

Andrew C Weems andrewc.weems@yahoo.com 423-773-2824			Current Position Graduate Research Assistant
Education Institute and Location	Degree	Year	Field
Mercer University	B.S.	2013	Biomedical Engineering
Mercer University	M.S.	2013	Biomedical Engineering
Texas A&M University	Ph.D.	E2017	Biomedical Engineering

Professional Experiences

Biomedical Device Laboratory, Texas A&M University **August 2013-present**

*Graduate Research Assistant- Dr. Duncan J Maitland, Stewart & Stevenson Professor
Biomedical Engineering Department*

- Synthesis of shape memory polyurethane (SMP) foams and novel SMP compositions
- Characterize degradation rates and products of SMPs for neurovascular and peripheral occlusion devices
- Developing novel, biodegradable SMPs from renewable resources
- Laboratory Safety Liaison

Prosthetic Design Laboratory, Mercer University

*Biomedical Engineering Department- Dr. Ha V Vo
Graduate Student*

August 2012-July 2013

- Assisted in design and manufacture of prosthetics; certified as a fitting prosthetist
- Designed total metacarpal joint replacement device
- Teacher's Assistant/Supplemental Instructor- Statics and Solid Mechanics/Dynamics

Undergraduate Student

January 2010-August 2012

- Manufacturing and assembly of lower limb prosthetics
- Solidworks modeling of prosthetic designs

National Science Foundation REU, Texas A&M University

May 2012-August 2012

Chemical Engineering Department- Dr. Victor Ugaz

- Synthesis of microgels and fabrication of lab-on-a-chip devices
- Electrophoresis separation of varying sizes of DNA fragments
- Computational analysis of lab-on-a-chip design

National Science Foundation REU, Northwestern University

May 2011-August 2011

Nanoscale Science and Engineering Center/Theoretical Chemistry Department- Dr. George Schatz

- Computational analysis of DNA segments' mechanical behavior in water

Kamin Performance Materials, Macon

January 2011-December 2012

Chemical Characterization Intern

- Designed basic analytical test for determining surfactant species
- Performed soil sample analysis for preliminary mining sites/ground water analysis

Publications

1. Z Steelman, A Traverso, **AC Weems**, JM Szafron, DJ Maitland, V Yakovlev. Brillouin spectroscopy comparison with thermal analysis of shape memory polymers. *J Phys Chem Lett.* 2016, submitted.
2. SM Hasan, RS Thompson, H Emery, AL Nathan, **AC Weems**, F Zhou, MBB Monroe, DJ Maitland. Modification of shape memory polymer foams using tungsten, aluminum oxide, and silicon dioxide nanoparticles. *RCS Advances*, 2016, 6, 918-927.
3. Boyle, A.J., **AC Weems**, SM Hasan, LD Nash, DJ Maitland. Solvent stimulated actuation of shape memory polymer foams using dimethyl sulfoxide and ethanol. *Smart Mater and Struct*, 2016. Submitted
4. **AC Weems**, JE Raymond, AD Easley, MA Wierbicki, T Gustafson, DJ Maitland. Synthesis, characterization and in vitro analysis of shape memory polymers with visible and near infrared imaging modalities. *RCS Advances*, In prep.
5. TS Kristufek, SL Kristufek, AT Lonneckner, LA Link, **AC Weems**, JE Raymond, KL Wooley. Rapidly-cured isosorbide-based cross-linked polycarbonate elastomers. *Polymer Chemistry.* 2016, Submitted

6. TL Landsman, **AC Weems**, SM Hasan, RS Thompson, TS Wilson, DJ Maitland. Embolic applications of shape memory polyurethane scaffolds, Advances in Polyurethane Biomaterials, edited by SL Cooper and J Guan. Woodhead Publishing (Elsevier imprint).
7. SM Hasan, **AC Weems**, RL Muschalek, DJ Maitland, TS Wilson. Biodegradation of Shape Memory Polymers, Lifetimes and Compatibility of Synthetic Polymers. Edited by J Lewicki. Wiley-Scrivener, 2015.
8. CS Seney, D Moore, D Goode, J Mimbs, R Vaithi, **AC Weems**, R Goddard. Probing the surface pH effects of Ag nanoparticles in solution via isothermal titration calorimetry and zeta-potential measurements. *J Phys Chem C*, **2015**, submitted
9. **AC Weems**, JE Raymond, T Gustafson, KT Wacker, BE Keller, KL Wooley, DJ Maitland. Examination of radio-opacity enhancing additives in shape memory polyurethane foams. *J. Appl. Polym. Sci.*, 132 (22), 2015. 42054.
10. **AC Weems**, H.Vo. Computational comparison of one piece metacarpal-phalangeal/phalangeal-phalangeal total joint replacements. *J.Biomed.Sci.Engin.* 2014, 7(7), 427-433
11. **AC Weems**, H.V.Vo. A novel design of total metacarpal/metatarsal-phalangeal total joint replacement. *J.Mech.Engin.Auto.* 2014, 5, 391-399.
12. **AC Weems**, H.Vo. "Novel Design of a Total Finger and Toe Joint Replacement: Computational Comparisons." *American Society of Engineering Education*, **2013**,

Patents

1. **AC Weems**, JE Raymond. (July 2015) Method of incorporation of fluorescent and near infrared modalities into shape memory polymers.
2. **AC Weems**. Novel Metacarpal-phalangeal prosthesis. Awarded: Sept 15, 2015. US: 9,132,019

Leadership Development and Service

Biomedical Engineering Graduate Student Association

June 2015-present

- Steering committee member; direct the organization mission and structure during inaugural year
- Developed ideas for outreach to prospective, incoming, and established graduate students

Mercer University, Mercer On Mission Vietnam

May 2013-July 2013

- Designed and manufactured prosthetics at Mercer University, Macon, GA that were sent to Vietnam
- Fit lower limb prosthetics (above and below knee) in south Vietnam
- Basic clinical care, including physical therapy, general healthcare, and assisted in surgical procedures

Mercer University Prosthetics and Orthotics Club (MPOC)

September 2012-July 2013

- Founding member of MPOC
- Designed novel prosthetics, including pediatric lower limb prosthetic
- Fit prosthetics to amputees in the Macon community

Selected Honors and Awards

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| 1. NASA H Jenkins GRFP, NASA | 2015 |
| 2. Department of Biomedical Engineering Travel Grant, Texas A&M University | August 2015 |
| 3. Diversity Fellowship, Texas A&M University | 2013 |
| 4. Enrichment Fellowship, Texas A&M University | 2013 |
| 5. Fulbright Fellowship Finalist, Vietnam | 2014 |
| 6. Fulbright Fellowship Finalist, United Kingdom | 2013 |
| 7. Presidential Scholarship, Mercer University | 2009- 2013 |
| 8. National Science Foundation Research Experience for Undergraduates | Summer 2012 |
| 9. National Science Foundation Research Experience for Undergraduates | Summer 2011 |
| 10. Mercer University Student Research Podium Presentation Award | Spring 2013 |
| 11. Mercer University Student Research Poster Award | Spring 2012 |
| 12. Mercer University School of Engineering Travel Grant | Fall 2012 |
| 13. Mercer University Department of Chemistry Travel Grant | Spring 2012 |
| 14. Mercer University Honors Engineering Travel Grant | Spring 2011 |

Academic Mentoring

Alexandra Easley, Undergraduate Research

Biomedical Engineering, Texas A&M University
Student research mentee in Biomedical Device Laboratory during 2015-present

Sydney Reese, Undergraduate Research

Biomedical Engineering, Texas A&M University
Student research mentee in Biomedical Device Laboratory during 2015-present

Garrett Harmon, Undergraduate Research

Biomedical Engineering, Texas A&M University
Student research mentee in Biomedical Device Laboratory; July 2015-December 2015

Kyle Campbell, Undergraduate Research

Biomedical Engineering, Texas A&M University
Student research mentee in Biomedical Device Laboratory during 2015 spring

Jason Szafron, Undergraduate Research

Biomedical Engineering, Texas A&M University
Student research mentee in Biomedical Device Laboratory during 2014-2015

Technical Presentations (selected)

1. American Chemical Society (ACS) National Meeting (Oral)-*Degradation of shape memory polymers: examination of highly porous, thermoset polyurethanes*. **AC Weems**, KT Wacker, KL Wooley, DJ Maitland. Philadelphia, PA, 2016.
2. American Chemical Society (ACS) National Meeting (Oral)-Renewable neolignan thermosets with tunable thermomechanical characteristics towards biomedical applications. KT Wacker, **AC Weems**, DJ Maitland, KL Wooley. Philadelphia, PA, 2016.
3. American Chemical Society (ACS) National Meeting (Podium)-*Degradation of shape memory polyurethanes and their foams*, **AC Weems**, DJ Maitland. Boston, MA., August 2015
4. Student Research Week, Texas A&M University, (Podium) *Degradation of thermoset shape memory polymers*. **AC Weems**, DJ Maitland. College Station, TX, May 2015.
5. Biomaterials Day, Texas A&M University (Poster)- *Effects of radio-opaque additives on shape memory polyurethane foam*, **AC Weems**, JE Raymond, T Gustavson, BE Keller, DJ Maitland, College Station, TX, May 2014
6. Materials Advantage Symposium, Texas A&M University, (Poster)-*Effects of radio-opaque additives on shape memory polyurethane foam*, **AC Weems**, JE Raymond, T Gustavson, BE Keller, DJ Maitland, College Station, TX, March 2014
7. American Society for Engineering Education (ASEE), University of Tennessee, **AC Weems**, H.Vo , Southeastern Conference (Podium)- *Novel Metacarpophalangeal Total Joint Replacement*, Cookeville, TN, March 2013
8. Biomedical Engineering Society National Meeting (BMES)(Poster)- *Novel design of Metacarpal-phalangeal/Metatarsal-phalangeal Total Joint Replacement*, **ACWeems**, H.Vo , Atlanta, GA, October 2012
9. MSEN/CVEN REU (Poster), Texas A&M University-*Toward fast microfluidic separation: A closer look at the migration of DNA in two different regimes*, **AC Weems**, N Shi, V Ugaz, College Station, TX, July 2012
10. Student Research Week, Mercer University (Podium)- *Novel design of Metacarpal-phalangeal/Metatarsal-phalangeal Total Joint Replacement*, **ACWeems**, H.Vo , Macon, GA, April 2012 (**1st place**)
11. American Chemical Society (ACS) National Meeting (Poster)-*Investigation of Stability in Ag Nanoparticle Solutions using Zeta-Sizer Measurements*, **AC Weems**, C Seney, San Diego, CA, March 2012
12. Nanoscale Science and Engineering Center (NSEC) REU Summer Research Series, Northwestern University (Podium)-*Insights on unusual properties of poly(dA:dT) tracts: an atomistic simulation study*, **AC Weems**, X Zhu, G Schatz, Evanston, IL, August 2011