DEAN’S LIST

Cumulative GPA: 3.623/4.000

2nd Place – Young Summer Scholar Research Program Symposium

2nd Place – AIChE Undergraduate Poster Presentation

Recognition

1ST YEAR Ph.D. CANDIDATE

Chemical Engineering

University of Colorado Boulder

2019-Present

HONORS BACHELOR OF SCIENCE

Chemical Engineering

Minor in Biochemical Engineering

University Delaware

2015 – 2019

Education

Community

BLUE HEN LEADERSHIP PROGRAM

August 2015-May 2017

Discover personal leadership style and effect change by working with a community partner.

HABITAT FOR HUMANITY

Spring 2016 and 2017

Organized and led group of students to build a house for those in need.

Publication

Wiley, K.L.; Ovadia, E.M.; **Calo, C.J.**; Huber, R.E., Kloxin, A.M.Rate-based approach for controlling the mechanical properties of ‘thiol-ene’ hydrogels formed with visible light *Polym. Chem.* 2019, *10*, 4428-4440.

Profile

Seeking a graduate research experience that builds on my chemical engineering training and experiences to further develop my laboratory proficiency and knowledge base.

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Boulder, CO, 80303

 Chemical Engineering Ph.D. Candidate

Chris Calo

Experience

**Undergraduate Research**

*April Kloxin Research Group, University of Delaware: June 2017 – present*

Develop poly(ethylene glycol) hydrogel networks, using ‘thiol-ene’ click chemistry, that serve as extra-cellular matrix mimics, which can be used to investigate the effects of various environmental cues on cell behavior.

Hydrogel Formation: Make polymer stock solutions based on stoichiometric ratios pertaining to functional end groups and photo-initiator. Polymerize solutions using a 455 nm LED or 365 nm UV light.

Mechanical Analysis of Hydrogels: Measure elastic properties of hydrogels with an AR-G2 rheometer (Storage Modulus) or a RSA-G2 dynamic mechanical analyzer (Young’s Modulus).

Fmoc-based Solid-Phase Peptide Synthesis: Use peptide synthesizer (Liberty Blue or PS3) to make polypeptide. Cleave polypeptide from resin. Precipitate in diethyl ether to obtain crude product. Purify using high-performance liquid chromatography.

Independent Project: Model diffusion of proteins and peptides into and out of a hydrogel. Characterize reaction kinetics involved in the cleavage of cross-links within a hydrogel.

*Christopher Bowman Research Group, University of Colorado Boulder: June 2018 – August 2018*

Develop synthetic nucleic acid sequences, using ‘thiol-ene’ click chemistry, with the ability to bind to complementary single-stranded DNA, which are used for biological applications.

Click Nucleic Acid (CNA) Formation: Create monomer units with series of synthetic organic reactions. Polymerize monomer units via ‘thiol-ene’ photo-initiated click reaction.

CNA Separation: Isolate polymer fractions according to degree of polymerization using reverse phase high-performance liquid chromatography.

Demonstrate Binding Affinity: Mix monodisperse CNAs with complementary single-stranded DNA and use microscale thermophoresis to quantify binding affinity between CNA and DNA.

**Skills**

Applications/Tools: MS Office (Word, Excel, PowerPoint), Matlab/Simulink, Mathematica, Minitab, AFT Fathom, Aspen+, Origin, Netlogo, Ansys Fluent

Lab Equipment: Fmoc solid-phase peptide synthesis (PS3 and Liberty Blue), rheology (AR-G2), dynamic mechanical analysis (RSA-G2), high-performance liquid chromatography (Waters), gel permeation chromatography (GPC), microscale thermophoresis (MST)