

Julie N. L. Albert

Assistant Professor, Department of Chemical and Biomolecular Engineering
Robert and Gayle Longmire Early Career Professor in Chemical Engineering
Tulane University
300 Lindy Boggs Building, New Orleans, LA 70118
Phone: (504) 862-3260/Email: jalbert6@tulane.edu

Education

- Jan. 2012 Ph.D. in Chemical Engineering, University of Delaware, Newark, Delaware
Advisor: Thomas H. Epps, III, Ph.D.
Thesis title: Exploration of Block Copolymer Thin Film Self-Assembly using Gradient Methods
- Dec. 2005 B.S. in Chemical Engineering, Mathematics Minor, Honors Program, Summa Cum Laude, Commencement Speaker, University of Florida, Gainesville, Florida

Professional Experience

- July 2014- Present Robert and Gayle Longmire Early Career Professor in Chemical Engineering, Department of Chemical and Biomolecular Engineering, Tulane University
- Jan. 2014- Present Assistant Professor, Department of Chemical and Biomolecular Engineering, Tulane University
- Sept. 2011 – Dec. 2013 Postdoctoral Research Scholar, Department of Chemical and Biomolecular Engineering, NSF Research Triangle Materials Research Science and Engineering Center (MRSEC) Fellow, North Carolina State University, Raleigh, NC.
Advisor: Jan Genzer, Ph.D.
Project: Fabricating silicone elastomer networks with tunable modulus and surface chemistry for cell mobility studies and peptide assembly
- Aug. 2006 – Sept. 2011 Graduate Research Assistant, University of Delaware, Department of Chemical Engineering, Newark, DE.
Advisor: Thomas H. Epps, III, Ph.D.
- Aug. 2009 - Dec. 2009 Teaching Fellow, University of Delaware, Department of Chemical Engineering
- Chemical Engineering Thermodynamics I, CHEG 231
- Lectured and designed homework assignments, exams, and projects
- Aug. 2007- Dec. 2007; Feb. 2009- May 2009 Graduate Teaching Assistant, University of Delaware, Department of Chemical Engineering
- Introduction to Polymer Science and Engineering, CHEG 600
- Chemical Engineering Thermodynamics II, CHEG 325
- May 2005 – July 2006 Unit Operations Laboratory Student Assistant, University of Florida, Department of Chemical Engineering

Research Interests

- Nano- and micro- structured polymeric materials
- Surface chemistry
- Combinatorial methods
- Confined crystallization
- Biocompatible and functionalized surfaces and scaffolds for cell culture
- Solar energy

Honors, Awards, and Fellowships

2015	Gulf Research Program Early-Career Research Fellowship, National Academy of Sciences
2015	Research Competitiveness Subprogram Award, Louisiana Board of Regents
2014	Classroom Enhancement Grant for CENG 4500 Chemical Process Control, Center for Engaged Learning & Teaching, Tulane University
2012	AIChE Women's Initiative Committee Travel Award
2009	Teaching Fellowship, University of Delaware Department of Chemical Engineering
2008	National Science Foundation Graduate Research Fellowship

Research Publications

1. **J. N. L. Albert**, J. Genzer. "Low Modulus Silicone Elastomer Networks with Desirable Viscoelastic and Surface Properties for Cell Mobility Studies." (In preparation)
2. **J. N. L. Albert**, R. Mays, K. Sintavanon, S. R. MacEwan, A. Chilkoti, J. Genzer. "Effect of Sequence Blockiness on the Morphologies of Surface-grafted Elastin-like Polypeptides." (In preparation)
3. R. L. Mays, J. N. L. Albert, A. Davey, S. R. MacEwan, A. Chilkoti, S. Zauscher, M. Dickey, J. Genzer. "Assembly and Stability of Elastin-like Copolypeptides on Flat Impenetrable Surfaces." (In preparation)
4. B. S. Lwoya and J. N. L. Albert. "Nanostructured Block Copolymers for Proton Exchange Membrane Fuel Cells," *Energy Environ. Focus.* **2015**, *4*, 278-290. Part of the special issue Clean Conversion and Utilization of Energy: Green Processes and Nanotechnology.
5. M. Luo, J. E. Seppala, **J. N. L. Albert**, R. L. Lewis, III, N. Mahadevapuram, G. E. Stein, T. H. Epps, III. "Manipulating Nanoscale Morphologies in Cylinder-Forming Poly(styrene-*b*-isoprene-*b*-styrene) Thin Films Using Film Thickness and Substrate Surface Chemistry Gradients," *Macromolecules.* **2013**, *46*(5), 1803-1811. DOI: 10.1021/ma302410q
6. E. G. Kelley,* **J. N. L. Albert**,* M. O. Sullivan, T. H. Epps, III. "Stimuli-responsive Copolymer Solution and Surface Assemblies for Biomedical Applications," *Chem. Soc. Rev.* **2013**, *42*, 7057-7071. Part of the themed collection Stimuli responsive materials. *Authors contributed equally to this work. DOI: 10.1039/C3CS35512H
7. **J. N. L. Albert**, J. E. Seppala, R. L. Lewis, R. L. Jones, T. H. Epps, III. "Systematic Study on the Effect of Solvent Removal Rate on the Morphology of Solvent Vapor Annealed ABA Triblock Copolymer Thin Films," *ACS Nano.* **2012**, *6*(1), 459-466. DOI: 10.1021/nn203776c
8. J. Y. Kelly, **J. N. L. Albert**, J. A. Howarter, C. M. Stafford, T. H. Epps, III, M. J. Fasolka. "Manipulating Morphology and Orientation in Thermally-Responsive Block Copolymer Thin Films," *J. Polym. Sci. Part B: Polym. Phys.* **2012**, *50*(4), 263-271. DOI: 10.1002/polb.23004

9. **J. N. L. Albert**, J. D. Kim, C. M. Stafford, T. H. Epps, III. "Controlled Vapor Deposition Approach to Generating Surface Energy/Chemistry Gradients," *Review of Scientific Instruments*. **2011**, 82(6), 065103. DOI: 10.1063/1.3594104
10. **J. N. L. Albert**, T. D. Bogart, R. L. Lewis, K. L. Beers, M. J. Fasolka, J. B. Hutchison, B. D. Vogt, T. H. Epps, III. "Gradient Solvent Vapor Annealing of Block Copolymer Thin Films Using a Microfluidic Mixing Device," *Nano Letters*. **2011**, 11(3), 1351-1357. DOI: 10.1021/nl104496r
11. W.-S. Young, **J. N. L. Albert**, A. B. Schantz, T. H. Epps, III. "Mixed-salt Effects on the Ionic Conductivity of Lithium-doped PEO-containing Block Copolymers." *Macromolecules*. **2011**, 44(20), 8116-8123. DOI: 10.1021/ma2013157
12. J. Y. Kelly, **J. N. L. Albert**, J. A. Howarter, S. Kang, C. M. Stafford, T. H. Epps, III, M. J. Fasolka. "Investigation of Thermally Responsive Block Copolymer Thin Film Morphologies Using Gradients," *ACS Applied Materials and Interfaces*. **2010**, 2(11), 3241-3248. DOI: 10.1021/am100695m
13. **J. N. L. Albert** and T. H. Epps, III. "Self-assembly of Block Copolymer Thin Films," *Materials Today*. **2010**, 13(6), 24-33. DOI: 10.1016/S1369-7021(10)70106-1
14. **J. N. L. Albert**, M. J. Baney, C. M. Stafford, J. Y. Kelly, T. H. Epps, III. "Generation of Monolayer Gradients in Surface Energy and Surface Chemistry for Block Copolymer Thin Film Studies," *ACS Nano*. **2009**, 3(12), 3977-3986. DOI: 10.1021/nn900750w

Presentations

Invited Conference Presentations

1. **J. N. L. Albert**. "Thin Film Self-Assembly of Nano- and Micro-Structured Polymer Materials," Invited Speaker, Plenary Session: Emerging Areas in Polymer Science and Engineering, AIChE National Meeting, Salt Lake City, UT, November 2015.
2. **J. N. L. Albert**, T. H. Epps, III, J. Seppala, M. Luo. "Manipulating Nanoscale Ordering in Block Copolymer Thin Films," Invited Speaker, Session on Self Assembly in Thin Films and Confined Geometries, AIChE National Meeting, Pittsburgh, PA, November 2012.
3. **J. N. L. Albert**, T. D. Bogart, R. L. Lewis, T. H. Epps, III. "Gradient Solvent Vapor Annealing of Block Copolymer Thin Films," Invited Speaker, Padden Award Symposium, APS March Meeting, Dallas, TX, March 2011.
4. **J. N. L. Albert**, M. J. Baney, C. M. Stafford, J. Y. Kelly, T. D. Bogart, R. L. Lewis, T. H. Epps, III. "Surface Energy/Chemistry Gradients for Block Copolymer Thin Film Studies," Invited Speaker, Akzo Nobel Student Award Symposium, ACS National Meeting, Boston, MA, August 2010.

Invited Panels

1. Panelist, "How to get a job in academia and be successful," 11th National Graduate Research Polymer Conference, Louisiana State University, Baton Rouge, LA, June 2014
2. Panelist, "Getting Out of Grad School" career panel hosted by the Graduate Student Association of North Carolina State University, Feb. 2013

Contributed Conference Presentations (presented noted in bold)

1. **J. N. L. Albert**. "Polymers for Nano, Bio, and Energy," Poster, Gordon Research Conference (GRC), Polymer Physics, Mount Holyoke College, South Hadley, MA, July 2014.

2. **G. Y. Kelly** and J. N. L. Albert. “Confined Crystallization in Biocompatible Polymer Blend Thin Films,” Poster, AIChE Annual Meeting, Atlanta, GA 2015.
3. **J. N. L. Albert**, K. Sintavanon, R. Mays, S. R. MacEwan, A. Chilkoti, J. Genzer. “Effect of Sequence Blockiness on the Morphologies of Surface-grafted Elastin-like Polypeptides,” Poster, APS March Meeting, Denver, CO, March 2014.
4. **J. N. L. Albert**, J. Genzer. “Low Modulus Silicone Elastomer Networks with Desirable Viscoelastic Properties for Cell Mobility Studies,” Speaker, APS March Meeting, Baltimore, MD, March 2013.
5. **J. N. L. Albert**, J. Genzer. “Syntactomer Peptide Assembly on Deformable Silicone Elastomer Surfaces,” Poster, APS March Meeting, Baltimore, MD, March 2013.
6. **J. N. L. Albert**. “Polymer Interfaces and Gradients at Work: Biomaterials and Energy Materials,” Poster, AIChE Annual Meeting, Pittsburgh, PA, November 2012.
7. **J. N. L. Albert**, K. Efimenko, J. Genzer. “Silicone Elastomer Networks with Tunable Modulus for Cell Mobility Studies,” Poster, APS March Meeting, Boston, MA, February 2012.
8. **J. N. L. Albert**, W.-S. Young, R. L. Lewis, III, T. D. Bogart, J. R. Smith, T. H. Epps, III. “Effect of Solvent Removal Rate on the Morphology of Solvent Vapor Annealed ABA Triblock Copolymer Thin Films,” Speaker, APS March Meeting, Boston, MA, February 2012.
9. **J. N. L. Albert**, M. J. Baney, C. M. Stafford, J. Y. Kelly, T. D. Bogart, T. H. Epps, III. “Surface Energy/Chemistry Gradients for Block Copolymer Thin Film Studies,” Poster, Graduate Research Polymers Conference, Chapel Hill, NC, June 2010.
10. **J. N. L. Albert**, M. J. Baney, T. H. Epps, III. “Surface Energy Gradients for Block Copolymer Thin Film Studies,” Speaker, 2009 ACS National Meeting, Washington, DC, August 2009.
11. **J. N. Lawson**, M. J. Baney, T. H. Epps, III. “Effect of Surface Energetics on Block Copolymer Phase Behavior,” Speaker, 2009 APS March Meeting, Pittsburgh, PA, March 2009.
12. **J. N. Lawson**, M. J. Baney, T. H. Epps, III. “Generating Surface Energy Gradients for Block Copolymer Thin Film Studies,” Speaker, 2008 AIChE Annual Meeting, Philadelphia, PA, November 2008.
13. **J. N. Lawson**, T. H. Epps, III. “Generating Surface Energy Gradients for Block Copolymer Thin Film Studies,” Poster, 2008 SPE TOPCON, Wilmington, DE, October 2008.
14. **J. N. Lawson**, T. H. Epps, III. “Generating Surface Energy Gradients for Block Copolymer Thin Film Studies,” Poster, 2008 APS March Meeting, New Orleans, LA, March 2008.
15. **J. N. Lawson**, T. H. Epps, III. “Stabilizing Self-assembled Block Copolymer Network Structures in Thin Films”, Speaker, 2007 DOE/NREL Renewable Energy Academic Partnership (REAP) Review Meeting and NSF Solar Hydrogen IGERT Workshop, Newark, DE, August 2007.

Researchers Supervised

Ph.D. Students

Giovanni Kelly (01/2014-present) – Mechanically and Chemically Heterogeneous Polymeric Materials with Tunable Properties for Cell Studies

Baraka Lwoya (01/2014-present) – Effect of Block Copolymer Architecture on Thin Film Phase Behavior

M.S. Students

Sloan Lipman (01/2015-present) – Self-assembly of Ternary Block Copolymer/Homopolymer Blends from the Nanoscale to the Microscale

Undergraduate Students

1. Brett Bomwell (01/2014-05/2015, B.S. 2016 Tulane) – Self-assembly of Block Copolymer/Homopolymer Blends from the Nanoscale to the Microscale
2. Kathleen Granger (01/2014-present, B.S. 2016 Tulane) – Formation of Biocompatible Scaffolds from Polymer Blends
3. Fabiana Fornerino (05/2014-08/2014, B.S. 2015 Tulane) – Solvent Vapor Annealing Thin Films of Block Copolymers with Different Architectures
4. Cole Ashman (08/2014-present, B.S. 2016 Tulane) – Poly(siloxane) Materials for Dye-sensitized Solar Cells
5. Marissa Beam (08/2014-present, B.S. 2017 Tulane) – Solvent Vapor Annealing Thin Films of Block Copolymers Using Gradient Methods
6. Arisa Baiamonte (06/2015-present, B.S. 2017 Tulane) – Synthesis of Polysiloxane Copolymers
7. Winnifred Brackey (06/2015-present, B.S. 2017 Tulane) - Self-assembly of Ternary Block Copolymer/Homopolymer Blends from the Nanoscale to the Microscale
8. Tyler Staggs (06/2015-present, B.S. 2016 Tulane) – Film Thickness Effects on Polymer Phase Behavior
9. Nicholas Sehlinger (Summer 2015, Bulldogs in the Big Easy Intern from Yale University) – Nanoporous Block Copolymer Filtration Membranes for Enhanced Oil Recovery

Student Awards

1. Giovanni Kelly – Louisiana Board of Regents Support Fund Fellowship, 2014
2. Kathleen Granger – Newcomb College Institute Student Grant for Independent Research, 2014
3. Kathleen Granger – Newcomb-Tulane College Dean’s Grant, 2014
4. Cole Ashman – Newcomb-Tulane College Dean’s Grant, 2015
5. Marissa Beam – Newcomb-Tulane College Dean’s Grant, 2015

Thesis Committees

I am serving on the thesis committee for the following graduate student at Tulane University.

1. Karolina Kosakowska (Primary advisor: Scott Grayson, Chemistry Department, IGERT Bioinnovation Program)
2. Olasehinde Owoseni (Primary advisor: Vijay John, Chemical and Biomolecular Engineering Department)

Teaching Experience

Courses Instructed, January 2014-Present

Tulane University, Department of Chemical and Biomolecular Engineering

CENG 2120 – Thermodynamics I, Spring 2014-2015 (core)

CENG 6420 – Survey of Contemporary Polymers Research, Fall 2015 (elective)

Teaching Fellowship, Fall 2009

University of Delaware, Department of Chemical Engineering

- Chemical Engineering Thermodynamics I, CHEG 231
- Co-instructed the course (lectures, homework assignments, exams, projects) with professors Doug Buttrey and Chris Roberts

Teaching Assistant, Fall 2007 & Spring 2009

University of Delaware, Department of Chemical Engineering

- Introduction to Polymer Science and Engineering, CHEG 600
- Chemical Engineering Thermodynamics II, CHEG 325
- Responsibilities: Substitute lecturing for the professor (twice), Exam review sessions, Assignment and exam grading

Undergraduate Student Mentor, January 2007 – September 2013

North Carolina State University, Department of Chemical and Biomolecular Engineering, Genzer Group

University of Delaware, Department of Chemical Engineering, Epps Group

- Trained new graduate and undergraduate students in laboratory techniques
- Supervised eleven undergraduate students' summer research projects and senior thesis projects, including students in the Research Experience for Undergraduates (REU) Program

Student Assistant, May 2005 – July 2006

University of Florida, Chemical Engineering Unit Operations Laboratory

Supervisor: James Bosworth

- Instructed students in lab safety and equipment operation
- Ordered, maintained, and installed equipment

Professional Memberships and Activities

Memberships

- 2008-Present American Institute of Chemical Engineers (AIChE)
- 2007-Present American Physical Society (APS), Division of Polymer Physics (DPOLY)
- 2009-Present American Chemical Society (ACS), Division of Polymeric Materials: Science and Engineering (PMSE), Division of Polymer Chemistry (POLY)
- 2014-Present American Society for Engineering Education (ASEE), Women in Engineering Division (WIED)
- 2014-Present Society of Women Engineers (SWE)
- 2012-2014 ACS Combinatorial Science Young Investigators Panel
- 2008-2010 University of Delaware Women in Engineering Graduate Steering Committee Chair (2009-2010)

Activities

APS DPOLY Program Abstract and Session Sorter, 2013 APS March Meeting, Baltimore, MD
AIChE Polymers Division Session Co-Chair, 2015 AIChE Annual Meeting, Salt Lake City, UT
Reviewer for Journals: *MRS Communications*, *Chemistry of Materials*, *Journal of Polymer Science Part B: Polymer Physics*
National Science Foundation Panel Reviewer

Service Activities at Tulane University

- 2015-Present University Senate Student Affairs
- 2014-Present Faculty advisor for undergraduate student organization, Society of Women Engineers (SWE)
- 2014-Present Graduate committee
- 2014-2015 Qualifying Exam committee