

Ashley R. Longstreet

136 Highland Ave #28 • Somerville, MA 02143
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EDUCATION

- Florida State University** – Tallahassee, FL Aug. 2010 – Aug. 2015
Ph. D., Organic Chemistry
Thesis Title: “Access to Polysubstituted Heterocycles and Fluorescent Indicators from a Single Enamine Class”
- Lynchburg College** – Lynchburg, VA Aug. 2006 – May 2010
B.Sc.’s, Biomedical Science and Chemistry, Highest Honors, *magna cum laude*
Honors Thesis Title: “The Development of an Effective Water-Soluble Receptor for Pyrene Derivative Dyes”

RESEARCH AND PROFESSIONAL EXPERIENCE

- Massachusetts Institute of Technology, Cambridge, MA: NIH Postdoctoral Fellow** Aug. 2015 – Present
Advisor: Prof. Timothy F. Jamison
Developed flow syntheses for the continuous manufacturing of pharmaceuticals and air- and moisture-stable Ni-precatalysts.
- Florida State University: Research Assistant** Dec. 2010 – July 2015
Advisor: Prof. D. Tyler McQuade
Developed a streamlined synthesis for nevirapine, an antiviral for HIV, and showcased ylidenemalononitrile/ylideneacyanoacetate enamines as fluorescent indicators/labels and intermediates to various heterocycles.
- Responsible for biweekly reporting to the Clinton Health Access Initiative (part of the Clinton Foundation) funding agency.
 - Developed a collaboration within the department (Hanson, Mattoussi, and Shatruk groups) on developing enamines as fluorescent biomolecule labels or amine sensors, which resulted in a publication in a high-impact journal.
- Virginia Commonwealth University, Richmond, VA: NSF-REU Research Fellow** May – Jul. 2009
Advisor: Prof. Vladimir Sidorov
Synthesized an enhanced water-soluble receptor for quenching fluorescent dyes for biomembrane assays.
- Lynchburg College: Senior Research Project** Jan. 2009 – May 2010
Advisors: Prof. Pricilla Gannicott and Prof. David Freier
Investigated the content of a proposed active ingredient, cichoric acid, in *E. purpurea* medicinal extract by GC/MS.

TEACHING EXPERIENCE

- Science Club for Girls (<http://www.scienceclubforgirls.org>) – Cambridge, MA** Oct. 2015 – Present
Science Club for Girls is a nonprofit organization dedicated towards increasing diversity within the sciences. Every fall and spring semester, two other mentors and I led groups of up to 12 girls through fun, interactive activities that educated

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the girls in subjects such as engineering and physics and promoted their interest in the sciences.

Mentorship – FSU & MIT

January 2012 to
Present

Mentored a total of four undergraduates, four graduate, and two visiting students.
Mentorship roles included:

- Developing suitable projects for undergraduates and visiting students
- Educating mentees on responsible, reliable, and safe techniques in organic chemistry
- Advising students on how to develop and test hypotheses
- Helping prepare graduate students for their qualifying exams
- Involving students in the publication process

Teaching Assistant for Organic I Recitation – FSU

2011 Spring & Fall
Semesters

Responsibilities included:

- Conducting two 50-minute review sessions once a week with ca. 40 students each
- Holding office hours once a week
- Preparing quizzes and tests, grading

Department of Chemistry & Biochemistry Outreach Program – FSU

Aug. 2010 – Aug. 2011

Other graduate students and I traveled to local middle and high schools to perform chemistry demonstrations to children during their science class. Each graduate student was responsible for leading and educating the class on one or two demonstrations. Demonstrations included the iodine clock experiment, synthesizing slime, igniting gun cotton, and freezing objects in liquid nitrogen.

Teaching Assistant for Organic II Laboratories – FSU

2010 Fall & 2011
Summer Semesters

Responsibilities included:

- Teaching one lab section twice a week with ca. 16 students per semester
- Providing a short lecture on chemical theory, safety, and handling techniques before each lab
- Holding office hours once a week
- Preparing quizzes, grading lab reports, quizzes, and tests

PUBLICATIONS (undergraduate authors are in *bold*)

10. Bédard, A.C.; Longstreet, A.R.; Britton, J.; Wang, Y.; Moriguchi, H.; Hicklin, R.W.; Green, W.H.; Jamison, T.F. Minimizing E-Factor in the Continuous-Flow Synthesis of Diazepam and Atropine. *Bioorg. Med. Chem.* **2017**, In Press, DOI: 10.1016/j.bmc.2017.02.002
9. Longstreet, A.R.; Chandler, R.R.; Banerjee, T.; Miller, L.Z.; Hanson, K.; McQuade, D.T. Ylidenemalonitrile Enamine-Coated Media as Fluorescent “Turn-On” Probes for Volatile Primary Amines. *Photochem. Photobiol. Sci.* **2017**, Advanced Article, DOI: 10.1039/C7PP00021A
8. Longstreet, A.R.[†]; Rivalti, D.[†]; McQuade, D.T. Synthesis and Reactivity Profile of Ylidenemalonitrile Enamines and their Ester Analogs Towards Electrophiles and Nucleophiles. *J. Org. Chem.* **2015**, *80*,

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7. Longstreet, A.R.; Jo, M.; Chandler, R.R.; Hanson, K.; Zhan, N.; Hrudka, J.J.; Mattoussi, H.; Shatruk, M.; McQuade, D.T. Ylidenemalononitrile Enamines as Fluorescent “Turn-On” Indicators for Primary Amines. *J. Am. Chem. Soc.* **2014**, *136*, 15493.
6. Longstreet, A.R.; Opalka, S.M.; **Campbell, B.S.**; Gupton, B.F.; McQuade, D.T. Investigating the Continuous Synthesis of a Nicotinonitrile Precursor to Nevirapine. *Beilstein J. Org. Chem.* **2013**, *9*, 2570. Invited article for the “Chemistry in Flow Systems III” thematic series.
5. Longstreet, A.R.; **Campbell, B.S.**; Gupton, B.F.; McQuade, D.T. Improved Synthesis of Mono- and Disubstituted 2-Halonicotinonitriles from Alkylidene Malononitriles. *Org. Lett.* **2013**, *15*, 5298.
4. Opalka, S.M.; Park, J.K.; Longstreet, A.R.; McQuade, D.T. Continuous Synthesis and Use of *N*-Heterocyclic Carbene Copper(I) Complexes from Insoluble Cu₂O. *Org. Lett.* **2013**, *15*, 996.
3. Longstreet, A.R.; McQuade, D.T. Organic Reaction Systems: Using Microcapsules and Microreactors to Perform Chemical Synthesis. *Acc. Chem. Res.* **2013**, *46*, 327.
2. Miller, L.Z.; Steinbacher, J.L.; Houjeiry, T.I.; Longstreet, A.R.; Woodberry, K.L.; Gupton, B.F.; Chen, B.; Clark, R.; McQuade, D.T. Controlled Synthesis of Silica Capsules: Taming the Reactivity of SiCl₄ using Flow and Chemistry. *J. Flow Chem.* **2012**, *2*, 92.
1. Opalka, S.M.; Longstreet, A.R.; McQuade, D.T. Continuous Proline Catalysis via Leaching of Solid Proline. *Beilstein J. Org. Chem.* **2011**, *7*, 1671-1679. Invited article for the “Chemistry in Flow Systems II” thematic series.

PATENTS

McQuade, D.T.; Gupton B.F.; Longstreet, A.R.; Opalka, S.M. Provisional Patent Application #61/871,496. Filed August 29, 2013.

PRESENTATIONS

Longstreet, A.R.; Opalka, S. M.; McQuade, D. T. Heterogeneous Catalysis in Flow: The Leaching of Solid Proline. *Florida Annual Meeting and Exposition*, **2012**, Tampa, FL. (Oral presentation)

Longstreet, A.R.; Sidorov, V. Developing an Effective Water-Soluble Receptor for Pyrene Derivative Dyes. *LC Student Scholar Showcase*, **2010**, Lynchburg, VA. (Oral presentation)

Longstreet, A.R.; Freier, D.; Williams, D.; Gannicott, P. Development of a GC-MS Method to Analyze Cichoric Acid Content in a Commercially Available *Echinacea purpurea* Glycerin Extract, *LC Student Scholar Showcase*, **2010**, Lynchburg, VA. (Poster presentation).

Longstreet, A.R.; Sidorov, V. Developing an Effective Water-Soluble Receptor for Pyrene Derivative Dyes. *LC's Student Research and Internship Symposium*, **2009**, Lynchburg, VA. (Oral presentation)

Longstreet, A.R.; Freier, D. Determining Cichoric Acid Concentration in *Echinacea purpurea* Glycerin Extract using HPLC. *LC Student Scholar Showcase*, **2009**, Lynchburg, VA. (Poster presentation)

AWARDS AND HONORS

NIH Ruth L. Kirschstein National Research Service Award, Postdoctoral Fellowship	2016
P.E.O. Chapter Nominee for the P.E.O. Scholar Award	2014
The Ermine M. Owenby, Jr. Travel Fund to Promote Excellence – FSU	2012
James Lewis Howe Award for Excellence in Chemistry – ACS, VA Blue Ridge Section	2010
Outstanding Senior in Chemistry Award – Lynchburg College	2010

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Dean's Award for Best Poster at LC Student Scholar Showcase – 2 nd Place	2010
Iota Sigma Pi – National Honor Society for Women in Chemistry (inducted)	2009
Phi Kappa Phi – National Academic Honor Society (inducted)	2009
Omicron Delta Kappa – National Leadership Honor Society (inducted)	2009
Beta Beta Beta – National Biological Honor Society (inducted)	2009
Volunteer Award – Lynchburg College Emergency Medical Services	2007
Westover Honors Program	2007-2010
Phi Eta Sigma – National Freshman Honor Society (inducted)	2007

LEADERSHIP AND SERVICE ACTIVITIES

Science Club for Girls	2015 – 2016
FSU Department of Chemistry & Biochemistry Outreach Program	2010 – 2011
Secretary – Student Affiliates of ACS at LC, member from Sept. 2008 to May 2010	2009 – 2010
Vice President – Operation Smile, member from Jan. 2008 to May 2010	2008 – 2010
President (April 2008 to September 2009), Treasurer (April 2007 to April 2008) – Circle K International, member from Sept. 2006 to Sept. 2009	2007 – 2009
Emergency Medical Technician-Basic (EMT-B) – LC Emergency Medical Services	2006 – 2008
EMT-B – Stafford Township Emergency Medical Services	2005 – 2007

REFERENCES

D. Tyler McQuade

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Defense Advanced Research Projects Agency
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Timothy F. Jamison

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Michael Shatruk

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