

## **Tobin Elliott Brown**

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### **EDUCATION**

#### **Ph.D. - Chemical Engineering** (2013- current)

University of Colorado - Boulder

Advisor: Kristi Anseth

Cumulative GPA: 3.93

#### **B.Eng. - Chemical Engineering** (2009-2013)

McGill University, Montreal, Quebec

Cumulative GPA: 3.90 – Dean's Honour List

### **PUBLICATIONS** (\*denotes equal contribution)

**Brown, T.E.**, Carberry, B.J., Worrell, B.T., Dudaryeva, O.D., McBride, M.K., Bowman, C.N., Anseth, K.S., "Photopolymerized dynamic hydrogels with tunable viscoelastic properties through thioester exchange," *Submitted*.

**Brown, T.E.**, Anseth, K.S., "Spatiotemporal hydrogel biomaterials for regenerative medicine." *Chemical Society Reviews*, **2017**, 46, 6532-6552. *Featured on the inside front cover*

Shin, D.S., Tokuda, E.Y., Leight, J.L., Miksch, C.E., **Brown, T.E.**, Anseth K.S., "Synthesis of microgel sensors for spatial and temporal monitoring of protease activity," *ACS Biomaterials Science and Engineering*, **2017**.

**Brown, T.E.\***, Marozas, I.A.\* , Anseth, K. S., "Amplified photodegradation of cell-laden hydrogels via an addition-fragmentation chain transfer reaction." *Advanced Materials*, **2017**, 1605001.

Erythropel, H.C., **Brown, T.E.**, Maric, M., Nicell, J.A., Cooper, D.G., Leask, R. "Designing greener plasticizers: Effects of alkyl chain length and branching of maleate diester based plasticizers." *Chemosphere*, **2015**, 134: 106-112.

McKinnon, D., Domaille, D., **Brown, T.E.**, Kyburz, K., Kiyotake, E., Cha, J., Anseth, K. S., "Measuring Cellular Forces Using Bis-Aliphatic Hydrazone Crosslinked Stress-Relaxing Hydrogels." *Soft Matter*, **2014**, 10(46): 9230-6.

McKinnon, D.\*, **Brown, T.E.\***, Kyburz, K., Kiyotake, E., Anseth, K. S., "Design and Characterization of a Synthetically Accessible, Photodegradable Hydrogel for User-Directed Formation of Neural Networks." *Biomacromolecules*, **2014**, 15 (7): 2808–2816.

Storms, Z. J., **Brown, T.E.**, Cooper, D. G., Sauvageau, D. and Leask, R., "Impact of the cell life-cycle on bacteriophage T4 infection". *FEMS Microbiology Letters*, **2014**, 353: 63–68.

Storms, Z. J., **Brown, T.E.**, Sauvageau, D. and Cooper, D. G. (2012), "Self-cycling operation increases productivity of recombinant protein in *Escherichia coli*". *Biotechnol. Bioeng.*, **2012**, 109: 2262–2270.

### **PRESENTATIONS**

Oral presentation – "Spatiotemporal control over intestinal organoid formation in photodegradable hydrogels," Society for Biomaterials National Meeting, Atlanta, GA (2018)

Poster – "Secondary photocrosslinking of click hydrogels to probe myoblast mechanotransduction," Frontiers in Photoactive Soft Matter, Boulder, CO (2017)

Oral presentation – "Photodegradable, photoadaptable hydrogels crosslinked by allyl sulfides for cell culture applications," American Chemical Society National Meeting, Washington DC (2017)

Oral presentation – “Amplified photodegradation of cell-laden hydrogels through an addition-fragmentation reaction,” Society for Biomaterials National Meeting, Minneapolis, MN (2017)

Oral presentation – “Amplified photodegradation of cell-laden hydrogels through an addition-fragmentation reaction,” American Chemical Society National Meeting, San Francisco (2017)

Poster – “Surface patterned dermal-epidermal co-culture hydrogels to mimic the hair follicle niche,” World Biomaterials Congress, Montreal (2016)

Oral Presentation – “Photodegradable hydrogels for studying axon guidance and the user-directed formation of neural circuits,” American Chemical Society National Meeting, Denver (2015)

Poster – “Light Wavelengths to Control the Release of Multiple Growth Factors,” Society for Biomaterials Annual Meeting, Denver (2014)

## WORK EXPERIENCE

### **Visiting Scientist (Oct.-Dec. 2016 & Apr.-Jun. 2017)**

Professor Matthias Lutolf, Bioengineering Institute, EPFL, Lausanne, Switzerland

- Photodegradable hydrogels for the culture of intestinal stem cell organoids and defined crypt formation

### **Research Assistant (2013-current)**

Professor Kristi Anseth, Chemical and Biological Engineering, CU Boulder

- Dynamically tunable hydrogels for the culture and directed growth of mammalian cells, including embryonic stem cell-derived motor neurons and human mesenchymal stem cells (hMSCs)

### **Research Assistant (summer 2012)**

Professor Richard Leask, Chemical Engineering, McGill

- EUL Scholarship research grant
- The effect of host cell synchronization on bacteriophage replication and recombinant protein production

### **Research Assistant (summer 2011)**

Professor David Cooper, Chemical Engineering, McGill

- Synthesis and biodegradation of potential “green” plasticizers and analysis of metabolites

## AWARDS

2017 – American Institute of Chemists Graduate Award, CU Boulder Dept. of Chemical Engineering

2017 – *Finalist*, Eastman Chemical Student Award in Applied Polymer Science, American Chemical Society

2015 – National Science Foundation Graduate Research Fellow

2015 – Excellence in Graduate Polymer Research Symposium, American Chemical Society

2014 – NIH/CU Molecular Biophysics Training Scholarship (NIH T32 GM-065103)

2013 - NSERC Postgraduate Studies M Scholarship

2013 - Dean’s Outstanding Merit Fellowship - CU Boulder PhD program

2009-2013 – Dean’s Honour List – McGill University (top 10% in faculty)

2012 - McGill EUL Undergraduate Research Scholarship

2009-2013 - JW McConnell Scholarship – McGill University

2009 - National Merit Scholar (*declined to study in Canada*)

2009 - U.S. Presidential Scholar Semifinalist

## TEACHING/MENTORING EXPERIENCE

**Advanced Teaching Assistant: Chemical Engineering Heat Transfer (CHEN 3210)** – (Fall 2016) Faculty course questionnaire (overall) = 5.0/6.0

**Two guest lectures given in Physical Chemistry with Biological Applications 2 (CHEM 4431)** – (Spring 2015)

**Teaching Assistant: General Chemistry for Engineers (CHEN 1211) & Chemical Engineering Kinetics (CHEN 4330)** - (Spring 2014)

**Mentor to two high school students, three undergraduate students, and two graduate students in the Anseth lab**

## SCIENCE OUTREACH

**Boulder Valley School District Science Fair: Student Mentor** – 2015, **Judge** – 2014, 2015

**Google/NIH LabTV project:** Biographical video sketch to encourage top students to enter the medical research field

**Manager of Anseth group website ([www.colorado.edu/ansethgroup](http://www.colorado.edu/ansethgroup)) and Twitter account, @AnsethGroup**

## PROFESSIONAL SERVICE

**Member: Society for Biomaterials, American Chemical Society**

## VOLUNTEER EXPERIENCE

**Undergraduate Tutor – Material and Energy Balances**

**Engineers Without Borders Canada** (School outreach program)

**Jackson Youth Hockey Assistant Coach**

**Habitat for Humanity**

- Volunteer in the ReStore in Jackson and on Saturday build days

## ACTIVITIES

CU ChBE Graduate Leadership Council, mentor in chemical engineering program, Quebec Engineering Competition, ice hockey, hiking