Michelle Barber

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Education

Massachusetts Institute of Technology (MIT) - Cambridge, MA
Candidate for B.S. in Chemical Engineering, GPA – 4.4/5.0 (June 2013)

Experience

MIT Chemical Engineering Research: Hatton Laboratory (Cambridge, MA): 2010 –current

- Conducted research on efficient methods for carbon sequestration using electrochemical methods for use of capturing and recycling carbon emissions from power points.
- Built and designed a two-cell pH control system to increase the control from a pH range of 5-7 to 4-9 without water electrolysis.

Baker Hughes: Center for Technology Innovation Nanotechnology Intern (Houston, TX): 2012

- Developed oil-based formulations with advanced electrical and thermal properties.
- Performed simulations and correlated experimental results with predicted estimates.
- Authored comprehensive protocols for evaluation of thermal/electrical properties of liquids.
- Learned about various technologies and products used in the oilfield drilling industry.

Army Corp of Engineers: Engineering Research and Development Center Intern (Concord, MA): 2011

- Developed models to assess risk in the nanotechnology and medical fields.
- Authored book chapter for publication in *Principles of Individual Surgery* entitled "Risk Theory and Surgery".
- Presented "Using Value of Information to Prioritize Nanomaterial Research," at SETAC North America 32nd Annual Meeting - November 17th, 2011.

Harvard Research Experiences for Undergraduates: Capasso Laboratory (Cambridge, MA): 2010

- Performed research on the self-assembly of metamaterials using the techniques of soft lithography and microfluidics in a clean room.

Oakland University: Fuel Cell Researcher (Oakland University): 2006-2009

- Developed a new material to increase the electrical conductivity and mechanical strength of the bipolar plate of a fuel cell and applied a contact mechanics model to determine the effect of current collector surface roughness on fuel cell performance.
- Published technical paper, "*Contact mechanics approach to determine contact surface area between bipolar plates and current collector in proton exchange membrane fuel cells*," M.Barber, et.al, J. of Power Sources, 185 (2008), 1252-1256.

Awards

- Society of Manufacturing Engineers Family Scholarship, 2009, SME E. Wayne Kay Scholarship 2010, 2012
- Detroit/Michigan Science Fair: Participant
  - Prof. Award from the United States Navy (1st Place), 2009
  - Prof. Award from IEEE (1st Place), 2007, 2009
  - Prof. Award from ASM (Most Outstanding Exhibit), 2007, 2008

Skills/Interests

- Python, MATLAB, clean room techniques, conversational in Mandarin
- MIT Asian Dance Team, Intramural Sports Chair
- Mentored three high school students through MIT SWE, Student Member SME, SWE, ESD, AICHe