

## Dr. Benjamin Meekins

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### Curriculum Vitae

#### RESEARCH AND WORK EXPERIENCE

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- University of South Carolina      Columbia, SC      **2016-present**  
**Research Assistant Professor**  
My research will focus on photovoltaics, solar fuel conversion (water splitting and carbon dioxide remediation), and catalysis related to both.
- University of Texas – Austin      Austin, TX      **2015-2016**  
**Physical Chemistry Lab Coordinator**
- University of Texas – Austin      Austin, TX      **2014-2016**  
**Researcher** under Dr. C. Buddie Mullins  
Studied stability and synthesis methods of new photovoltaic candidate materials
- University of Texas – Austin      Austin, TX      **2012-2014**  
**Postdoctoral Researcher** under Dr. Allen Bard  
Studied single nanoparticle collisions in non-aqueous medium for reaction systems and design of a nanometer-scale electrode
- University of Notre Dame      Notre Dame, IN      **2007-2012**  
**Graduate Research Assistant** under Dr. Prashant Kamat  
Studied photocatalyst/co-catalyst systems at a fundamental level to better design large-scale systems
- University of South Carolina      Columbia, SC      **2006-2007**  
**Undergraduate Research Assistant** under Dr. J. W. Van Zee  
Studied effect of chloride ions on PEMFC activity and whether recovery was possible
- University of South Carolina School of Medicine      Columbia, SC      **2005**  
**Undergraduate Research Assistant** under Dr. Marlene Wilson  
Studied effects of diazepam (Valium) on rats under stressful conditions

#### EDUCATION

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- University of Notre Dame      Notre Dame, IN      **2007-2012**  
PhD and Masters in Chemical and Biomolecular Engineering  
Thesis: “Photocatalyst/Co-catalyst Systems and Their Roles in Enhancing Water Oxidation”  
Advisor: Prashant V. Kamat

University of South Carolina                      Columbia, SC                      **2003-2007**  
Bachelor of Science in Chemical Engineering, *cum laude*  
Honors Diploma, Tau Beta Pi member  
Thesis: "Exergy Analysis of a Methyl Tertiary-Butyl Ether Production Plant"  
Advisor: Dr. Thomas Stanford

## **PUBLICATIONS**

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Meekins, B. H., and Allen J. Bard. *Detection of Single Particle Collision Events in Non-Aqueous Media*. In preparation.

Ki Min Nam, Hyun S. Park, Heung Chan Lee, Benjamin H. Meekins, Kevin C. Leonard, and Allen J. Bard. *Compositional Screening of the Pb-Bi-Mo-O System. Spontaneous Formation of a Composite of p-PbMoO<sub>4</sub> and n-Bi<sub>2</sub>O<sub>3</sub> with Improved Photoelectrochemical Efficiency and Stability*, **J. Phys. Chem. Lett.** 2013, 4, pp 2707–2710 (DOI: 10.1021/jz401334k)

Meekins, B. H.; Lin, Y.-C.; Manser, J. S.; Manukyan, K.; McGinn, P. J.; Mukasyan, A.; Kamat, P. V. *Photoactive Porous Silicon Nanopowder*, **ACS Appl. Mater. Interfaces.** 2013, 5 (8), 2943-2951. (DOI: 10.1021/am3031745)

Meekins, B. H.; Kamat, P. V. *Role of Water Oxidation Catalyst IrO<sub>2</sub> in Shuttling Photogenerated Holes Across TiO<sub>2</sub> Interface*. **J. Phys. Chem. Lett.** 2011, 2, 2304-2310.  
(<http://dx.doi.org/10.1021/jz200852m>)

Meekins, B. H.; Kamat, P. V. *Got TiO<sub>2</sub> Nanotubes? Lithium Ion Intercalation can Boost Their Photoelectrochemical Performance Three-Fold*. **ACS Nano** 2009, 3, 3437–3446.  
(<http://dx.doi.org/10.1021/nn900897r>)

## **AWARDS**

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- Sustainable Energy Initiative (SEI) Fellowship, University of Notre Dame (2010-2011)
- Rothberg Scholar, University of South Carolina Department of Chemical Engineering (2003-2007)
- South Carolina Palmetto Fellows Scholar (2003-2007)

## **REFEREED CONFERENCE PROCEEDINGS**

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Meekins, B. H., "Power and Remediation with Photovoltaics," AICHE Fall Conference, Atlanta, GA, Fall 2014

Meekins, B. H. and P. V. Kamat, "The Role of Water Oxidation Catalyst IrO<sub>2</sub> in Shuttling Photogenerated Holes Across TiO<sub>2</sub> Interface," International Symposium on Clusters and Nanostructures, Richmond, VA, Nov. 6-10, 2011

Meekins, B. H. and P. V. Kamat, "Amplification of Photocurrent Generation in Lithium Ion Intercalated TiO<sub>2</sub> Nanotube Arrays," Materials Research Society Fall Meeting, Boston, MA, November 2009

## PRESENTATIONS

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### POSTERS

“Low Temperature Synthesis and Photoelectrochemical Characterization of GaZnON” Center for Electrochemistry Conference, Austin, TX, Spring 2016

“Power and Remediation with Photovoltaics” AIChE Fall Conference, Atlanta, GA, Fall 2014

"The Role of Water Oxidation Catalyst IrO<sub>2</sub> in Shuttling Photogenerated Holes Across TiO<sub>2</sub> Interface" International Symposium on Clusters and Nanonstructures, Richmond, VA (VCU), Fall 2011

"Enhanced Photovoltaic Properties of SrTiO<sub>3</sub>-TiO<sub>2</sub> Heterostructures for Solar Cell and Hydrogen Generation Applications" Graduate Student Union Symposium, Notre Dame, IN, Spring 2011

"Amplification of Photocurrent Generation in Lithium Ion Intercalated TiO<sub>2</sub> Nanotube Arrays" Materials Research Society Fall Meeting, Boston, MA, Fall 2009

"TiO<sub>2</sub> Nanotube-Gold Arrays for Hydrogen Generation" Graduate Student Union Symposium, Notre Dame, IN, Spring 2009

### POPULAR PRESS

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**Narrated Presentation** "*The Role of IrO<sub>2</sub> in Mediating Hole Transfer at the TiO<sub>2</sub> Interface*" (<http://youtu.be/okO2ZhKVpb4>), 2011

**Scivee TV Video Perspective** "*Tailored TiO<sub>2</sub>-SrTiO<sub>3</sub> Heterostructure Nanotube Arrays for Improved Photoelectrochemical Performance*" (<http://www.scivee.tv/node/27601>), 2011

### TEACHING

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CH153K/154K – Physical Chemistry Lab (Drs. Wilson and Campion) **Spring 2015**  
Floated between eight experiments, guiding students and answering questions about both laboratory procedure and theory

CH 320N – Organic Chemistry (Dr. Colapret) **Spring 2015**  
Held office hours; proctored and graded monthly and final exams

CBE 40498 – Energy and Climate (Dr. Kuczenski) **Spring 2009**  
**Head TA** – Performed all grading of assignments and exams and provided office hours weekly for both homework and test preparation help.

CBE 30361 – Materials Science (Dr. Mukasyan) **Fall 2008**  
**Head TA** – Oversaw division of grading duties to two 1st-year TAs for both assignments and tests for 100+ student class and answered all questions about grading. Helped administer and monitor exams. Provided weekly office hours for questions about homework or upcoming tests.

CBE 30356 – Transport Phenomena II (Dr. Zhu) **Spring 2008**

Graded turned-in assignments and tests in a timely fashion and helped answer questions from students about grading.

CBE 31358 – Chem. Engr. Lab I (Dr. Saddawi)

**Fall 2007**

Guided students through experiments in (1) conversion of methane over palladium catalysts, (2) fermentation of sugar by microbes, and (3) particle flow generated by heat in a viscous fluid.

#### Teaching Workshops Attended

- *Promoting Critical Thinking in the Classroom*
- *Mentoring Undergraduate Research*
- *Grading Oral and Written Work*
- *Presentation Zen*
- *Keeping Students Engaged in Class*

#### **PROFESSIONAL AND HONOR SOCIETIES**

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- Tau Beta Pi
- American Institute of Chemical Engineers
- American Chemical Society
- Electrochemical Society