Christopher P. **Breen**

Chemist I · Snapdragon Chemistry

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Education

Boston University

Boston, Massachusetts

B.A. in Chemistry, Minor in Modern Chinese Language

Sept. 2012 - May 2016

- Classes taken during summer 2013 and 2014
- Graduate courses successfully completed in Medicinal Chemistry, Organic Reaction Mechanisms, Physical Organic Chemistry, Organometallic Chemistry, and Advanced Synthetic Methods

Hingham High School

Hingham, Massachusetts

High School Diploma

Sept. 2008 - May 2012

- Pre-calculus taken through Northwestern University during the summer of 2011

Work Experience

Snapdragon Chemistry, Inc.

Cambridge, Massachusetts

Chemist I

May 2016 - Present

- Design and execution of multi-step synthetic experiments using continuous flow techniques
- Improved approaches to chemical processes through retrosynthetic analysis and efficiencies enabled by flow chemistry
- Performed reaction kinetic experiments in a variety of chemical systems
- Experience with performing organometallic, photochemical, and catalytic asymmetric reactions in flow
- Responsible for ordering consumables, ordering chemicals, and contacting vendors
- Writing contributions to project updates given to clients

Aramco Services Company

Cambridge, Massachusetts

Synthetic Chemistry Intern (Advanced Materials Team: Catalysis Development)

May 2015 - Aug. 2015

- Production of a small organic molecule library used for structure directing properties in further synthetic processes
- Laboratory work was conducted independently with supervision and scientific advising from a senior staff member
- Development of laboraorty skills relevant to organometallic chemistry (glovebox technique, Schlenk technique)
- Regular written and oral reports given to senior staff members

Academic Research Projects

Axial Chirality Transfer in the Catalytic Asymmetric Cyclopropanation of Enantioenriched Allenylsilanes

Boston University (Panek Lab)

Undergraduate Project Leader

Jan. 2016 - Present

- A cyclopropantion reaction of allenylsilanes with diazoacetates catalyzed by a chiral Ru(II) complex was developed
- Project was independently proposed and executed
- Current conditions allow for cyclopropane products formation in 85 % yield, 98 : 2 e.r., and 98 : 2 *E/Z* (by chiral HPLC analysis) when using achiral allenylsilanes
- A previously unreported complementary pair of enantioenriched allenylsilanes was created to better suit reactivity
- Reaction was found to be double stereodifferentiating when using enantioenriched allenylsilanes (d.r. > 20 : 1 by ^{1}H NMR analysis)
- Project currently ongoing in the Panek Laboratory with plans of publication in due course

Asymmetric Propargylation of Carbonyls

Boston University (Panek Lab)

Undergraduate Project Leader

Sep. 2015 - Dec. 2015

- Investigated conditions for using achiral allenylsilanes in asymmetirc nucleophilic additions to aldehydes
- Additional applications to C-glycosidations where the stereoselectivity favored the alpha-glycoside

Convergent Synthesis of Novel Muramyl Dipeptide Analogues *Boston University (Panek Lab)*

Undergraduate Research Assistant *Jan. 2015 - May 2015*

- Worked with a graduate student towards developing an efficient synthetic route to muramyl dipeptide analogues displaying anti-inflammatory properties
- Established optimized conditions for glucoseamine fragment modification, which have been reported in a recent *J. Med. Chem.* artile (see citation below)
- Collaborated with another undergraduate researcher in creating a final product analogue
- Recognized for synthetic contributions and preliminary results (*J. Med. Chem.* **2016**, *59*, 6878-6890)

Awards

Fall 2015 **Stipend Award Recipient**, Undergraduate Research Oportunities (U.R.O.P.) *Boston University*

Spring 2016 **Stipend Award Recipient**, Undergraduate Research Oportunities (U.R.O.P.) *Boston, University*

Non-Native Languages

Chinese **Proficient**, Up to 7th semester modern Chinese language classes taken at Boston University

Affiliations

TO PROFESSIONAL SOCIETIES AND GROUPS

- American Chemical Society: Memeber Since 2015
- The Royal Society of Chemistry: Member Since 2015

References

TO PERSONAL AND PROFESSIONAL CHARATER

- Prof. James Panek (panek@bu.edu)
- Prof. Aaron Beeler (beelera@bu.edu)
- Prof. Scott Schaus (seschaus@bu.edu)
- Tatiana Pilyugina, Senior Scientist at Aramco Services Company (tatiana.pilyugina@aramcoservices.com)
- Matt Bio, President and CEO of Snapdragon Chemistry, Inc. (matt.bio@snapdragonchemistry.com)