PAUL JULIUS BRACHER

Curriculum Vitae

Department of Chemistry
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APPOINTMENTS

Assistant Professor — **St. Louis, MO** — **2013–present**

Department of Chemistry, Saint Louis University

EDUCATION

California Institute of Technology — **Pasadena, CA** — **2010–2012**

National Science Foundation ACC Postdoctoral Fellow
Advisor: Professor Harry B. Gray

Harvard University — **Cambridge, MA** — **2002–2010**

Doctor of Philosophy in Chemistry
Advisor: Professor George M. Whitesides
Thesis Title: "I. Delivery Templates of Patterned Paper for the Fabrication of Planar Materials,
II. Thiol–Thioester Exchange as a Reversible, Covalent Binding Interaction"

New York University — **New York, NY** — **1998–2002**

Bachelor of Science in Chemistry with Departmental Honors, *Summa Cum Laude*
Unweighted Cumulative GPA: 3.966/4.000; GPA in Major: 4.000/4.000
Advisor: Professor David I. Schuster
Thesis Title: "The Synthesis and Photophysics of Porphyrin–Fullerene Dyads"

Thomas Jefferson High School for Science and Technology — **Alexandria, VA** — **1994–1998**

Fairfax County Advanced Studies Diploma
Unweighted Cumulative GPA: 4.000/4.000
Advisor: Dr. John Liebermann, Jr. – Chemical Analysis Laboratory
Senior Project: "The Effect of Counteranion Structure on the Critical Micelle Concentration of Tetradecyltrimethylammonium"

AWARDS AND RECOGNITION

National Science Foundation ACC Postdoctoral Fellow (2010–2012)
Fieser Student Lecture Prize at Harvard (2009)
Harvard Origins-of-Life Initiative Fellow (2006–2009)
Dudley R. Herschbach Teaching Award at Harvard (2005)
Harvard CUE Certificate of Distinction in Teaching (2003)
National Science Foundation Graduate Research Fellow (2002–2005)
NYU Borgman/Phi Beta Kappa Prize for Best Thesis in the Sciences (2002)
NYU College of Arts and Science Class of 2002 Commencement Rep. (2002)
New York University Distinguished Chemist Award (2002)
New York University Honors Scholar (2002)
Phi Beta Kappa, Beta of New York Chapter (2001)
Barry M. Goldwater Scholar (2001)
Harold Seidenstein Memorial Award in Chemistry at NYU (2001)
Arnold and Mabel Beckman Foundation Research Scholar (2000–2001)
Phi Lambda Upsilon, Alpha Lambda Chapter, Honorary Chemistry Society (2000)
Hema Sakhrani Memorial Award in Chemistry at NYU (1999)
Samuel F.B. Morse Scholar at NYU (1998–2002)
United States Office of Naval Research Scholar (1998–2002)
NYU College of Arts and Science Dean's List (1998–2002)
United States National Chemistry Olympiad Team (1998)
USA Today All-USA High School Academic Team (1998)
Virginia Science Talent Search Grand Prize (1998)
Westinghouse/Intel Science Talent Search Finalist (1998)
Phi Theta Kappa Honor Society for Junior Colleges, Alpha Beta Rho Chapter (1996)

TEACHING EXPERIENCE

Courses

Saint Louis University

- Instructor for Chem 343: "Principles of Organic Chemistry II", Summer 2014
- Instructor for Chem 346: "Organic Chemistry I", Fall 2013
- Instructor for Chem 347: "Organic Chemistry II", Spring 2014
- Instructor for Chem 391: "Introduction to Chemical Literature", Fall 2013
- Co-Instructor for Chem 500: "Intro. to Chemical Research", Summer 2014

Harvard University

- Teaching Fellow for Chem 30: "Organic Chemistry", Fall 2003 and Fall 2004
- Teaching Fellow for Chem 27: "The Organic Chemistry of Life", Spring 2003

New York University

- Teaching Assistant for "Organic Chemistry Laboratory II", Spring 2000

Research Mentorship

Current Research Group at SLU: Advisor to 4 graduate students, 5 undergraduate students, 1 visiting undergraduate student

Research Mentorship Prior to SLU: Laboratory mentor or co-mentor to 4 undergraduate researchers, 1 high-school researcher

OUTREACH AND SERVICE ACTIVITIES

***ChemBark* – A Blog About Chemistry and Chemical Research** **Founder/Editor** **2006–**

- *ChemBark* is a blog about the world of chemistry, with special focus on operational, managerial, and cultural issues in academic research
- The site receives roughly 50,000 page views per month and has been discussed in *Chemical & Engineering News*, *Nature Chemistry*, *Chemistry World*, and *Scientific American*

The Solar Army – Solar Materials Discovery Program **Team Mentor** **2010–2013**

- This NSF-funded high school outreach program enables student teams to screen metal-oxide semiconductors for activity in the photoelectrolysis of water into hydrogen and oxygen
- The team at San Marino High School comprised six students, one teacher, and one mentor
- Our team met after school on one afternoon per week

Caltech CCI Solar Informal Science Education Partnership **Coordinator** **2012–2013**

- This program was funded as a supplemental NSF award to Caltech's Solar Fuels Center for Chemical Innovation program (Principal Investigator: Harry B. Gray)
- Served as the coordinator for Caltech researchers in the partnership among Caltech, Wildwood High School, and the West Side Science Club to develop and execute a curriculum for informal science education (ISE)

Advisory Boards

- *Chemical & Engineering News* Advisory Board (2011–2013)
- *C&EN Online* Advisory Board (2012–2014)

Other

- Judge for Sigma Xi Research Symposium at Saint Louis Univ. (2014)
- Judge for District VII Annual Meeting of the Missouri Junior Academy of Science (2014)
- Session Chair for Caltech SURF Summer Seminar Day (2012)
- Lead Judge for the American Chemical Society at the Intel International Science and Engineering Fair (2011)
- Judge for Caltech Summer Undergraduate Research Fellow presentation competition (2010, 2011)

SCIENTIFIC PUBLICATIONS AND PRESENTATIONS

Publications

18. McKone, J.R.; Ardo, S.; Blakemore, J.D.; Bracher, P.J.; Dempsey, J.L.; Darnton, T.V.; Hansen, M.C.; Harman, W.H.; Rose, M.J.; Walter, M.G.; Dasgupta, S.; Winkler, J.R.; Gray, H.B. "The Solar Army: A Case Study in Outreach Based on Solar Photoelectrochemistry" *Rev. Adv. Sci. Eng.* **2014**, in press.

17. Russell, M.J.; Barge, L.M.; Bhartia, R.; Bocanegra, D.; Bracher, P.J.; Branscomb, E.; Kidd, R.; McGlynn, S.; Meier, D.H.; Nitschke, W.; Shibuya, T.; Vance, S.; White, L.; Kanik, I. "The Drive to Life on Wet and Icy Worlds." *Astrobiology*, **2014**, *14*, 308–343.

16. Bracher, P.J.; Gray, H.B. H.N. Cheng, S. Shah, and M.L. Wu (eds.) "Chemists: Public Outreach is an Essential Investment of Time, not a Waste of It." in *Vision 2025 – How to Succeed in the Global Chemistry Enterprise*, ACS Symposium Series 1157, ACS Books: Washington, DC, **2014**, pp. 37–50.

15. Marinescu, S.C.; Bracher, P.J.; Winkler, J.R.; Gray, H.B. "Solar Fuels." *AIP Conf. Proc.* **2013**, *1519*, 64–67.

14. Mack, E.T.; Bracher, P.J.; Perez-Castillejos, R.C. "Thermodynamic Analysis to Assist in the Design of Recombinant Antibodies." *Crit. Rev. Immunol.* **2012**, *32*, 503–527.

13. Bracher, P.J.; Snyder, P.W.; Bohall, B.R.; Whitesides, G.M. "The Relative Rates of Thiol–Thioester Exchange and Hydrolysis for Alkyl and Aryl Thioalkanoates in Water." *Orig. Life Evol. Biosph.* **2011**, *41*, 399–412.

12. Derda, R.; Bracher, P.J. "YouTube or You Lose: Grand Challenges Canada Explores Whether Scientists are Ready for Web-Based Grant Competitions", *ACS Chem. Bio.* **2011**, *6*, 771–774.

11. Bracher, P.J. "Safety for Beginners." (An invited review of *Laboratory Safety for Chemistry Students*, by R.H. Hill, Jr. and D.C. Finster) *Nat. Chem.* **2011**, *3*, 91.

10. Bracher, P.J.; Gupta, M.; Whitesides, G.M. "Patterned Paper as a Template for the Delivery of Reactants in the Fabrication of Planar Materials." *Soft Matter* **2010**, *6*, 4303–4309.

9. Bracher, P.J.; Gupta, M.; Whitesides, G.M. "Patterning Precipitates of Reactions in Paper." *J. Mater. Chem.* **2010**, *20*, 5117–5122.

8. Bracher, P.J.; Gupta, M.; Mack, E.T.; Whitesides, G.M. "Heterogeneous Films of Ionotropic Hydrogels Fabricated From Delivery Templates of Patterned Paper." *ACS Appl. Mater. Interfaces* **2009**, *1*, 1807–1812.

7. Bracher, P.J.; Gupta, M.; Whitesides, G.M. "Shaped Films of Ionotropic Hydrogels Fabricated Using Templates of Patterned Paper." *Adv. Mater.* **2009**, *21*, 445–450.

6. Dickey, M.D.; Lipomi, D.J.; Bracher, P.J.; Whitesides, G.M. "Electrically Addressable Parallel Nanowires with 30 nm Spacing from Micromolding and Nanoskiving." *Nano Lett.* **2008**, *8*, 4568–4573.

5. Winkleman, A.; Bracher, P.J.; Gitlin, I.; Whitesides, G.M. "Fabrication and Manipulation of Ionotropic Hydrogels Cross-Linked by Paramagnetic Ions." *Chem. Mater.* **2007**, *19*, 1362–1368.

4. Krishnamurthy, V.M.; Semetey, V.; Bracher, P.J.; Shen, N.; Whitesides, G.M. "Dependence of Effective Molarity on Linker Length for an Intramolecular Protein-Ligand System." *J. Am. Chem. Soc.* **2007**, *129*, 1312–1320.

3. Li, K.; Bracher, P.J.; Guldi, D.M.; Herranz, M.Á.; Echegoyen, L.; Schuster, D.I. "[60]Fullerene-Stoppered Porphyrinorotaxanes: Pronounced Elongation of Charge-Separated-State Lifetimes." *J. Am. Chem. Soc.* **2004**, *126*, 9156–9157.

2. Guldi, D.M.; Nuber, B.; Bracher, P.J.; Alabi, C.A.; MacMahon, S.; Kukol, J.W.; Wilson, S.R.; Schuster, D.I. "Synthesis and Photophysics of a Copper-Porphyrin–Styrene–C_{60} Hybrid." *J. Phys. Chem. A* **2003**, *107*, 3215–3221.

1. Bracher, P.J.; Schuster, D.I. D.M. Guldi and N. Martín (eds.) "Electron Transfer in Functionalized Fullerenes" in *Fullerenes: From Synthesis to Optoelectronic Properties*. Kluwer Academic Publishers: Dordrecht, The Netherlands, **2002**, pp 163–212.

Patent Applications

2. Bohall, B.R.; Bracher, P.J.; Ryan, D. "Permanent and Reversible Attachment of Molecules to Substrates Bearing Thioester Bonds," PCT Int. Appl. WO **2012**/051425A1.

1. Whitesides, G.M.; Gupta, M.; Bracher, P.J.; Rozkiewicz, D.; Wong, A.; Mack, E. "Shaped Films of Hydrogels Fabricated Using Templates of Patterned Paper," PCT Int. Appl. WO **2009**/121038 A2.

Presentations

10 Invited Talks/Lectures
7 Talks at Scientific Meetings
12 Poster Presentations