Levi Lentz – IMA Fellow

Energy Interest Area

I am currently working on atomic design and optimization of organic photovoltaic materials as a PhD candidate in Mechanical Engineering at MIT. The end goal of the research is to develop a predictive model to determine new and novel materials that can be used in highly efficient solar devices.

Current Career Objective

I plan on completing a PhD at MIT in the energy sciences with a minor in business. I plan to work on decarbonizing the energy, transportation, and manufacturing sectors through market penetration of clean energy generation and storage technologies.

Education

MASSACHUSETTS INSTITUTE OF TECHNOLOGY **Cambridge, MA, USA**

Doctoral Candidate in Mechanical Engineering, expected June 2017
Adviser: Dr. Alexie Kolpak
Research Area: 2D layered phosphate materials for novel energy applications

MASSACHUSETTS INSTITUTE OF TECHNOLOGY **Cambridge, MA, USA**

Master of Science in Mechanical Engineering, May 2014
Adviser: Dr. Alexie Kolpak
Research Area: Computational material design for advanced hybrid-photovoltaic materials

San Diego State University **San Diego, CA, USA**

Bachelor of Science with Honors and Distinction in Mechanical Engineering, May 2012
Student participant in several energy related student organizations, including ASHRAE and USGBC. Worked as a volunteer researcher in the Solar Energy and Combustion Laboratory for three years. In addition to the energy-related classes required for the degree, completed Solar Engineering and Combustion Engineering.

Professional Experience

Precision Engine Controls Corporation (Dec 2011-Aug 2012) **San Diego, CA, USA**

Manufacturing Intern: Responsible for production management including redesigning management programs to track production efficiency. The program redesign led to a 100% improvement in operator use time.

San Diego State University (June 2008 – Dec 2011) **San Diego, CA, USA**

Domain Administrator: Responsible for management of a network of 2000 computers; designed server-side programs to manage the large network. These programs led to a decrease in computer and network downtime.

Leadership

Activities Coordinator Co-Chair (2014-2015)

Oversee a budget of $300,000
Organize, plan, and execute events for the MIT graduate community centered on social and networking opportunities.
Manage a team of 10 people to ensure an enjoyable graduate experience for a diverse graduate population

QUALIFICATION EXAM CHAIR, Graduate Society of Mechanical Engineers (2014-present)

Organize and maintain internal data pertinent to students currently studying for the qualifying exams in mechanical engineering at MIT

Organize once-a-semester lectures with 20+ students giving information about their experiences

Organize lectures for current students looking to practice their presentation skills to others

PRESIDENT, Graduate Society of Mechanical Engineers (2013-2014)

Coordinate fourteen officers to lead events that encourage research and interdepartmental communication in the Graduate Mechanical Engineering Department at MIT. Increased funding to GAME by 30% YOY through grant applications internal to MIT.

CO-CHAIR, Last Lecture Series (2010-2012)

Planned, coordinated, and executed two Last Lecture Series to allow a professor to give a lecture near the end of their tenure.

Worked with the University President, Dr. Stephen Weber, to plan his last lecture before retirement.

Increased attendance year over year by over 25%.

VOLUNTEER RESEARCHER, Solar Energy and Combustion Laboratory at SDSU (2009-2012)

Redesigned a flame channel to model microgravity flame propagation on a NASA-funded study

Worked with diverse engineers to analyze Combustion and Solar Energy phenomena.

MEMBERSHIP CHAIR, Mortar Board (2011-2012)

Organized the chapter to select the next class of forty Mortar Board members, pursuant to the standards of the organization.

Narrowed the application pool from approximately one hundred applications to the forty accepted candidates.

STUDENT REPRESENTATIVE, University Honors Program (2009-2012)

Worked on a team of non-engineers to plan and organize events for the four hundred student members to meet the social and academic needs of the organizations.

PRESIDENT, Tau Beta Pi (2010 – 2011)

Coordinated a diverse group of engineering students to meet the standards of the society

Sparked a renewed interest in the Honor Society that caused a 100% increase in the number of initiated members.

STUDENT ASSISTANT, C-Programming (2009-2012)

Designed an interface and distribution solution for students to practice the code required for the class.

Revamped the coursework to increase student participation in the course.

Skills

- Extensive knowledge of Linux, Mac OSX, and Windows XP, 7, and 8
- Practical knowledge of manufacturing processing and flow control
- Practical knowledge and application of C, Perl, Python, SQL, PHP, and other programming languages
- Extensive use of Matlab, Mathematica, and other mathematical solutions
- Extensive experience planning productive group meetings
- Experience working in diverse groups of engineers for development of eloquent solutions to complex problems
- Extensive experience with SolidWorks, ProEngineer, and other 3D CAD software
- Design of network topology for high throughput design of engineering systems
- Rapid prototyping

Presentations

Lentz L, Kolpak A. First Principle Optimization of Exciton Separation via Functional Modification of the Atomic Structure. Poster session presented at: 2013 APS March Meeting; 2013 Mar 18-22; Baltimore, MD.

Lentz L, Kolpak A. First Principle Materials Design for Increased Efficiency in Hybrid Photovoltaics. Poster session presented at: 2013 MRS Spring Meeting & Exhibit; 2013 Apr 1-5; San Francisco, CA.

Lentz L, Kolpak A. Functionalization of hybrid organic-inorganic materials for highly efficient photovoltaic materials. Talk presented at: 2014 APS March Meeting; 2013 Mar 3-7; Denver, CO

Lentz L, Kolpak A. First Principles Determination of Electronic Mobilities in Layered Transition Metal Phosphates for Use in Hybrid Organic Photovoltaic. Poster session presented at: 2014 MRS Fall Meeting and Exhibit; 2014 November 30-December 5; Boston, MA.

Lentz L, Kolpak A. 2D Transition Metal Phosphates for use in the design of highly ordered organic photovoltaic bulk heterojunctions. Presented at: 4th International Symposium on Energy, Challenges, & Mechanics; 11-13 August 2015; Aberdeen, Scotland, UK

Lentz L, Kolpak A. Control of Energy Alignment in Hybrid Organic Photovoltaics Based on Layered Transition Metal Phosphates. Presented at: Electronic Materials Conference; 22 June 2016; University of Delaware

Invited Talks

Lentz L, Kolpak A. DFT for Solar Applications. Invited talk for a DFT workshop at Kaestart University in Bangkok, Thailand organized by Dr. Nong Artrith.

Awards and Honors

- Outstanding Presentation, DFT Workshop at Kaestart University (2015)
- Outstanding Chair, Clean Energy Ministerial (Korea) (2014)
- Outstanding Participant, Clean Energy Ministerial (Korea) (2014)
- Outstanding Presenter at Mechanical Engineering Research Symposium, MIT (2014)
- Energy Initiative Fellowship, MIT (2012)
- Henry L. Janssen Award, SDSU (2012)
- Valedictorian of Engineering Class, SDSU (2012)
- Phi Beta Kappa, SDSU (2012)
- Homecoming King, SDSU (2011)
- Mortar Board, SDSU (2011)
- Golden Key, SDSU (2010)
- Italian Machine Tool Design Award (2010)
- University of Michigan Travel Grant (2009)
- Tau Beta Pi, SDSU (2009)
- Phi Kappa Phi, SDSU (2009)
- Phi Eta Sigma, SDSU (2008)
- Valedictorian, Escondido Charter High School (2008)

Personal Background

Year of Birth: 1989
Nationality: USA, California