

Reid E. Shaeffer

Mechanical Engineer

Education

December 2016	Doctor of Philosophy in Mechanical Engineering Focus on heat transfer, thermodynamics, and fluid dynamics. <i>Title of Dissertation: "Design of a Compact, Lightweight Absorption Chiller"</i>	University of Florida
May 2014	Master of Science in Mechanical Engineering	University of Florida
December 2012	Bachelor of Science in Mechanical Engineering Summa Cum Laude <i>Title of Honors Thesis: "Cryogenic Chilldown with Pulse Flow Liquid Nitrogen"</i>	University of Florida

Experience

May 2014 - December 2016	Research Assistant <ul style="list-style-type: none">Performed research in the area of absorption refrigeration.Activities included simulation development, investigation of novel refrigeration cycles, as well as all aspects of design and fabrication of physical systems including control software programming.Developed an advanced experimental absorption chiller featuring a unique architecture.Secured proposals for subcontractor selection and prepared subcontracts.Responsibilities included budget management and acquisitions from industry vendors.Coordinated team and subcontractor efforts and presented progress briefings to sponsors and conference attendees.	Nanostructured Energy Systems Laboratory
January 2013 - May 2014	Research Assistant <ul style="list-style-type: none">Performed research in the area of cryogenic heat transfer and boiling.Areas included flow control, surface modification, and optimization strategies for terrestrial and micro-gravity conditions.Experience in cryogenic systems was used to create an experimental payload for space flight on-board Virgin Galactic's SpaceShip Two.Assisted in securing funding, budget development and expenditure monitoring for various programs.Worked with environmental health and safety representatives to establish safe testing procedures.	Cryogenic Thermal Fluids Laboratory
May - September 2012 May - July 2011	Mechanical Engineering Intern <ul style="list-style-type: none">Performed design, drafting and field observation of HVAC systems and associated equipment.Served as a key project team member working with other engineering disciplines in delivering critical final design products for bidding and construction. Familiar with industry design standards (LEED, ASHRAE, etc.) and their application in project delivery.Design tasks performed include facility heat load analysis, system sizing and layout, as well as reviewing component submittals for multi-story medical and industrial facilities.Reviewed system controls drawings and developed testing procedures for commissioning and start-up verification.Systems experienced include chilled water, variable refrigerant flow, and direct expansion systems.	Affiliated Engineers

Projects

May 2014 - December 2016	Development of a Compact Absorption Chiller Pioneered an advanced lithium bromide absorption refrigeration system starting from concept, modeling, simulation, and ultimately through fabrication and testing. A new architecture for absorption chillers was realized; one of compact plates offering improvements in heat and mass exchange at low cost with production volume scalability. During development, a novel manufacturing technique was developed using lasers. Proprietary simulation software was created for system design, operation, and analysis.	Advanced Research Projects Agency-Energy (ARPA-e)
January 2013 - May 2014	Sub-Orbital Cryogenic Heat Transfer Payload Sole member leading an effort to design, fabricate, and integrate an experimental payload into Virgin Galactic's SpaceShip Two. The objective of the experiment was to gain knowledge about heat transfer characteristics of liquid fuels under micro-gravity conditions. NASA and private industry companies were interested in understanding cryogenic heat transfer and possible optimization strategies in order to conserve fuel during missions to Mars. The payload was designed to meet size, weight, strength, and safety requirements set by Virgin Galactic.	NASA

Honors and Affiliations

- January 2013 **Alumni Graduate Fellowship** [University of Florida](#)
The Alumni Graduate Fellowship Fund represents the highest graduate student award available at the University of Florida.
- May 2014 **Interdisciplinary Microsystems Group**
The Interdisciplinary Microsystems Group (IMG) is a college-wide multi-departmental education and research group focused on engineering at the University of Florida.
- December 2011 **Tau Beta Pi and Pi Tau Sigma**
Engineering honor societies focusing on academics and character.

Skills

Computer

SolidWorks, Matlab, ANSYS FEA, Abaqus FEA, COMSOL, Revit MEP, AutoCAD, MS Office suite, LaTeX, LabVIEW, Fortran 95, Carrier HAP, Trane Trace 700.

Mechanical

Advanced/nontraditional and conventional manufacturing, experimental design and fabrication, basic machining, high vacuum fabrication, expert laser welding, engine overhaul, and auto refinishing.

Certifications

- February 2013 **Engineer in Training (EIT) Certification**
License Number #1100017111
- April 2013 - 2015 **Certified LabVIEW Associate Developer**
License Number #100-313-1690
- October 2014 **Certificate of Laser Welding System Applications**
Laser Star Technologies

Publications

- December 2013 **"An Experimental Study on Liquid Nitrogen Pipe Chillover and Heat Transfer with Pulse Flows"**
International Journal of Heat and Mass Transfer
Reid Shaeffer, Hong Hu, J.N. Chung
- January 2015 **"Numerical Simulation of the Liquid Nitrogen Chillover of a Vertical Tube"**
53rd AIAA Aerospace Sciences Meeting
Samuel Darr, Hong Hu, Reid Shaeffer, J.N. Chung, Jason Hartwig, Alok Majumdar
- January 2015 **"Modification and Enhancement of Cryogenic Quenching Heat Transfer by a Nanoporous Surface"**
International Journal of Heat and Mass Transfer
Hong Hu, Cheng Xu, Yang Zhao, Reid Shaeffer, Kirk J. Ziegler, J.N. Chung

Teaching

- Fall 2016 **Teaching Assistant** [University of Florida](#)
Heat Transfer
 - Created exams and assignments.
 - Guided office hours and held review lectures.
 - Graded class submissions and maintained score database.
- Summer 2016 **Teaching Assistant** [University of Florida](#)
Mechanics of Materials Lab
 - Reviewed lab reports from students for engineering experiments for understanding of engineering concepts and attention to experimental stipulations.

Personal

Motivated, goal-oriented, punctual, and conscientious. Also enjoy rebuilding and improving cars (1986 Toyota Land Cruiser and 1989 Porsche 944S2), rock climbing, snowboarding, cycling, woodworking, and golf.

January 4, 2017