

# Patrick Luckow

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## EDUCATION

### University of Maryland, College Park, MD

Master of Science in Mechanical Engineering, Expected May 2009  
GPA 4.00/4.00

### Northwestern University, Evanston, IL

Bachelor of Science in Mechanical Engineering, June 2007  
GPA 3.73/4.00, Dean's List 6 Quarters

## RELATED COURSEWORK

Energy Systems Analysis

Sustainable Energy Systems

Engineering Design Methods

Fundamentals of Fluid Mechanics

Life Cycle Cost Analysis

Conduction and Radiation Heat Transfer

Engineering Entrepreneurship

International Environmental Politics

Reliability Engineering

## ACADEMIC EXPERIENCE

### Research Experience

#### Graduate Research Assistant, University of Maryland, College Park, MD

Fall 2007 - present

- Publications: 2008 ASME Energy Sustainability Conference "Energy Efficient Polymers For Gas-Liquid Heat Exchangers" CONV-09 Heat Transfer in Sustainable Energy "Minimum Mass Seawater Heat Exchangers for LNG Applications"
- Studying high thermal conductivity polymer heat exchangers for seawater applications in the power industry
- Investigating least-material optimization methods for heat exchanger design, demonstrating applicability to polymers
- Conducting research on a "total coefficient of performance" metric comparing lifetime energy consumption of heat exchanger materials, incorporating both pumping power and manufacturing energy
  - Conclusion: Polymer performance is 48% better than aluminum and 7 times better than titanium.
- Derivation of analytical equation for conduction in a two-dimensional orthotropic fin
- Designed an experimental polymer heat exchanger setup, demonstrating a 70% improvement in performance over ABS.

### University of Maryland Energy Research Center (UMERC)

#### Student Representative, Coordinator, University of Maryland, College Park, MD

Fall 2007 - present

- Collaborating with professors campus-wide to develop a web-based repository of UMD's energy research efforts
- Assisting with Transforming Energy Lecture Series, including finding speakers and summarizing seminars for publication

### Engineers for a Sustainable World Projects

#### Ergonomic Solar Power Kit, Northwestern University, IL

Fall 2006

- Led team in developing a portable solar power kit, which allowed people to easily power a laptop or other electronics
- Produced a \$200 complete system design, including panel, charge controller, inverter, batteries, and case
- Conducted market research and user testing, leading to the development of an intensive marketing plan

#### Sustainable Shuttle Stop, Northwestern University, IL

Winter 2006

- Designed a shelter for users of the campus shuttle system, utilizing sustainable materials
- Organized and planned schedules and goals for 4 person team, tested new materials, created a model and complete proposal

### Engineering Entrepreneurship

#### Green Fuels: Eco-Friendly Fuel Services Business Plan, Northwestern University, IL

Spring 2007

- Developed a business opportunity to recycle waste vegetable oil as a renewable fuel source
- Voted best business plan in class; competed against 25 other multidisciplinary teams

## PROFESSIONAL EXPERIENCE

#### DaimlerChrysler, Internship, Stress Lab & Durability Development, Auburn Hills, MI

Summer 2007

- Completed load and vibration data acquisition and analysis on various Chrysler vehicles
- Contributed to the development of an improved generic body vibration profile

#### Northrop Grumman, Co-op, Defensive Systems Division, Rolling Meadows, IL

Summer 2005-Winter 2007

- Designed new enclosures and mounting structures for electronic components
- Silenced existing enclosures • Conducted thermal testing of complete systems

## SKILLS & QUALIFICATIONS

Software: Ansys, Matlab (6 years), Labview (4 years), Unigraphics NX 3, Pro/ENGINEER Wildfire 2.0, MS Office  
Professional Engineer Intern (EIT): Illinois Department of Financial and Professional Regulation, July 2007

## ACTIVITIES

Pi Tau Sigma: President 2006, Mechanical Engineering Honors Society, inducted 2006

Association of Energy Engineers: Active member of UMD Student Chapter ; 2007-present

Engineers for a Sustainable World: Local project leader 2006; webmaster 2003-2006

Experience, Inc. Energy Blogging Challenge: Most successful blog and winner of a DOE sponsored trip to Washington, D.C.

Competitive Cycling: Ride leader, Northwestern and University of Maryland cycling teams; 2004-present