Colin Clancy Kelsall

Ph.D. Student
Department of Mechanical Engineering
Massachusetts Institute of Technology

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EDUCATION

MASSACHUSSETTS INSTITUTE OF TECHNOLOGY **Cambridge, MA**
Ph.D. in Mechanical Engineering *Sept. 2018 – Jun. 2021 (Expected)*
Advisor: Dr. Asegun Henry

MASSACHUSSETTS INSTITUTE OF TECHNOLOGY **Cambridge, MA**
M.S. in Mechanical Engineering (GPA: 4.6/5.0) *Jun. 2016 – Sept. 2018*
Thesis: Cavity Absorber-Emitters for High-Temperature Solar Thermophotovoltaics
Advisor: Dr. Evelyn N. Wang

GEORGIA INSTITUTE OF TECHNOLOGY **Atlanta, GA**
B.S. in Mechanical Engineering (GPA: 3.72/4.0) *Aug. 2012 – May 2016*
Thermal, Fluids, and Energy Concentration
Graduated with Highest Honors

RESEARCH EXPERIENCE

MASSACHUSSETS INSTITUTE OF TECHNOLOGY **Cambridge, MA**
Graduate Research Assistant – Dr. Asegun Henry *Sept. 2018 – Present*

- Currently developing a prototype high-temperature, phase change, thermal energy storage system utilizing a thermophotovoltaic energy conversion device

Graduate Research Assistant – Dr. Evelyn N. Wang *Jun. 2016 – Sept. 2018*

- Analytically and experimentally investigated the relationship between geometric parameters and performance of solar thermophotovoltaic systems (STPV) to improve the efficiency and dispatchability of solar energy conversion technologies

GEORGIA INSTITUTE OF TECHNOLOGY **Atlanta, GA**
Undergraduate Research Assistant – Dr. Asegun Henry *Jan. 2015 – May 2016*

- Worked on the design and fabrication of a prototype high-temperature, liquid metal CSP receiver system
- Designed and machined graphite and advanced ceramic components including pipe fittings, pumps and valves
- Fabricated a novel high-temperature air curtain cavity insulation system to improve receiver efficiency

CONFERENCE PRESENTATIONS/PROCEEDINGS

- C. C. Kelsall, C. Amy, D. Friedman, M. Steiner, and A. Henry, "Thermal Energy Grid Storage (TEGS) Using Multi-Junction Photovoltaics (MPV) 'Sun-in-a-Box': MPV Design Challenges," at *ASME Summer Heat Transfer Conference and 13th International Energy Sustainability Conference (co-located), July 14-17, Bellevue, WA.*

- C. C. Kelsall, D. M. Bierman, A. Leroy, B. Bhatia, and E. N. Wang, "Cavity Absorber-Emitters for High-Temperature Solar Thermophotovoltaics," in *Proceedings of the 16th International Heat Transfer Conference, IHTC-16, August 10-15, 2018, Beijing, China.*

PUBLICATIONS

- C. Amy, D. Budenstein, M. Bagepalli, D. England, F. DeAngelis, G. Wilk, C. Jarrett, C. Kelsall, J. Hirschey, H. Wen, A. Chavan, B. Gilleland, C. Yuan, W. C. Chueh, K. H. Sandhage, Y. Kawajiri & A. Henry, "Pumping liquid metal at high temperatures up to 1,673 kelvin," *Nature*, vol. 550, no. 7675, pp. 199–203, 2017.

PATENTS

- A. Henry, C. Amy, M. Bagepalli, D. Budenstein, D. England, C. Kelsall, "All Ceramic Pump and Valve for Circulation of High Temperature Liquid Metals," U.S. Provisional Pat. Ser. No. 62/374,941, filed 15 August 2016

INDUSTRY EXPERIENCE

EDEN GEOPOWER **Cambridge, MA**
Chief Technology Officer *Jan. 2017 – Sept. 2017*

- Worked to develop a method of extracting geothermal power from non-producing oil wells
- Performed several modelling and design tasks to determine feasibility of proposed methods

HYPERLOOP TRANSPORTATION TECHNOLOGIES **Los Angeles, CA**
Engineering Specialist *Jan. 2015 – Sept. 2016*

- Worked remotely with an international group of engineers to develop the power storage system for a prototype Hyperloop supersonic vacuum tube transportation system
- Analyzed options for a phase change cooling system for the battery pack of the Hyperloop capsule

MPR ASSOCIATES **Alexandria, VA**
Summer Engineer *May 2014 – Aug. 2014*

- Assisted with the preparation and checking of several reports and designs focused on the nuclear power industry
- Completed testing and analysis of electrical and mechanical replacement systems for existing power plants

HONORS AND AWARDS

GEORGIA INSTITUTE OF TECHNOLOGY

- Pi Tau Sigma Mechanical Engineering Honor Society *2014*
- Dean's List *2012 – 2016*
- National Merit Scholar, National Merit Scholarship Corporation *2012*

OTHER PROJECTS

PATHS TO SCALABLE CARBON NEUTRALITY FOR MIT **Cambridge, MA**
Group Member *Feb. 2018 – May 2018*

- Developed suggestions for MIT to stop contributing to climate change and inspire others at an affordable price as part of a course on holistic approaches to carbon neutrality

ENGINEERS WITHOUT BORDERS – GEORGIA TECH CHAPTER **Atlanta, GA**
Technical Director, Uganda Project *Sept. 2012 – Jan. 2016*

- Technical Director of a project to install a water distribution system to serve 1,200 people in the community of Oloo, Northern Uganda
- Directed technical committee of 15 students to design and implement a borehole well and solar pumping system

RUNOFF POWER GENERATION PROJECT **Atlanta, GA**
Team Technical Lead *Sept. 2013 – Feb. 2015*

- Designed a green energy system with three other students to capture the potential energy of storm runoff on bridges
- Received funding from the Georgia Tech Grand Challenges Program to develop prototype in fall of 2013
- Finalist in Ideas to Serve Social Enterprise competition in the spring of 2014

SKILLS

Software:	Autodesk Inventor, AutoCAD, SolidWorks, HSMWorks, EPAnet 2.0, COMSOL, LabVIEW
Programming:	Java, Python, MATLAB
Microsoft Office:	Word, Excel, PowerPoint, Project
Communication:	Technical presentation, technical report writing and drawing, project proposals, contracts
Lab:	Multimeter, power supply, oscilloscope, function generator, soldering iron, LDV, source meter
Hardware:	Manual machining, CNC mill, abrasive waterjet, laser cutter, 3D printer, welding (MIG, TIG), IBS