Sean Jackson
Florida Agricultural and Mechanical University
High Performance Materials Institute
2005 Levy Avenue, Tallahassee, FL 32310
Sean1.Jackson@FAMU.edu

RESEARCH INTEREST

To continue research in the areas of bioinspired engineering mechanism, photodetection and photovoltaic devices, and additive processing of functional materials. I come with a diverse background of technical training in manufacturing engineering and biological sciences.

EDUCATION

Doctor of Philosophy, Department of Industrial and Manufacturing Engineering
2018 – 2023
Florida Agricultural and Mechanical University

M.S. Molecular Cell Biology, Department of Biological Sciences
2018
Florida State University

B.S. Molecular and Cell Biology, Department of Biological Sciences
2014
Florida Agricultural and Mechanical University

PUBLICATIONS

In preparation - Jackson S., Tran, P., Dickens, T. Rheological and Structural Characterization of 3D-printable Gel Polymer Electrolytes. *Polymer, 0(00): 1-12 October 2020.*

In preparation – Jackson S., Dickens, T. A Review of Printable Electrolytes for Photovoltaic, Battery, and Supercapacitor Devices.

Psulkowski, S., Pollard, M., Jackson, S., Tran, P., Dickens, T. Intelligent Process and Operational Monitoring of Composite Systems. *International Workshop on Structural Health Monitoring (IWSHM) (Conference). 2019*

Ufudike, C., Jackson, S., Bolden, N., Dickens, T. Synthesis and characterization of extruded cellulosic fibrils for enhanced reinforced/filamentary textiles. *Textile Research Journal, 0(00): 1-12*, December 2016.

Gustin J., Jackson S., Williams C., Patel A., Armstrong P., Peter G., Settles A. Analysis of Maize (*Zea mays*) Kernel Density and Volume Using Micro-computed Tomography and Single-Kernel Near-Infrared Spectroscopy. *Journal of Agricultural and Food Chemistry, 61(46): 10872-10880,* October 2013.

RESEARCH EXPERIENCE

MSFC CAN
2020 – present
Florida A&M University - Department of Industrial &Manufacturing

Project: Viability Assessment of Printed Powerless Sensors Structures for Aerospace Environment (Grant Number: 80NSSC20M0176).

NSF CREST CoManD Center
2018 – present
Florida A&M University - Department of Industrial &Manufacturing

Project: Subproject 2 Energy Devices

Development and optimization of *in situ* health monitoring system for carbon fiber composite devices via multimaterial core-shell additive manufacturing deposition.

Molecular Cell Biology
2014 – 2018
Florida State University - Department of Biological Sciences

Project: Determination of Telomere Lengths on Callus Stem Cell Replication in *Arabidopsis Thaliana*

Manipulation of *Arabidopsis thaliana* telomere lengths through T-DNA insertion lines to analyze the effect of telomere length and maintenance on *in vitro* stem cell renewal.

Hybrid Natural Composites
2014
Florida State University - High Performance Materials Institute

Project: Investigating Carbon Fiber Textile Reduction for Structural Composites

Creation of a hybrid carbon fiber/nanocellulose composite in aims to increase biodegradability and reduce weight of synthetic structural composite reinforcements.

Molecular Cell Biology
May, 2012 – July, 2013
University of Florida - Department of Horticultural Sciences

Project: Machine vision-based individual maize kernel phenotyping

Incorporation of a high-throughput, single-kernel phenotyping method through near-infrared (NIR) spectroscopy. Prediction of physical and chemical characteristics including: kernel weight, density, starch, oil, and protein concentration.

Project: Genomic mapping of *nlr1* and *nlr2 Zea mays* mutants
PCR-based genomic identification to identify the location of two novel *nlr* Maize mutants.

SKILLS AND EXPERTISE

Carbon fiber composite fabrication (Vacuum assisted resin transfer molding (VARTM))
3D Printing (Fused Deposition Molding, Direct Ink Writing [nScrypt nFD-450]

Rheological Analysis, Modeling (Power Law)	Differential scanning calorimetry (DSC)
Atomic Force Microscopy (AFM)	Dynamic Mechanical Analysis (DMA)
Scanning electron microscopy (SEM)	Thermogravimetric Analysis (TGA)
Micro-computed tomography (uCT)	Fourier Transform Infrared Spectroscopy (FTIR)
Microindentation	Nanoindentation
	Dynamic Contact Angle Tensiometry

High-speed Video Analysis and Processing

TEACHING EXPERIENCE

Instructor of Record

Florida State University - Department of Biological Sciences
Biology One Laboratory
Fall 2014, Spring 2015, Fall 2016

Florida State University - Department of Biological Sciences
Biology Two Laboratory
Fall 2017

Florida State University - Department of Biological Sciences
Biology Laboratory for Non-majors
Summer 2016

Florida State University - Department of Biological Sciences
Plant Biology Laboratory
Spring 2016

Florida State University - Department of Biological Sciences
Microbiology Laboratory
Spring 2018

Teaching Assistant

Florida State University - Department of Biological Sciences

Biology Two Lecture	**Summer 2017**
Molecular Biology Lecture	**Spring 2017**
Plant Biology Lecture	**Fall 2015**
Evolution Lecture	**Summer 2015**

STUDENT ENGAGEMENT

Young Scholars Program (YSP)
June 2019 – August 2019
Florida A&M University

Advisement of an undergraduate student to promote self-led research in the field of industrial engineering. Designed multiple experiments to allow the undergraduate student first-hand experience in conducting independent research for journal publication. Student completed multiple key objectives including synthesis of novel nanoparticle electrolyte inks for dye-sensitized solar cells and analysis and interpretation of rheological data, both of which were presented at a poster session at conclusion of program.

Research Experiences for Undergraduates (REU)
Summer 2018, 2019
Florida A&M University

Advisement of undergraduate students on various research and education-based topics to promote admission into post-graduate educational programs. Topics include 1) Aiding students in designing experiments to empirically test developed hypotheses, 2) providing hands-on experience conducting experiments leading to journal publication, and 3) teaching design of experiments (DOE) course to improve students experimental design capabilities.

FGLSAMP (FL – GA Louis Stokes Alliance)
August, 2016 - 2019
Florida State University

Advisement of undergraduate students on topics involving extracurricular activities and internship
positions to promote admission into post-graduate educational programs

Undergraduate Biology Tutor
January, 2011 – January, 2014
Florida Agricultural and Mechanical University

Academic tutoring and advising on biological courses offered to undergraduate students

Golden Key International Honor Society
January, 2011 – August, 2014
Florida Agricultural and Mechanical University

Planned and participated in student-led, community-first programs to increase student involvement in local communities

T.O.Y.S. (Teaching Our Youth Science)
March, 2012 – November, 2012
Florida Agricultural and Mechanical University

Tutor for elementary and middle-school students covering STEM topics

INVITED TALKS

Florida Annual Meeting and Exposition (FAME) Conference – American Chemical Society May 2019

Jackson, S., Roy, R., Tran, P., Dickens, T. (presented 2019, May) Optimization of Printable Polymer Nanocomposite Electrolytes for Dye-Sensitized Solar Cells. Florida Annual Meeting and Exposition Conference, FAME, Tampa, FL.

Emerging Researchers National (ERN) Conference
February 2019

Jackson, S., Tran, P., Dickens, T. (presented 2018, February). Optimization of Electrolytes for 3D printing of Wire-Shaped Dye-Sensitized Solar Cells. Emerging Researchers National Conference, ERN, NSF, Washington, DC. (National) 1st Place Graduate Oral Competition.

Florida State University
Fall 2017

A discussion of Poxson et al.,2017 - Poxson, D., Karady, M., Gabrielsson, R., Alkattan, A., Gustavsson, A., Doyle, S., Robert, S., Ljung, K., Grebe, M., Simon, D., Berggren, M. Regulating Plant Physiology with Organic Electronics. *PNAS*, 114(18): 4597-4602, *March 2017.* Florida State University, FSU, Tallahassee, FL.

Florida State University
Spring 2017

A discussion of Lee et al., 2016 - Lee, J., Xie, X., Yang, K., Zhang, J., Lee, S., Shippen, D. Dynamic Interactions of Arabidopsis TEN1: Stabilizing Telomeres in Response to Heat Stress. *The Plant Cell*, 28(9): 2212-2224, *September 2016.* Florida State University, FSU, Tallahassee, FL.

Florida Agricultural and Mechanical University

Transitioning from Undergraduate to Graduate School – *Professional Development Seminar.* Hosted by Latina Banks M.S. Florida A&M University, FAMU, Tallahassee, FL.

Florida State University
Fall 2016

A discussion of Amiard et al., 2014 - Amiard, S., Olivier, M., Allain, E., Choi, K., Smith-Unna, R., Henderson, I., White, C., Gallego, M. Telomere Stability and Development of *ctc1* Mutants are Rescued by Inhibition of EJ Recombination Pathways in a Telomerase-dependent Manner. *Nucleic Acids Research,* 42(19): 11979-11991, *Oct. 2014.* Florida State University, FSU, Tallahassee, FL.

Florida State University
Spring 2016

A discussion of Ufodike et al., 2016 - Ufodike, C, Jackson S., Bolden N., Dickens T. Synthesis

and Characterization of Extruded Cellulosic Fibrils for Enhanced Reinforced/Filamentary Textiles. *Textile Research Journal;* 0(00): 1-12**,** *December 2016.* Florida State University, FSU, Tallahassee, FL.

Florida State University
Fall 2015
A discussion of Long et al., 2015 - Long, Y. Smet, W., Cruz-Ramirez, A., Castelijns, B., de Jonge, W., Mahonen, A., Bouchet, B., Perez, G., Akhmanova, A., Scheres, B., Blilou, I. Arabidopsis BIRD Zinc Finger Proteins Jointly Stabilize Tissue Boundaries by Confining the Cell Fate Regulator SHORT-ROOT and Contributing to Fate Specification. *The Plant Cell*, 27(4):1185-1199, *March 2015.* Florida State University, FSU, Tallahassee, FL.

FSU High Performance Materials Institute
Summer 2015
Jackson, S., Chatterjee, J., Dickens, T. Investigating Carbon Fiber Textile Reduction for Structural Composites. Florida State University, FSU, Tallahassee, FL.

Florida State University
Fall 2014
A discussion of Gustin et al., 2013 - Gustin J., Jackson S., Williams C, Patel A, Armstrong P, Peter F., Settles A. Analysis of Maize (*Zea mays*) Kernel Density and Volume Using Micro-computed Tomography and Single-Kernel Near-Infrared Spectroscopy. *Journal of Agricultural and Food Chemistry, 61(46): 10872-10880, October 2013.* Florida State University, FSU, Tallahassee, FL.

55th Annual, International Maize Conference
Spring 2013
A discussion of Gustin et al., 2013 - Gustin J., Jackson S., Williams C., Patel A., Armstrong P., Peter G., Settles A. Analysis of Maize (*Zea mays*) Kernel Density and Volume Using Micro-computed Tomography and Single-Kernel Near-Infrared Spectroscopy. *Journal of Agricultural and Food Chemistry, 61(46): 10872-10880, October 2013*

Florida Agricultural and Mechanical University
Fall 2012
A discussion of Gustin et al., 2013 - Gustin J., Jackson S., Williams C., Patel A., Armstrong P., Peter G., Settles A. Analysis of Maize (*Zea mays*) Kernel Density and Volume Using Micro-computed Tomography and Single-Kernel Near-Infrared Spectroscopy. *Journal of Agricultural and Food Chemistry, 61(46): 10872-10880, October 2013.* Florida Agricultural and Mechanical University, FAMU, Tallahassee, FL.

MEMBERSHIPS AND HONORS

Emerging Researcher's National (ERN) Conference
February 2019
Graduate Student Oral Presentation – Category: Technology and Engineering: First Place

Conference Travel Award
February 2019
Emerging Researchers National (ERN) Conference

Treasurer, Society for the Advancement of Material and Process Engineering – (SAMPE)
October, 2018
Florida Agricultural and Mechanical University - Florida State University

Mentor, FL – GA Louis Stokes Alliance – (FGLSAMP)
August, 2016 – August, 2018
Florida State University

Historian, Golden Key International Honor Society
January, 2011 – August, 2014
Florida Agricultural and Mechanical University

Member, Biological Student Organization
November, 2010 – April, 2014
Florida Agricultural and Mechanical University

Member, Teaching Our Youth Science – (TOYS)
March, 2012 – November, 2012
Florida Agricultural and Mechanical University

Department of Biology Class Valedictorian
April, 2014
Florida Agricultural and Mechanical University

Magnet Award Winner – Maize Genetics Conference
March, 2013
Florida Agricultural and Mechanical University