

# APRIL M. KLOXIN

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## Education

### **Ph.D. in Chemical Engineering**

May 2009

Dissertation: "Photolabile hydrogels for dynamic tuning of physical and chemical properties to probe cell-cell and cell-material interactions"

*Research advisor: Prof. Kristi S. Anseth*

Department of Chemical and Biological Engineering, University of Colorado, Boulder, CO

### **M.S. in Chemical Engineering**

December 2004

Thesis: "Synthesis and Characterization of Antibacterial PEG Hydrogels"

*Research advisors: Prof. Richard J. Spontak and Prof. Stuart L. Cooper*

Department of Chemical and Biomolecular Engineering, North Carolina State University, Raleigh, NC

### **B.S. in Chemical Engineering, Summa Cum Laude, University Scholar**

May 2001

Department of Chemical Engineering, North Carolina State University, Raleigh, NC

## Professional Experience

### **Assistant Professor**

2011

Departments of Chemical Engineering and Materials Science and Engineering,  
University of Delaware, Newark, DE

### **Post-doctoral Research Associate**

2009-2011

*Research advisors: Prof. Kristi S. Anseth*

*Collaborators: Prof. Vivek Balasubramaniam and Prof. Bradley B. Olwin*

Howard Hughes Medical Institute and the University of Colorado, Boulder, CO

### **Graduate Research Assistant**

2005-2009

*Research advisor: Prof. Kristi S. Anseth*

Department of Chemical and Biological Engineering, University of Colorado, Boulder, CO

### **Graduate Research Assistant**

2002-2004

*Research advisors: Prof. Richard J. Spontak and Prof. Stuart L. Cooper*

Department of Chemical and Biomolecular Engineering, North Carolina State University, Raleigh, NC

## Honors and Awards

- Western Association of Graduate Schools Innovation in Technology Award 2009-2010
- Max S. Peters Outstanding Graduate Research Award 2009-2010
- Excellence in Graduate Polymer Research Award, ACS Polymer Chemistry Div. 2008
- US Department of Education's GAANN Fellowship 2005-2009
- NASA Graduate Student Research Program Fellowship 2005-2008
- Chemistry and Biochemistry Graduate Teaching Excellence Award 2004-2005
- Agilent Outstanding Student Graduate Fellowship 2004-2005
- North Carolina State University Dean's and Alumni Association Fellowships 2002-2003
- James and Ethel Hudgins Angelo Memorial Scholarship 1997-2001

## **Publications**

- **AM Kloxin**, MW Tibbitt, and KS Anseth, "Synthesis of photodegradable hydrogels as dynamically tunable cell culture platforms," *Nature Protocols*, **Accepted**.
- MW Tibbitt, **AM Kloxin**, KU Dyamenahalli, and KS Anseth, "Controlled two-photon photoerosion of PEG hydrogels to study and manipulate subcellular interactions on soft materials," *Soft Matter*, **In Press**, DOI: 10.1039/C0SM00174K.
- **AM Kloxin**, CJ Kloxin, CN Bowman, and KS Anseth, "Mechanical properties of cellularly responsive hydrogels and their experimental determination," *Advanced Materials*, **22**, 3484-3494, 2010.
- **AM Kloxin**, MW Tibbitt, AM Kasko, JA Fairbairn, and KS Anseth, "Tunable hydrogels through controlled photodegradation for external manipulation of the cell microenvironment," *Advanced Materials*, **22**, 61-66, 2010.
- **AM Kloxin**, JA Benton, and KS Anseth, "In situ elasticity modulation with dynamic substrates to direct cell phenotype," *Biomaterials*, **33**, 1-8, 2010.
- **AM Kloxin**, AM Kasko, CN Salinas, and KS Anseth, "Photolabile hydrogels for dynamic tuning of physical and chemical properties," *Science*, **324**, 59-63, 2009.
- **AM Kloxin** and KS Anseth, "Protein gels on the move," *Nature*, **454**, 705-706, 2008 [News & Views].
- VS Khire, **AM Kloxin**, CC Clouch, KS Anseth, and CN Bowman, "Synthesis, Characterization and Cleavage of linear polymers attached to Silica Nanoparticles formed using Thiol-acrylate Conjugate Addition Reactions," *Journal of Polymer Science A: Polymer Chemistry*, **46**, 6896-6906, 2008.
- CR Nuttelman, **AM Kloxin**, and KS Anseth, "Temporal changes in PEG hydrogel structure influence human mesenchymal stem cell proliferation and matrix mineralization," *Advances in Experimental Medicine and Biology: Tissue Engineering*, **585**, 135-149, 2006.

## **Presentations**

- **AM Kloxin**, MW Tibbitt, and KS Anseth "Photodegradable gels for studying the influence of gel structure on cell function," Macro2010: 43rd IUPAC World Polymer Congress - Polymer Science in the Service of Society, July 2010, Glasgow, Scotland, U.K. Oral.
- **AM Kloxin**, JA Benton, MW Tibbitt, and KS Anseth "Phototunable hydrogels for external manipulation of cell micronvironments," Pacific Polymer Conference, December 2009, Cairns, Australia. Oral.
- **AM Kloxin**, JA Benton, MW Tibbitt, and KS Anseth "In situ control of hydrogel modulus with light to direct cell phenotype," American Institute of Chemical Engineers (AIChE) National Meeting, November 2009, Nashville, TN. Oral.
- **AM Kloxin**, JA Benton, AL Banaszek, and KS Anseth, "Controlled photolytic degradation of PEG-based hydrogel surfaces to examine the effect of stiffness on valvular interstitial cells," World Biomaterials Congress, May 2008, Amsterdam, The Netherlands. Oral.

- **AM Kloxin**, AM Kasko, CN Salinas, and KS Anseth, "Photoresponsive PEG-based 3D cell culture platforms," American Chemical Society (ACS) National Meeting, April 2008, New Orleans, LA. Polymer Chemistry Division Excellence in Graduate Polymer Research Symposium. Oral.
- **AM Kloxin**, AM Kasko, and KS Anseth, "Controlled photolytic degradation of PEG-based hydrogels," 3M IUCRC Photopolymerization Symposium, April 2008, St. Paul, MN. Poster.
- **AM Kloxin**, AM Kasko, CN Salinas, and KS Anseth, "Photoresponsive PEG-based hydrogels as niches to tailor biochemical cue presentation for tissue engineering applications," Materials Research Society (MRS) National Meeting, March 2008, San Francisco, CA. Oral.
- **AM Kloxin**, AM Kasko, and KS Anseth, "Controlled photolytic degradation of PEG-based hydrogels to direct cell behavior," Biomedical Engineering Society (BMES) National Meeting, September 2007, Los Angeles, CA. Oral.
- **AM Kloxin**, AM Kasko, Jonathan Fairbairn, and KS Anseth, "Controlled photolytic degradation of PEG-based hydrogels: bulk network mass loss, surface patterning, and modeling," Photopolymerization Fundamentals Conference, June 2007, Breckenridge, CO. Poster.
- **AM Kloxin**, AM Kasko, Jonathan Fairbairn, and KS Anseth, "Controlled degradation of photolabile PEG-based hydrogels," MRS, April 2007, San Francisco, CA. Poster.

### **Teaching and Mentoring**

#### **Co-instructor in First-Year Engineering Projects**

University of Colorado, Boulder, CO

Fall 2009

#### **Lecturer in Chemical and Biological Engineering Senior Seminar**

University of Colorado, Boulder, CO

Fall 2008

#### **Teaching Assistant**

University of Colorado, Boulder, CO

- Tissue Engineering: Designed and taught cell-material interactions lab Spring 2009
- Thermodynamics (Advanced TA): Lead recitation and lectured (1 week) Fall 2006
- Chemistry for Engineers: Lead recitation and lab and graded Fall 2004

North Carolina State University, Raleigh, NC

- Transport Phenomena I: Lectured (1 week), graded, and held office hours Spring 2003
- Chemical Reaction Engineering: Lead recitation, lectured (1 week), and graded Fall 2002

#### **Research Mentor**

University of Colorado, Boulder, CO

- Lisa Sawicki, NSF REU, University of Florida Summer 2010
- Sarah Haeger, HHMI Biosciences UROP, University of Colorado 2009-2010
- Bruce Han, Independent Study, University of Colorado 2009-2010
- Balaji Sridahar, MSTP student, University of Colorado Summer 2009
- Caroline Szczepanski, NSF REU, Lafayette College Summer 2008
- Mark Tibbitt, PhD Student, University of Colorado Spring 2008
- Abigail Banaszek, Graduate Research Methods, University of Colorado Fall 2007
- Daniel Cox, NSF REU, University of Missouri at Columbia Summer 2007
- Brandon Downey, Independent Study, University of Colorado Spring 2007

- Jonathan Fairbairn, Independent Study, University of Colorado 2006-2007
- Brian Kay & Malie Shomali, Graduate Research Methods, University of Colorado Fall 2006

**Professional Service**

- AAUW Expanding Your Horizons College Guide Coordinator 2008 & 2009
- AAUW Expanding Your Horizons College Guide 2006 & 2007
- Science Fair Judge, High Peaks Elementary School 2006-2009
- Biotechniques Lab Guide for GEEN 1500 2007-2010
- Women In Engineering Program Tour Guide 2006-2007
- Weekly HW Tutor, Southern Hills Middle School, Boulder, CO 2005-2007
- Weekly HW Tutor, Olds Elementary School, Raleigh, NC 2003-2004

**Funding Obtained**

- NSF DMR Biomaterials Grant for KSA written with KSA [Funded] 2010-2013
- NASA GSRP Fellowship for AMK [funded and renewed for 3 year maximum] 2005-2008