

MARTIN A. COWELL

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EDUCATION

UC Berkeley, Berkeley CA

Ph.D. Mechanical Engineering

M.S. Mechanical Engineering

Expected May 2017

GPA: 3.9/4.0

Colorado School of Mines, Golden CO

B.S. Mechanical Engineering

May 2013

GPA: 3.9/4.0

SKILLS

- **Mechanical & Electrical Design:** CAD, rapid prototyping, additive manufacturing, design for manufacturing and assembly, machining, FEA
- **Programming and Software:** Python, MATLAB, Simulink, R, EES, SolidWorks (Certified), Autodesk Inventor, Adobe Creative Suite, Arduino, Eagle

EXPERIENCE

Graduate Researcher

UC Berkeley

Fall 2013 – Present

Project Lead

Advanced Manufacturing for Energy Lab

- Led team of 5 assistant researchers in developing an energy harvesting wireless sensor using printed electronics
- Designed and built an indoor light harvesting wireless sensor. Expected 10+ year life without maintenance
- Optimized formulation and manufacturing of printed supercapacitors to improve capacitance by 100x
- Reduced wireless sensor size by 55% by using optimization modeling of energy harvesting dynamics
- Advised and mentored students on energy harvesting, electronics integration, mathematical modeling

Mechanical Engineer

Persistent Efficiency

March 2015 – April 2016

- Early employee at IoT electric sub-metering startup: excelled in fast-paced research and manufacturing
- Designed injection molded enclosures for 100k parts/yr. Features include live hinge, dual material, snap closure, “location fit” PCB retainer using overmolding, and undercut cams
- Built testing environment and designed test procedures to validate novel power-flow sensing

Mechanical Engineer

Undergraduate Capstone

August 2012 – May 2013

- Designed and built a novel fuel gauge for zero gravity propellant tanks
- Leveraged finite element analysis to guide vibrational sensing system design
- 3rd place – Colorado School of Mines Engineering & Computer Science Trade Fair 2013

Research Fellow

Los Alamos National Labs

Summer 2012

- Built a sensory-substitution glove linking the wearer’s brain to a distributed sensor network
- Prototyped wearable electronics for human subject testing

PUBLICATIONS

- Cowell, M. et al. (2016) “Wireless sensor node demonstrating indoor-light energy harvesting and voltage-triggered duty cycling” PowerMEMS
- Munsing, E., Cowell, M., Moura, S., Wright, P. (2016) “Optimal component sizing in a two-reservoir passive energy harvesting system” PowerMEMS
- Lechene, B., Cowell, M. et al. (2016) “Organic solar cells and fully printed super-capacitors optimized for indoor light energy harvesting” Nano Energy
- Cowell, M. et al. (2014) “Composite carbon-based ionic liquid supercapacitor for high-current micro devices”. Journal of Physics: Conference Series.
- Mascareñas, D. et al (2014) “A Vibro-haptic Human Machine Interface for Structural Health Monitoring.” Structural Health Monitoring, Sage Journal.