

# Christine Gregg

cgregg@berkeley.edu

## EDUCATION

### University of California, Berkeley

*PhD, Mechanical Engineering*

*Master of Mechanical Engineering*

Advisor: Prof. Paul K. Wright

Master's Thesis: "Passively Self-Tuning Energy Harvesting System: Piezoelectric Element Integration and Characteristic System Behavior"

Awards: Chancellor's Fellow, Chang-Lin Tien Graduate Fellowship, Graduate Division Block Grant Award

Berkeley, CA

Expected May 2018

May 2015

### University of Delaware

*Honors Bachelor of Mechanical Engineering with Distinction, Aerospace Concentration, Mathematics Minor* May 2013

Graduated Summa Cum Laude, GPA: 4.00

Select Awards: Bradford B. Barnes Memorial Scholarship, Stark Scholar, Distinguished Scholars Program, Nowinski Award for Excellence in Undergraduate Research

Newark, DE

## RESEARCH EXPERIENCE

### NASA Ames Research Center

*Dr. Kenneth Cheung—Coded Structures Lab*

- Conducted research on the efficient manufacturing and failure modes of digital lattice materials

June 2015—August 2016

### Berkeley Advanced Manufacturing for Energy Lab

*Prof. Paul K. Wright, UC Berkeley—Dept. of Mechanical Engineering*

- Developing self-adaptive vibrational energy harvester

August 2013—Present

### NASA Ames Research Center Aeromechanics Intern

*Dr. William Warmbrodt—Chief, Aeromechanics Branch*

- Developed the flight test plan for the Hub Mounted Video Camera (HMVC) project on the UH-60 helicopter in collaboration with U.S. Army Aeroflightdynamics Directorate personnel
- Generated a schedule of necessary aerodynamic tare tests for wind tunnel testing of the High Efficiency Tilt Rotor (HETR) and Large Civil Tilt Rotor (LCTR) scale models
- Assisted with planning of photogrammetric calibration measurements of the Tiltrotor Test Rig (TTR)

June 2013—Jan 2014

### NASA Ames Research Center Aeromechanics Intern

*Dr. Benjamin Sim—U.S. Army Aeroflightdynamics Directorate, Dr. William Warmbrodt—Chief, Aeromechanics Branch*

- Performed phased array analysis of acoustic wind tunnel data using MATLAB and commercial array software
- Utilized analysis to recommend a redesign of acoustic sampling system
- Recommended additional tests and experiments for further code verification

June 2012—August 2012

### Center for Composite Materials, University of Delaware

*Dr. Erik Thostenson, UD—Dept. of Mechanical Engineering*

- Developed electrophoretic deposition methods for graphene solutions onto carbon fiber for composite property enhancement. Performed SEM imaging of specimens.
- Worked on damage sensing in carbon nanotube (CNT) infused composites, syntactic foams, and sandwich structures. Dispersed CNTs in resins to prepare many types of multifunctional nanocomposite specimens and structural laminates using vacuum assisted resin transfer molding (VARTM). Assisted with quasi-static and fatigue testing of bolted specimens. Performed optical microscopy and associated specimen preparation. Manufactured nanocomposite laminates for damage sensing in structural concrete
- Developed dispersal methods for microcapsules in resins for microcapsule-based self-healing composites

Feb 2011—May 2013

## TEACHING EXPERIENCE

### Teaching Assistant, Undergraduate Heat Transfer

*Prof. Suresh Advani, University of Delaware—Dept. of Mechanical Engineering*

- Conducted office hours for student homework help and assisted with discussion sections

Spring 2013

### Teaching Assistant, Undergraduate Dynamics

*Prof. Valery Roy, University of Delaware—Dept. of Mechanical Engineering*

Fall 2011

- Taught weekly group review sessions focusing on practice problems and concept review

## ACTIVITIES AND LEADERSHIP

### Science and Engineering Community Outreach (SECO)

Fall 2013—Present

*Co-chair*

- Conducted multiple science lessons in local elementary schools on concepts such as gears and structures

### Tau Beta Pi Engineering Honor Society

September 2012—May 2013

*President*

- Organized and hosted area conference
- Lead efforts to expand educational outreach in partnership with other undergraduate mechanical engineering service organizations

### Society of Women Engineers (University of Delaware Chapter)

September 2012—May 2013

*Organizer, Girl Scout Outreach*

- Organized multiple STEM outreach events for local Girl Scout council
- Developed a Solidworks learning module used during these outreach events (middle school and high school girls)

### Air Force ROTC

September 2009—September 2011

*Cadet*

- Attended Field Training
- Arnold Air Society member

## PUBLICATIONS AND PRESENTATIONS

- (2014) C.E. Gregg, P. Pillatsch, P. K. Wright. “Passively Self-Tuning Piezoelectric Energy Harvesting System” in PowerMEMS, 2014.
- (2016) B. Jennett, D. Cellucci, C. Gregg, K. Cheung. “Meso-Scale Digital Materials: Modular, Reconfigurable, Lattice-Based Structures” in ASME 2016 11<sup>th</sup> International Manufacturing Science and Engineering Conference, 2016.

## HONORS AND AWARDS

- (2016) NASA Space Technologies Research Fellowship
- (2015) Chang-Lin Tien Graduate Fellowship, Graduate Division Block Grant Award (UC Berkeley)
- (2013) Chancellor’s Fellowship (UC Berkeley)
- First Place- SAMPE Student Research Competition, Long Beach, CA (undergrad division)
- First Place- SAMPE Baltimore-Washington Chapter Student Poster Competition
- Mary and George Nowinski Award for Excellence in Undergraduate Research
- Center for Composite Materials Outstanding Senior Award
- W. Francis Lindell Mechanical Engineering Award to the Distinguished Senior
- (2012) Center for Composite Materials Undergraduate Research Award
- W. Francis Lindell Mechanical Engineering Award to the Distinguished Junior
- (2011) General Honors Award
- Mechanical Engineering Alumni Award to Outstanding Sophomore
- Third Place- Center for Composite Materials Undergraduate Poster Symposium
- “Characterization of Damage Mechanisms in Mechanically Fastened Composite Joints using Carbon Nanotube Networks”
- Summer Scholars Undergraduate Research Program
- (2010, 2011) Hutchinson Academic Excellence Award
- (2009- 2013) Stark Scholar
- (2009- 2013) Bradford B. Barnes Memorial Scholarship

## SKILLS

- **Computational/Modeling:** Solidworks, Rhinoceros, Grasshopper, Finite Element Analysis (Solidworks, ABAQUS)
- **Laboratory/Fabrication:** Scanning Electron Microscopy (SEM), VARTM (Vacuum Assisted Resin Transfer Molding), lasercutting, 3D printing, mill and lathe
- **Software/ Languages:** LabVIEW (Certified Associate Developer), MATLAB, Arduino, Python