Oral)
- Brian Donovan and Derek Patton “Semi-fluorinated thioether polymers via step growth polymerization” 250th American Chemical Society National Meeting, Boston, MA, August 20, 2015. (Poster)
- Brian R. Donovan and Derek L. Patton “Semi-fluorinated thioether polymers via step growth polymerization” USM Graduate Research Symposium, March 23, 2015.

- Dahlia Amato, Douglas Amato, Susan Walley, Brian Donovan, Jessica Douglas, Jananee Narayanan, Olga Mavrodi, Dmitri Mavrodi, Alex Flynt, and Derek Patton “Functional, composite polythioether nanoparticles via thiol-alkyne photopolymerization in miniemulsion” Polymer Gordon Research Conference, Mt. Holyoke, MA June, 17, 2015. (Poster)
- Emily A. Hoff, Brooks A. Abel, Chase A. Tretbar, Charles L. McCormick, and Derek L. Patton “Low pH Aqueous RAFT Polymerization: Direct, Controlled Polymerization of Acyl Hydrazide-Containing Monomers and 4-Vinylimidazole” Polymer Gordon Research Conference, Mt. Holyoke, MA June, 17, 2015. (Poster)
- Emily Hoff, Brooks Abel, Chase Tretbar, Charles McCormick, Derek Patton “Facile post-polymerization modification of blocked isocyanate and hydrazide containing polymers”, POLY: Excellence in Graduate Polymer Research, American Chemical Society, Denver, CO March 23, 2015
- Douglas Amato, Dahlia Amato, Alex Flynt, Derek Patton “Functional polymer nanoparticles via thiol-ene nanoemulsion photopolymerization” POLY: Innovations in Macromolecular Network Chemistry, American Chemical Society, Denver, CO March 26, 2015
- Dahlia Amato, Krystin Holmes, Derek Patton “Introducing the effect of additives on hydrogel properties” CHED: Integrating Chemistry and Polymer Science Research into the Classroom, American Chemical Society, Denver, CO March 23, 2015 (Oral)
- Dahlia Amato, Douglas Amato, Mark Brei, Robson Storey, Derek Patton “Thiol-alkyne photopolymerization in miniemulsion: A facile route to functional polymer nanoparticles” POLY: Innovations in Macromolecular Network Chemistry, American Chemical Society, Denver, CO March 24, 2015 (Poster) **POLY Division Best Poster Award.**
- Emily A Hoff and Derek L Patton “Polymerization and Room Temperature Thiol-Isocyanate Modification of Blocked Isocyanatoethyl Methacrylates” Waterborne Symposium, New Orleans, LA Feb. 11, 2015. (Oral)
- Dahlia N. Amato, Douglas V. Amato, Alex S. Flynt, and Derek L. Patton, “Functional, sub-100 nm polymer nanoparticles via thiol-ene miniemulsion photopolymerization” Waterborne Symposium, New Orleans, LA Feb. 12, 2015. (Poster)
- Li Xiong, Wei Guo and Derek L. Patton “Superhydrophilic/Superoleophobic Surface Fabricated by Spray Deposition and Thiol-Ene Chemistry for Emulsified Oil/Water Separation” Waterborne Symposium, New Orleans, LA Feb. 12, 2015. (Poster)
- Jananee Narayanan, Shahab K. Rahimi and Derek L. Patton “Tunable network properties based on dual-cure hybrid based on poly(methacrylate) and polybenzoxazine networks” Waterborne Symposium, New Orleans, LA Feb. 12, 2015. (Poster)
- Yidan Guan, Kevin Meyers, Guangjie Hao, James W. Rawlins, Derek L. Patton “Preparation and Characterization of Latex Nanocomposites Using Modified Graphene Oxide: Mechanical, Water Sorption and Gas Barrier Properties” Waterborne Symposium, New Orleans, LA Feb. 12, 2015. (Poster)
- Emily A Hoff, Brooks A Abel, Chase A Tretbar, Charles L McCormick, Derek L Patton “Direct and indirect synthesis of hydrazide containing polymers via RAFT” POLY: Division of Polymer Chemistry, American Chemical Society, San Francisco, CA August 11, 2014

- Jananee Narayanan and Derek L. Patton “Tunable network properties based on dual cure hybrid (meth)acrylate and benzoxazine polymer networks” POLY: Division of Polymer Chemistry, American Chemical Society, San Francisco, CA August 13, 2014
- Brian R Donovan, Jared S Cobb, and Derek L Patton “Improving interfacial adhesion and network properties of halodopamine containing thiol-ene networks” POLY: Division of Polymer Chemistry, American Chemical Society, San Francisco, CA August 12, 2014
- Emily A Hoff, Brooks A Abel, Chase A Tretbar, Charles L McCormick, Derek L Patton “RAFT of blocked isocyanate methacrylates and pendent group modification by thiol-isocyanate reactions” POLY: Division of Polymer Chemistry, American Chemical Society, San Francisco, CA August 12, 2014 (Poster)
- Yidan Guan, Derek L. Patton, and James W. Rawlins “Fabricating biomimetic surfaces using non-wetting natural leaves as templates” PMSE: Division of Polymeric Materials Science and Engineering, American Chemical Society, San Francisco, CA August 12, 2014 (Poster)
- Brian R Donovan, Laken F Kendrick, and Derek L Patton “Geometric control of hybrid TiO₂/thiol-ene thin films” PMSE: Division of Polymeric Materials Science and Engineering, American Chemical Society, San Francisco, CA August 14, 2014
- **Patton, D.** *Spray-deposited superhydrophobic coatings via photopolymerization of hybrid thiol-ene polymer networks*, Gordon Research Conference: Polymers, Holyoke, MA June 2013, (Poster).
- Baranek, A.; **Patton, D.** *Synthesis and Characterization of Cross-linked, Quaternary Ammonium Polybenzoxazines for Anion Exchange Membranes*, 40th Annual Waterborne Symposium, New Orleans, LA, February 2013, (Oral) 1st Place Student Oral Presentation.
- Hoff, E. A.; Adkins, W.; Hensarling, H.; LeBlanc, A.; **Patton, D.** *Hydrazone-based dynamic covalent chemistry for reversible brush surface modification*, 40th Annual Waterborne Symposium, New Orleans, LA, February 2013, (Poster) 1st Place Poster Award.
- Xiong, L.; Sparks, B.; Hoff, E. F. T.; **Patton, D.** *Spray-deposited superamphiphobic coatings via photopolymerization of hybrid thiol-ene polymer networks*, 40th Annual Waterborne Symposium, New Orleans, LA, February 2013, (Poster) 2nd Place Poster Award.
- **Patton, D.** *Postpolymerization Modification of Polymer Brush Surfaces via Thiol-Click Chemistry*, Gordon Research Conference: Macromolecular Materials, Ventura, CA Jan. 2013, (Poster).
- Xiong, L.; Sparks, B. J.; Hoff, E. F.; **Patton, D.** *Spray-deposited superhydrophobic coatings via photopolymerization of hybrid thiol-ene polymer networks*, 245th ACS National Meeting & Exposition, New Orleans, LA, April 7-11; 2013.
- Hoff, E. F.; Sparks, B. J.; Hayes, L.; **Patton, D.** *Photopolymerization of thiol-ene/graphene nanocomposites*, 245th ACS National Meeting & Exposition, New Orleans, LA, April 7-11; 2013.
- Hoff, E. A.; Adkins, W. K.; Hensarling, R. M.; LeBlanc, A.; **Patton, D.** *Hydrazone-based dynamic covalent chemistry for reversible brush surface modification*, 245th ACS National Meeting & Exposition, New Orleans, LA, April 7-11; 2013.
- Cobb, J. S.; Jungman, M. J.; Narayanan, J.; **Patton, D.** *Ternary thiol-ene photopolymerizations using multifunctional monomers derived from the thiol-benzoxazine reaction*, 245th ACS National Meeting & Exposition, New Orleans, LA, April 7-11; 2013.

- Baranek, A. D.; Kendrick, L. L.; Narayanan, J.; Tyson, G. E.; Wand, S.; **Patton, D.** *Tailorability of bisphenol-based polybenzoxazines*, 245th ACS National Meeting & Exposition, New Orleans, LA, April 7-11; 2013.
- Baranek, A. D.; Kendrick, L. L.; Narayanan, J.; Tyson, G. E.; **Patton, D.** *Quaternary ammonium functional polybenzoxazines for anion exchange membrane (AEM) applications*, 245th ACS National Meeting & Exposition, New Orleans, LA, April 7-11; 2013.
- Baranek, A.; **Patton, D.** *Versatility of Bisphenol-Based Polybenzoxazine Networks*, Mississippi Academy of Science, Hattiesburg, MS, February 2013, (Oral)
- Hoff, E. A.; Adkins, W. K.; Hensarling, R. M.; LeBlanc, A.; **Patton, D.** *Reversible postpolymerization modification of brush surfaces via dynamic covalent hydrazone linkages*, Mississippi Academy of Science, Hattiesburg, MS, February 2013, (Oral)
- Guo, W.; Hensarling, R. M.; Hoff, E. A.; Leblanc, A. L.; Baranek, A. D.; **Patton, D.** *Rapid synthesis of polymer brush surfaces via microwave-assisted surface-initiated polymerization*, Mississippi Academy of Science, Hattiesburg, MS, February 2013, (Poster)
- Xiong, L.; Sparks, B. J.; Hoff, E. F.; **Patton, D.** *Spray-deposited superhydrophobic coatings via photopolymerization of hybrid thiol-ene polymer networks* Mississippi Academy of Science, Hattiesburg, MS, February 2013, (Poster)
- Sparks, B. J.; Hoff, E. F.; Hayes, L.; **Patton, D.** *Mussel-inspired thiol-ene polymer networks: Influencing network properties and adhesion with catechol functionality*, 68th Southwest Regional Meeting of the American Chemical Society, Baton Rouge, LA, November 4-7; 2012.
- **Patton, D.**; Hensarling, R.; Hoff, E.; LeBlanc, A.; Guo, W. *Engineering functional polymer surfaces via thiol-click chemistry*, 68th Southwest Regional Meeting of the American Chemical Society, Baton Rouge, LA, November 4-7; 2012.
- Sparks, B.; Hoff, E. F.; Hayes, L.; **Patton, D.** *Mussel-inspired Thiol-ene Polymer Networks: Influencing Network Properties and Adhesion with Catechol Functionality*, Polymer Networks Meeting, Jackson Hole, WY, August 15, 2012 (Poster).
- Baranek, A.; Kendrick, L.; Narayanan, J.; Tyson, G.; **Patton, D.** *Flexible bisphenol-based polybenzoxazines*, 10th National Graduate Research Polymer Conference, Case Western Reserve University, Cleveland, OH, May 2012, (Oral)
- Narayanan, J.; Hoff, E. F.; Bryson, T.; **Patton, D.** *Polynorbornene-based copolymers bearing thermally co-curable epoxy and benzoxazine pendent groups via ring opening metathesis polymerization*, 10th National Graduate Research Polymer Conference, Case Western Reserve University, Cleveland, OH, May 2012, (Oral)
- Kuchera, T. J.; Sparks, B. J.; Jungman, M. J.; Richardson, A. D.; Sain, D. A.; Hait, S.; Lichtenhan, J.; Striegel, M. F.; **Patton, D.** *Cyclic tetravinylsiloxanetetraols as hybrid inorganic-organic thiol-ene networks*, 243rd ACS National Meeting & Exposition, San Diego, CA, March 25-29; 2012.
- Jungman, M. J.; Cobb, J. S.; Narayanan, J.; **Patton, D.** *Post-modification of alkyne-functionalized thiol-benzoxazine copolymers*, 243rd ACS National Meeting & Exposition, San Diego, CA, March 25-29; 2012.
- Hoff, E. A.; Hensarling, R. M.; **Patton, D.** *Photolabile caged thiols: Towards one-pot postmodification of well-defined functional polymers via thiol-click chemistry*, 243rd ACS National Meeting & Exposition, San Diego, CA, March 25-29; 2012.

- Hensarling, R. M.; Leblanc, A. L.; Rahane, S. B.; Hoff, E. A.; **Patton, D.** *Versatile synthetic routes to create functional polymer surface utilizing thiol-click reactions*, 243rd ACS National Meeting & Exposition, San Diego, CA, March 25-29; 2012.
- Hensarling, R. M.; Hoff, E. A.; Leblanc, A. L.; **Patton, D.** *Photolabile caged pendant thiol polymer brushes for post-polymerization surface modification*, 243rd ACS National Meeting & Exposition, March 25-29; 2012.
- Guo, W.; Hensarling, R. M.; Hoff, E. A.; Leblanc, A. L.; Baranek, A. D.; **Patton, D.** *Rapid synthesis of polymer brush surfaces via microwave-assisted surface-initiated polymerization*, 243rd ACS National Meeting & Exposition, San Diego, CA, March 25-29; 2012.
- Baranek, A. D.; Kendrick, L. L.; Narayanan, J.; Tyson, G. E.; Wand, S.; **Patton, D.** *Flexible aliphatic-bridged bisphenol-based polybenzoxazines*, 68th Southwest Regional Meeting of the American Chemical Society, Baton Rouge, LA, November 4-7; 2012.
- Baranek, A.; **Patton, D.** *Synthesis and Characterization of Cross-linked, Quaternary Ammonium Polybenzoxazines for Anion Exchange Membranes*, 39th Annual Waterborne Symposium, New Orleans, LA. February 2012, (Poster). **1st Place Best Poster Award**
- LeBlanc, A.; **Patton, D.** *Versatile Synthetic Routes to Create Functional Polymer Surfaces Utilizing Thiol Click Reactions*, 39th Annual Waterborne Symposium, New Orleans, LA. February 2012, (Poster).
- Guo, W.; **Patton, D.**; *Rapid Synthesis of Polymer Brush Surfaces via Microwave-Assisted Surface-Initiated Radical Polymerization (μ W-SIP)*, 39th Annual Waterborne Symposium, New Orleans, LA. February 2012, (Poster).
- Jungman, M.; **Patton, D.** *Effect of Maximum Cure Temperature on Thermal Properties of Polybenzoxazine Composites*, 39th Annual Waterborne Symposium, New Orleans, LA. February 2012, (Poster).
- Sparks, B.; **Patton, D.** *Cyclic Tetravinylsiloxanetetraols as Hybrid Inorganic-Organic Thiol-ene Networks*, 39th Annual Waterborne Symposium, New Orleans, LA. February 2012, (Oral). **Best Student Presentation Finalist**
- Hoff, E. A.; **Patton, D.** *Photolabile Caged Thiols: Towards One-Pot Postmodification of Well-Defined Functional Polymers via Thiol-Click Chemistry*, 39th Annual Waterborne Symposium, New Orleans, LA. February 2012, (Poster). **3rd Place Best Poster Award**
- Sparks, B. J.; **Patton, D.** *Fundamental study of the adsorption of POSS-silanols onto model stone surfaces*, 242nd ACS National Meeting & Exposition, Denver, CO, August 28-September 1; 2011.
- Sparks, B. J.; Jungman, M. J.; Hait, S.; Lichtenhan, J.; Striegel, M. F.; **Patton, D.** *Cyclic tetrasiloxanetetraols as hybrid inorganic-organic thiol-ene networks*, 242nd ACS National Meeting & Exposition, Denver, CO, August 28-September 1; 2011.
- Sparks, B.; Church, J.; Chin, C.; Striegel, M.; Lichtenhan, J.; Patton, D. *Modified POSS polymers for stone conservation*, 241st ACS National Meeting & Exposition, Anaheim, CA, March 27-31; 2011.
- Rahane, S.; Hensarling, R.; Sparks, B.; Patton, D. *Synthesis of dual-functional polymer brushes by thiol-click reactions*, 242nd ACS National Meeting & Exposition, Denver, CO, August 28-September 1; 2011.
- **Patton, D.**; Narayanan, J.; Jungman, M. J. *Thiol-X and polybenzoxazine dual hybrid networks*, 242nd ACS National Meeting & Exposition, Denver, CO, August 28-September 1; 2011.

- Narayanan, J.; Jungman, M. J.; **Patton, D.** *Development of hybrid dual-cure polymer networks via thiol-ene and benzoxazine chemistries*, 242nd ACS National Meeting & Exposition, Denver, CO, August 28-September 1; 2011.
- Jungman, M. J.; Cobb, J. S.; Narayanan, J.; **Patton, D.** *Synthesis of dually-cured network polymers using thiol-yne and benzoxazine reactions*, 242nd ACS National Meeting & Exposition, Denver, CO, August 28-September 1; 2011.
- Hensarling, R. M.; LeBlanc, A. L.; Rahane, S. B.; **Patton, D.** *Efficient post-polymerization surface modification utilizing pendant thiol polymer brushes*, 242nd ACS National Meeting & Exposition, Denver, CO, August 28-September 1; 2011. **POLY Best Poster Award**
- **Patton, D.** *Multicomponent Polymer Surfaces via Thiol-Click Chemistry*” Gordon Research Conference: Macromolecular Materials, Ventura, CA Jan. 2011.
- Sparks, B. J.; **Patton, D.** *In Synthesis of polypeptide brushes via nickel-mediated surface-initiated polymerization of α -amino acid-N-carboxyanhydrides (NCAs)*, 239th ACS National Meeting, San Francisco, CA, March 21-25; 2010.
- Rahane, S. B.; Hensarling, R. M.; Sparks, B. S.; **Patton, D.** *Synthesis of dual-functional polymer brushes via thiol-click reactions*, Joint 66th Southwest and 62nd Southeast Regional Meeting of the ACS, New Orleans, LA, December 1-4; 2010.
- Rahane, S. B.; Hensarling, R. M.; **Patton, D.** *Synthesis and modification of multicomponent and multiclickable polymer brushes*, 240th ACS National Meeting, Boston, MA, August 22-26; 2010.
- **Patton, D.**; Hensarling, R. M.; Sparks, B. J.; Rahane, S. B.; LeBlanc, A. *Surface engineering with thiol-click reactions*, 240th ACS National Meeting, Boston, MA, August 22-26; 2010.
- Hensarling, R.; **Patton, D.** *Versatile Synthetic Routes to Create Functional Polymer Surfaces Utilizing Thiol “Click” Reactions*, 8th National Graduate Research Polymer Conference (NGRPC), Chapel Hill, NC June 2010 (Oral)
- Sparks, B.; **Patton, D.** *Synthesis of Polypeptide Brushes via Surface-Initiated-Polymerization of α -Amino Acid N-Carboxyanhydrides*, National Graduate Research Polymer Conference, Chapel Hill, NC, June 2010, (Oral)
- Hensarling, R.; **Patton, D.** *‘Clicking’ Polymer Brushes using Thiol-yne Chemistry: Indoors and Out*, Charles E. Hoyle Symposium, Hattiesburg, MS, April 2010 (Poster)
- **Patton, D.**; Hensarling, R. M.; Rahane, S.; Sparks, B. J.; Le, B. A.; Doughty, V. A. *Thiol click reactions: Versatile synthetic routes to functional polymer surfaces*, 239th ACS National Meeting, San Francisco, CA, March 21-25; 2010.
- Li, J.; **Patton, D.** *Preparation and properties of POSS-grafted polyphosphazenes*, 239th ACS National Meeting, San Francisco, CA, March 21-25; 2010.
- Hensarling, R. M.; Rahane, S. B.; **Patton, D.** *Versatile synthetic routes to functional polymer surfaces utilizing thiol “click” reactions*, Joint 66th Southwest and 62nd Southeast Regional Meeting of the American Chemical Society, New Orleans, LA, December 1-4; 2010.
- Hensarling, R. M.; Doughty, V. A.; Chan, J. W.; **Patton, D.** *Clicking polymer brushes using thiol-yne chemistry: Indoors and out*, 239th ACS National Meeting, San Francisco, CA, March 21-25; 2010.

- Baranek, A. D.; Suggs, S. A.; **Patton, D.** *Synthesis of tethered triazole poly(aryl ether sulfones) toward high temperature, low humidity proton exchange membranes*, 239th ACS National Meeting, San Francisco, CA, March 21-25; 2010.
- Arges, C. G.; Kulkarni, S.; Baranek, A.; Pan, K.-J.; Jung, M.-S.; **Patton, D.**; Mauritz, K. A.; Ramani, V. K. *Thin film quaternary ammonium and phosphonium based anion exchange membranes*, 240th ACS National Meeting, Boston, MA, August 22-26; 2010.
- Hensarling, R.; **Patton, D.** “Clicking” Polymer Brushes using Thiol-yne Chemistry: *Indoors and Out*. Waterborne Symposium, New Orleans, LA 2010. (Poster) **1st Place Graduate Poster Presentation**
- Sparks, B.; **Patton, D.** *Synthesis of Polypeptide Brushes via Nickel-Mediated Surface-Initiated Polymerization of α -Amino Acid-N-Carboxyanhydrides (NCAs)*. Waterborne Symposium, New Orleans, LA 2010. (Poster); **2nd Place Graduate Poster Presentation**
- Baranek, A.; **Patton, D.** *Synthesis of tethered triazole poly(aryl ether sulfones) toward high temperature, low humidity proton exchange membranes*, Waterborne Symposium, New Orleans, LA 2010. (Poster)
- Rahane, S.; Hensarling, R.; **Patton, D.** *Synthesis of multicomponent clickable polymer brushes* Waterborne Symposium, New Orleans, LA 2010. (Poster)
- Li, J.; **Patton, D.** *Preparation and properties of POSS-grafted polyphosphazenes*, Polymer Composite Matrix Science Workshop, New Orleans, LA. (Poster)
- Li, J.; LeBlanc, A.; Huber, J.; **Patton, D.** *Surface-initiated polymerization of phosphoranimines: A route to hybrid inorganic-organic poly(phosphazene) brushes*, 237th ACS National Meeting, Salt Lake City, UT, March 22-26; 2009.
- Dept. of Energy Peer Review, Washington, D.C. June 7-11, 2010. *Alternative Fuel Membranes for Energy Independence*, Co-presenter with K. Mauritz, R. Storey, D. Savin.

C. Contributed Presentations

Postdoctoral/Graduate Presentations (NIST, University of Houston, University of Alabama-Birmingham)

- **Patton, D.**; Xu, C.; Beers, K. L. *Statistical copolymer brush composition gradients via microchannel confined surface-initiated photopolymerization*, 233rd ACS National Meeting, Chicago, IL, March 25-29; 2007.
- **Patton, D.**; Page, K. A.; Genson, K. L.; Fasolka, M. J.; Beers, K. L. *Reactivity ratios in surface-initiated copolymerizations*, 234th ACS National Meeting, Boston, MA, August 19-23; 2007.
- Page, K. A.; **Patton, D.**; Huang, R.; Stafford, C. M. *Dynamics of confined polymer films measured via thermal wrinkling*, 234th ACS National Meeting, Boston, MA, August 19-23; 2007.
- Waenkaew, P.; Taranekar, P.; Huang, C.; **Patton, D.**; Phahichphant, S.; Advincula, R. C. *Layer-by-layer self-assembly and deposition of precursor poly(thiophene) and poly(ionene) derivatives*, 231st ACS National Meeting, Atlanta, GA, March 26-30; 2006.
- Taranekar, P.; **Patton, D.**; Fulghum, T. M.; Advincula, R. C. *Carbazole terminated poly(aryl ether) dendrimers: A dendrimeric conjugated precursor polymer approach*, 231st ACS National Meeting, Atlanta, GA, March 26-30; 2006.
- Taranekar, P.; Abdulbaki, M.; Waenkaew, P.; **Patton, D.**; Fulghum, T. M.; Advincula, R. C. *Polymer light-emitting diodes based on poly(cyanofluorene-alt-o/m/p-*

- phenylenevinylene*)- alternating copolymers, 231st ACS National Meeting, Atlanta, GA, March 26-30; 2006.
- **Patton, D.**; Taranekar, P.; Clyde, G.; Advincula, R. C. *Functional dendritic chain transfer agents (CTAs): A facile approach to dendritic-linear macromolecules via RAFT polymerization*, 231st ACS National Meeting, Atlanta, GA, March 26-30; 2006.
 - **Patton, D.**; Advincula, R. C. *Direct synthesis of norbornenyl-, vinyl-, and cinnamyl-functionalized telechelics by reversible addition fragmentation chain transfer (RAFT) polymerization*, 231st ACS National Meeting, Atlanta, GA, March 26-30; 2006.
 - Park, Y.; Deng, S.; Sriwichai, S.; Onishi, K.; Locklin, J.; Fulghum, T. M.; **Patton, D.**; Advincula, R. *Synthesis and fabrication of ultrathin hybrid semiconductor films by alternate layer-by-layer deposition of dithiol-terminated oligothiophenes and CdS nanoclusters*, 231st ACS National Meeting, Atlanta, GA, March 26-30; 2006.
 - Park, M.-K.; **Patton, D.**; Advincula, R. C.; Knoll, W. *Label-free biosensor based on ultrathin film of biotin-functionalized poly(3-aminobenzoic acid)*, 231st ACS National Meeting, Atlanta, GA, March 26-30; 2006.
 - Park, J. Y.; **Patton, D.**; Liu, M.; Taranekar, P.; Mays, J. W.; Dadmun, M. D.; Advincula, R. C. *Adsorption of bifunctionalized poly(2-vinylpyridine)-polystyrene- poly(2-vinylpyridine): characterization by AFM*, 231st ACS National Meeting, Atlanta, GA, United States, March 26-30; 2006.
 - Huang, C.; Taranekar, P.; Jiang, G.; **Patton, D.**; Advincula, R. C. *Molecular imprinting and sensing using LBL complexes of Europium (III) and an electrochemically crosslinkable polyelectrolyte*, 231st ACS National Meeting, Atlanta, GA, March 26-30; 2006.
 - Fulghum, T. M.; Maruffo, A.; Taranekar, P.; Abdulbaki, M.; **Patton, D.**; Advincula, R. C. *Surface initiated polymerization of precursor polymers for applications in optoelectronic devices*, 231st ACS National Meeting, Atlanta, GA, March 26-30; 2006.
 - Baba, A.; Taranekar, P.; Pannapati, R.; **Patton, D.**; Knoll, W.; Advincula, R. C. *Conducting polymer/glucose oxidase multilayer-based electrochemical surface plasmon resonance glucose biosensor*, 231st ACS National Meeting, Atlanta, GA, March 26-30; 2006.
 - Advincula, R. C.; **Patton, D.**; Park, J. Y.; Knoll, W. *Multiply-bound polymer chains of end-functionalized telechelics and block copolymers: A surface adsorption study by quartz crystal microbalance methods*, 231st ACS National Meeting, Atlanta, GA, March 26-30; 2006.
 - Rogers, A.; **Patton, D.**; Fulghum, T. M.; Advincula, R. C. *Synthesis of thiol end-capped polymer brushes via surface-initiated reversible addition fragmentation chain transfer polymerization*, 229th ACS National Meeting, San Diego, CA, March 13-17; 2005.
 - **Patton, D.**; Park, J. Y.; Liu, M.; Advincula, R. C.; Mays, J. W.; Dadmun, M. D.; Kilbey, S. M.; Smith, G. D. *Telechelic polymer velcros or brushes: Synthesis, characterization, and adsorption studies*, 230th ACS National Meeting, Washington, DC, Aug. 28-Sept. 1; 2005.
 - **Patton, D.**; Mullings, M.; Rogers, A.; Baba, A.; Advincula, R. C. *Multiply-bound polymer chains of α,ω -thiol telechelics: Surface adsorption properties*, 229th ACS National Meeting, San Diego, CA, March 13-17; 2005.
 - **Patton, D.**; Mullings, M.; Advincula, R. C. *A facile synthesis route to thiol functionalized α,ω -telechelic polymers via reversible addition fragmentation chain transfer (RAFT) polymerization*, 229th ACS National Meeting, San Diego, CA, March 13-17; 2005.

- Park, Y.; Locklin, J.; **Patton, D.**; Advincula, R. C. *Investigating the direct grafting of organic functionality from nanoparticle surfaces: Aromatic coupling reactions*, 229th ACS National Meeting, San Diego, CA, March 13-17; 2005.
- Park, J. Y.; **Patton, D.**; Liu, M.; Mays, J. W.; Dadmun, M. D.; Advincula, R. C. *Adsorption of P2VP-dPS-P2VP triblock copolymers onto reactive monolayers: Towards multiply bound polymer chains*, 229th ACS National Meeting, San Diego, CA, March 13-17; 2005.
- Ikarashi, A.; **Patton, D.**; Baba, A.; Locklin, J.; Advincula, R. C.; Kato, K.; Shinbo, K.; Kaneko, F. *Electrochemical crosslinking of oligofluorene-capped CdSe nanoparticles via electrochemical cross-linking*, 229th ACS National Meeting, San Diego, CA, March 13-17; 2005.
- Fulghum, T. M.; **Patton, D.**; Advincula, R. C. *Grafting of polymer brushes from layer-by-layer colloidal core-shell particles*, 229th ACS National Meeting, San Diego, CA, March 13-17; 2005.
- **Patton, D.**; Locklin, J.; Deng, S.; Onishi, K.; Advincula, R. C. *Oligofluorenes as electroactive ligands for CdX (X = Se, S) nanocrystals*, 227th ACS National Meeting, Anaheim, CA, March 28-April 1; 2004.
- **Patton, D.**; Liu, Y.; Meredith, M.; Locklin, J.; Park, M.-K.; Advincula, R. C. *Synthesis of Au nanoparticles within hydrogen-bonded multilayer ultrathin films of polymer pendant oligothiophenes*, 227th ACS National Meeting, Anaheim, CA, March 28-April 1; 2004.
- Onishi, K.; Locklin, J.; **Patton, D.**; Fulghum, T. M.; Advincula, R. C. *Conjugated polymer networks of CdS nanoparticles and oligothiophenes: Photoluminescence and device behavior*, 227th ACS National Meeting, Anaheim, CA, March 28-April 1; 2004.
- Onishi, K.; Locklin, J.; **Patton, D.**; Advincula, R. C. *Ultrathin hybrid semiconductor films by alternate layer-by-layer deposition of oligothiophene and CdS nanoclusters*, 227th ACS National Meeting, Anaheim, CA, March 28-April 1; 2004.
- Locklin, J.; **Patton, D.**; Hoacuja, R.; Corona, A.; Advincula, R. *Effects of temperature on the adsorption processes of bolaform amphiphiles and polyelectrolytes in layer by layer deposition*, 227th ACS National Meeting, Anaheim, CA, March 28-April 1; 2004.
- Locklin, J.; Deng, S.; **Patton, D.**; Onishi, K.; Baba, A.; Advincula, R. C. *Linear and branched oligothiophene electroactive surfactants with various headgroups and their interaction with different colloidal semiconductor nanocrystals*, 227th ACS National Meeting, Anaheim, CA, March 28-April 1; 2004.
- Millan, M. D.; Park, M.-K.; **Patton, D.**; Locklin, J.; Deng, S.; Advincula, R. C. *Observing the crosslinking of a benzophenone-modified poly(acrylic acid) film by UV-vis and FT-IR imaging*, 227th ACS National Meeting, Anaheim, CA, March 28-April 1; 2004.
- Bekku, H.; Katsuki, K.; Usui, H.; **Patton, D.**; Locklin, J.; Advincula, R. C. *Surface initiated polymerization of carbazole containing methacrylates by physical vapor deposition for improved hole injection layers*, 227th ACS National Meeting, Anaheim, CA, March 28-April 1; 2004.
- **Patton, D.**; Park, M.-k.; Wang, S.; Advincula, R. *Photoinduced isomerization of all-azobenzene dendrimer thin films prepared by the Langmuir Blodgett technique*, 223rd ACS National Meeting, Orlando, FL, April 7-11; 2002.
- **Patton, D.**; Park, M.-k.; Wang, S.; Advincula, R. *Evanescent waveguide characterization and photoisomerization of all-azobenzene functionalized dendrimers on ultrathin films: Aggregation behavior and matrix effects*, 222nd ACS National Meeting, Chicago, IL, August 26-30; 2001.

VIII. TEACHING, ADVISEMENT, AND MENTORSHIP

A. Courses Taught at the University of Southern Mississippi

Course	Credit Hours	Semester Taught (Enrollment)
PSC 341L, Polymer Techniques; Laboratory methods of polymer synthesis, structural determination and characterization	3	Fall 08-09 (10), Fall 09-10 (6), Fall 10-11 (10)
PSC 475, Biomaterials; An introduction to the basic concepts of biopolymers-biomaterials systems.	2	Spring 10-11 (9), Spring 11-12 (8), Spring 12-13 (12), Spring 13-14 (12). Spring 14-15 (17)
PSC 720, Polymer Techniques; Laboratory methods of polymer synthesis, structural determination and characterization	2	Fall 13-14 (9), Fall 14-15 (11)
PSC 740, Polymer Kinetics; Introduction to chemical and polymerization kinetics and reactor design	2	Spring 08-09 (11), Spring 09-10 (8), Spring 10-11 (13), Spring 11-12 (16), Spring 12-13 (10), Fall 14-15 (12)
PSC 691, Research	12	Fall 10-11 (4), Spring 11-12 (5), Summer 11-12 (7), Fall 2 (5), Spring 11-12 (4), Summer 11-12 (4), Fall 12-13 (5), Spring 12-13 (3), Summer 12-13 (4), Fall 13-14 (3), Spring 13-14 (2), Summer 13-14 (5), Fall 14-15 (4), Spring 14-15 (3), Summer 14-15 (5)
PSC 698, Thesis	1	Fall 11-12 (1), Spring 11-12 (1), Summer 11-12 (1), Fall 12-13 (1), Spring 12-13 (1)
PSC 791, Research	12	Summer 08-09 (3), Fall 09-10 (3), Fall 10-11 (1) Spring 09-10 (3), Summer 09-10 (5), Fall 11-12 (2), Spring 11-12 (3), Summer 11-12 (3), Fall 12-13 (3), Spring 12-13 (4), Summer 12-13 (2), Fall 13-14 (3), Spring 13-14 (3), Summer 13-14 (3), Fall 14-15 (3), Spring 14-15 (3), Summer 14-15 (3)
PSC 898, Dissertation	3	Summer 11-12 (2), Fall 12-13 (2), Spring 12-13 (2), Summer 12-13 (1), Fall 13-14 (1), Fall 14-15 (2), Spring 14-15 (2), Summer 14-15 (2)

B. Contributions Made in Course and Curriculum Development

- **PSC 341L Polymer Techniques** is a lab/lecture course involving sophomore polymer science students. This course serves as an introduction to an array of synthetic and characterization techniques that form the foundation for hands-on experience with polymer science research techniques. Patton served to refresh and modernize the course curriculum and laboratory experiments to meet the needs of next generation polymer science professionals. Patton also integrated a structured revision process for research term papers to meet the “writing intensive” course requirements.
- **PSC 475 Biomaterials** is a lecture course involving senior polymer science students. Patton revised the outdated course curriculum and focused the course on the study of cutting edge polymeric biomaterials, biomaterials surfaces, and biomaterials-biological interactions.

C. Course Evaluations

A summary of Dr. Patton’s overall instructor ratings on Polymer Science (BS), and Polymer Science and Engineering (Ph.D.) Student Course Evaluations is presented below. Dr. Patton’s evaluations in both undergraduate and graduate courses are generally in the good to excellent range. The breakdown of his numerical scores for both undergraduate and graduate classes indicates a well-prepared and well-organized instructor who provides clear explanations of difficult concepts and is effective in stimulating student interest.

Semester	Course	Enrollment	Responses	Rating*
Fall 2008-2009	PSC 341L	10	9	4.56
Spring 2008-2009	PSC 740	11	11	4.24
Fall 2009-2010	PSC 341L	6	6	4.09
Spring 2009-2010	PSC 740	8	8	4.49
Fall 2010-2011	PSC 341L	10	9	4.15
Spring 2010-2011	PSC 475	9	8	4.50
	PSC 740	13	12	4.31
Fall 2011-2012**	N/A	N/A	N/A	N/A
Spring 2011-2012	PSC 475	8	8	4.68
	PSC 740	16	15	4.55
Fall 2012-2013**	N/A	N/A	N/A	N/A
Spring 2012-2013	PSC 475	12	9	3.93
	PSC 740	10	9	4.01

*Overall instructor rating on a 1-5 scale with 5 = Excellent, 4 = Good, 3 = Average, 2 = Below Average, 1 = Poor; Rating was calculated by taking the averaging the response overall response from each question on the course evaluation. ** Dr. Patton did not teach a course these semesters.

D. Honors and Special Recognition for Teaching Accomplishments

- NSF Faculty Early Career Development (CAREER) Award. This prestigious award is based on a new faculty member’s potential for innovative approaches to both research and teaching.

- Invited to participate in a new initiative from the Provost's Office, The Teaching Forum. The Teaching Forum was designed to raise the quality of teaching at USM by having faculty share what they do well. Each session will involve a number of faculty members who will give brief presentations and help lead a discussion about what makes for good teaching. Each session is organized around a theme.

E. Supervision and Mentorship of Undergraduates, Graduates, and Postdoctoral Research Associates

a. Postdoctoral Research Associates (3)

- Dr. Chaitra Deodhar – (Oct. 2013 – current); Jointly advised with Dr. Kate Beers at NIST)
- Dr. Richard Sheridan (Jan. 2013 – Oct. 2013); Jointly advised with Dr. Kate Beers at NIST)
- Dr. Santosh Rahane (2009 – 2011), now a Senior Scientist at Millipore Corp, Boston, MA
- Dr. Jun Li (2008 – 2010)

b. Major Professor to Ph.D. Graduate Student (12)

- Dr. Ryan Hensarling (2009 – 2012, Ph.D. Dec 2012)
 - Dissertation Title: *Surface Engineering via Thiol-mediated Reactions*
 - Currently Polymer Engineer at Remington Arms, Elizabethtown, KY
- Dr. Bradley Sparks (2009 – 2013, Ph.D. May 2013)
 - Dissertation Title: *Photopolymerization and Characterization of Modified Thiol-Ene Networks*
 - Currently Senior Scientist at Halliburton, Houston, TX
- Austin Baranek (2009 – current)
 - Dissertation Title: *Design and Synthesis of Flexible and Functional Polybenzoxazine Thin Films*
 - Currently a Postdoctoral Researcher with Prof. Chris Bowman, Boulder, CO
- Jananee Narayanan Sivakami (2010 – current)
- Wei Guo (2011 – current)
- Emily Hoff (2011 – current)
- Li Xiong (2012 – current)
- Yidan Guan (Co-Advisor: Dr. James Rawlins) (2012 – current)
- Brian Donovan (2012 – current)
- Dahlia Amato (2014 – current)
- Doug Amato (2014 – current)
- Cassandra Reese (2015 – current)

c. Major Professor to M.S. Graduate Student (1)

- Matthew Jungman (2010 – 2013, M.S. May 2013)
 - Thesis Title: *Design of Functional Benzoxazine Materials via Thiol-Mediated Reactions*
 - Currently Research Scientist at Molecular Rebar, Austin, TX

d. Faculty Mentor for Undergraduate Students within USM (10)

- Steven Suggs (2008 – 2011, B.S. Polymer Science, 2011)
- Arthur LeBlanc (2008 – current, B.S. Polymer Science, 2012)
- Joel Huber (2008 – 2009)
- Laken Kendrick (2011 – current)
- Ethan Hoff (2011 – current, B.S. Polymer Science, 2013)
- Chase Tretbar (2013 – current)
- Laken Kendrick (2011 – current)
- Jared Cobb (2010 – current)
- Jamie Webb (2013 – 2014)
- Susan Walley (2015 – current)
- Blake Martin (2015 – current)

e. Faculty Mentor for Undergraduate Students outside USM (12)

- Lara Draelos (Summer 2015, New Mexico Institute of Mining and Technology)
- Jason Ballenas (Summer 2015, University of Massachusetts Amherst)
- Charlene Grabowski (Summer 2014, NSF REU from SUNY College of Environmental Sci. and Forestry)
- Catherine Barnier (Summer 2014, NSF REU from Western Connecticut State University)
- William White (Summer 2013, NSF REU from University of Massachusetts – Amherst)
- Eric Gorder (Summer 2012, NSF REU from University of North Carolina at Wilmington)
- William Adkins (Summer 2012, NSF REU from University of Louisville)
- LaTonya Hayes (Summer 2012, AGEM REU from Alcorn State University)
- Tasia Bryson (Summer 2011, AGEM REU from Chicago State University)
- Ginger Tyson (Summer 2011, REU from Huntington College)
- Timothy Kuchera (Summer 2011, REU from Univ. of Buffalo)
- Vanessa Doughty (Summer 2009, REU from St. Norbert College)
- Wendy Marth (Summer 2010, REU from Valparaiso College)
- Jake Reid (Summer 2010, REU from Copiah-Lincoln Community College)

f. High School Students (6)

- Hannele Heusser (Summer 2013, Oak Grove High School)
- Daniel Lawler (2012, Forrest County Agriculture HS)
- Jamie Sholar (2012, Forrest County Agriculture HS)
- Austin Heusser (Summer 2011, Oak Grove High School)
- Laken Kendrick (Summer 2010, Forrest County Agriculture HS)
- Ellis Crawford (Summer 2010, Oak Grove High School)

g. g. Faculty Mentor for Research Experience for Teachers (RETs)

- Sandra Mills (Summer 2015, Jones County Junior College)
- Mark Holcomb (Summer 2015, Oak Grove High School)

h. Doctoral Advisory Committee Member

- Ian Smith
- Mark Early
- Mark Brei
- Bob Peterson
- Andrew Janisse
- Brooks Abel
- Ashley Johnson
- Jake Ray
- Katherine Frank
- David Kingsley
- Todd Hartlage
- Andrew Holley, Ph.D. 2014
- Xiaonan Kou
- Heather Pearson
- Brandon Achord
- Stephen Foster
- Joshua Hanna
- Nate Kirk
- Eric Burden
- Junghwan Shin, Ph.D. 2009
- Christina Caroselli, M.S. 2010

IX. UNIVERSITY SERVICE

A. Service to the University of Southern Mississippi

- Data Management Committee (Committee Chair: Dr. Kevin Kuehn; Committee Members: Dr. Derek Patton, Dr. Andy Reese, Dr. Wujian Miao) – Tasked by the VP for Research to develop a University data management policy and associated documentation.

B. Service to the University of Southern Mississippi College of Science and Technology

- Marshall Scholarship Mock Interview Committee
- Faculty Mentoring Committee (Committee Chair: Dr. Faqing Wang) – Tasked with developing a formal process for faculty mentoring
- Faculty advisor for NSF Alliance for Graduate Education in Mississippi
 - Tasia Bryson, Summer 2011, Chicago State University
 - LaTonya Hayes, Summer 2012, Alcorn State University

C. Service to the School of Polymers and High Performance Materials

- Assistant Professor Search Committee Co-Chair (with Dr. Daniel Savin) (2013-2014)
- School of Polymers Seminar Coordinator (2011 – Present)
- School of Polymer Website Maintenance
- Search Committee for the Director of the School of Polymers
- Search Committee for New Faculty Recruiting
- Served on >25 Graduate Dissertation Committees
- Graduate Student Recruiting Committee (08/2008 – Present)
- Organic Polymer Chemistry Curriculum Committee (08/2008 – Present)
- Physical Polymer Chemistry Curriculum Committee (08/2008 – Present)
- Instrumentation Acquisition and Maintenance Committee (2009 – Present)
- Established USM American Chemical Society POLY Student Chapter and serve as Faculty Advisor
- Faculty advisor for NSF Research Experience for Undergraduate (REU)
 - Vanessa Doughty, Summer 2009, St. Norbert College

- Wendy Marth, Summer 2010, Valparaiso College
- Jake Reid, Summer 2010, Copenh-Lincoln Community College
- Ginger Tyson, Summer 2011, Huntington College
- Timothy Kuchera, Summer 2011, University of Buffalo
- William Atkins, Summer 2012, University of Louisville
- Eric Gorder, Summer 2012, Univ. of North Carolina-Wilmington
- William Whit, Summer 2013, Univ. of Massachusetts-Amherst
- Faculty Advisor for Summer High School Students
 - Ellis Crawford, Summer 2010 (Oak Grove High School)
 - Austin Heusser, Summer 2011 (Oak Grove High School)
 - Hannele Heusser, Summer 2013 (Oak Grove High School)
- Faculty Advisor for Petal High School Job Shadow Program
- Guest Speaker for Academically Talented Youth Students in Polymer Science, 2010
- Graduate recruiting activities
 - ACS National Meeting Recruiting Booth, Salt Lake City, UT 2008
 - ACS National Meeting Recruiting Booth, San Francisco, CA 2010
 - ACS National Meeting Recruiting Booth, Boston, MA 2010
 - ACS Joint Southeast/Southwest Regional Meeting New Orleans, LA 2010
 - National Center for Preservation and Training Technology/Northwestern Louisiana State University Natchitoches, LA 2010
 - ACS National Meeting Recruiting Booth, Anaheim, CA 2011
 - ACS National Meeting Recruiting Booth, Denver, CO 2011
 - ACS National Meeting Recruiting Booth, San Diego, CA 2012

D. Service to USM Student Organizations

- a. Founding faculty and current advisor for the USM American Chemical Society Division of Polymer Chemistry and Division of Polymeric Materials Science and Engineering (POLY-PMSE) Student Chapter
 - i. Two proposals funded from POLY-PMSE for chapter activities
 1. \$1000 POLY-PMSE + \$1000 Department Match
 2. \$500 POLY-PMSE

X. EXTERNAL SERVICE AND SYNERGISTIC ACTIVITIES

A. Professional Society Membership

- a. American Chemical Society
- b. Division of Polymeric Materials: Science and Engineering
- c. Materials Research Society
- d. Southern Society for Coatings Technology

B. Professional Society Service

- a. American Chemical Society Division of Polymer Chemistry
 - i. Elected for 2014-2017 Treasurer
 - ii. Ballot Candidate for 2013-2014 Alternate Councilor
 - iii. Marketing and Public Outreach Committee for the Polymer Division (2011 – Present)

iv. Sponsorship Committee for the Polymer Division (2011 – Present)

C. Symposium Organizer

- a. Organizing Committee for 11th National Graduate Research Polymer Conference June 10-12, 2014 at Louisiana State University
- b. 68th Southwest ACS Regional Meeting, Symposium: Advances in Polymer Chemistry, Baton Rouge, LA Nov 4-7, 2012
- c. Functional Polymer Surfaces and Interfaces, Joint Southwest/Southeast Regional American Chemical Society Meeting (SW/SERMACS) New Orleans, December 2-3, 2010.
- d. 13th Semiannual NIST Combinatorial Methods Industry Workshop – Advances in Library Fabrication; April 28-29, 2008.

D. Symposium Session Chair

- a. Discussion Leader (Invited), Polymers Gordon Research Conference, Holyoke, MA June 13, 2013.
- b. Session Chair, Joint ACS PMSE/Chinese Chemical Society Polymers Division, Hattiesburg, MS, April 12, 2013.
- c. Session Chair, 40th Annual Waterborne Symposium, New Orleans, LA, February 2013.
- d. Session Chair, ACS San Francisco, 2010, Peptides and Polypeptides: From Synthesis and Characterization to Application
- e. Session Chair, ACS Salt Lake City, 2009, Nanostructured Block Copolymer Materials
- f. Session Chair, ACS New Orleans, 2008, Polymer Surfaces and Interfaces – Loops, Branches, and Brushes
- g. Session Chair, Waterborne Symposium, New Orleans, 2009
- h. Session Chair, International Symposium for Stimuli Responsive Materials Session Chair, 2009, 2010

E. Advisory Committees

- a. University of Tennessee/Oak Ridge National Lab DOE EPSCoR Advisory Committee (2011 – Present) – Tasked with increasing the number of new users at ONRL neutron scattering facilities

F. Scientific Discussion Panels

- a. National Lab Day in Mississippi, Areas of Potential Collaboration, Materials Panel

G. Short Courses

- a. Photopolymerization Fundamentals Short Course, Functional Surfaces, 2013
- b. Design of Functional Polymer Surfaces, Waterborne Symposium, 2011

H. Journal Referee

Journal of the American Chemical Society, Polymer Chemistry, Chemical Communications, Journal of Materials Chemistry, Macromolecules/ ACS Macro Letters, Langmuir, Soft Matter, Journal of Organic Chemistry, ACS Applied Materials and Interfaces, European Polymer Journal, Reactive and Functional Polymers, Journal of Polymer Science A: Polymer Chemistry, RSC Advances, Biomacromolecules, High Performance Materials, Chemical

Engineering Journal, Macromolecular Symposia, Polymer, Angewandte Chemie Int. Ed., Progress in Organic Coatings, Thermochemica Acta, Sensors and Actuators, Chemistry of Materials

I. NSF Panel Review Member

- a. Division of Chemistry, 2009
- b. Division of Graduate Education, 2010
- c. Division of Chemistry/DMR, 2011
- d. Division of Chemistry, 2014

J. Proposal Referee (ad hoc)

- a. Army Research Office (ARO)
- b. National Science Foundation (NSF)
 - i. Division of Material Research
 1. Polymers
 2. Solid State and Materials Chemistry
- c. University of Alabama at Birmingham Diabetes Research and Training Center
- d. American Chemical Society Petroleum Research Fund

K. Recruitment and Outreach

- a. Active recruitment of underrepresented groups for graduate education in polymer science via the GAANN program
- b. K-12 education outreach via the “What is a Polymer” field trip program
- c. Petal High School Job Shadowing, Fall Semester in 2009 and 2010.
- d. Grades 3 – 5 outreach via classroom demonstrations at Oak Grove Lower Elementary
- e. High school demonstrations at Oak Grove High School
- f. Active participant in the Annual Mississippi High School Polymer Science Student Competition