



# James H. Pikul

**Graduate Institution:** University of Illinois - Urbana -Champaign

**Graduate Discipline:** Mechanical Engineering

**Hometown:** Park Ridge, IL

**Relevant SC Research:** Basic Energy Sciences

## Research Interest:

My broad research interests include developing micro and nano scale technologies for a broad range of applications such as sensors, water purification, and energy storage / harvesting among others. My current research interests include developing nano-architectures for improved electrochemical energy storage. In energy storage technologies there is tradeoff between energy density and power density, where energy density is related to how long your battery will last and power density is related to how fast you can charge / discharge. Using nano architectures both the energy and power density of energy storage devices can be improved. I am currently focused on using self-assembled architectures to develop microbatteries that have two to three orders of magnitude higher power density than conventional microbatteries, but retain the same amount of energy density. This technology has applications in powering autonomous sensors, MEMS actuators, and micro-electronics.

## About Me:

I am PhD candidate in my third year of graduate school. I received my masters in Mechanical Science and Engineering in the spring of 2011. I am most interested in developing new technologies that have practical and relevant applications. I am also interested in business and social sciences, having received minors in technology and management and international studies. I am interested in the three major career paths of academics, industry, and national labs, however, my long term career goal is to develop new businesses based on advanced technologies. I feel entrepreneurship is the best way for my technological ideas to have meaningful societal impact and a great way to combine my interests in technology and business.

I love to travel and recently participated in the National Nanotechnology Infrastructure Network (NNIN) Winter School in Bangalore, India where we spent one week in a workshop learning about nano fabrication with India Institute of Science students

and a second week in rural India. In rural India we were immersed into the local culture and studied how modern technologies are influencing the lives of people in developing nations. I am fascinated by the impact of technology in the developing world and would like to focus some of my technologies and business on this concept.

I am a member of ASME, MRS, and IEEE professional societies. I participate in local ASME and MRS events through the student run organizations at the University of Illinois. I enjoy playing several sports with my colleagues, including soccer, volleyball, and snowboarding. I also enjoy oil painting. I do not directly combine my art with my research but I find painting to be meditative and an excellent way to develop creative thinking.



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