

BIOGRAPHICAL SKETCH

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NAME Robin L. McCarley		POSITION TITLE Professor of Chemistry	
eRA COMMONS USER NAME tunnellsu			
EDUCATION/TRAINING <i>(Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)</i>			
INSTITUTION AND LOCATION	DEGREE <i>(if applicable)</i>	YEAR(s)	FIELD OF STUDY
Lake Forest College, IL	BA	1986	Chemistry
University of North Carolina	PhD	1990	Analytical Chemistry
University of Texas, NSF Postdoctoral Fellow		1990-1992	Analytical Chemistry

A. Positions and Honors. List in chronological order previous positions, concluding with your present position. List any honors. Include present membership on any Federal Government public advisory committee.

Positions and Employment

January 2007–present	LSU Alumni Professor	LOUISIANA STATE UNIVERSITY
August 2002–present	Professor of Chemistry	LOUISIANA STATE UNIVERSITY
August 1998–August 2002	Assoc. Professor of Chemistry	LOUISIANA STATE UNIVERSITY
July 1992–August 1998	Assist. Professor of Chemistry	LOUISIANA STATE UNIVERSITY

Honors

2007	Barbara Womack Alumni Professorship,
2003	LSU Distinguished Faculty Award
2002	LSU College of Basic Sciences Award of Excellence in Undergraduate Teaching
1998	LSU College of Basic Sciences Faculty Research Award
1993	Society for Analytical Chemists of Pittsburgh Award
1991-1992	National Science Foundation Postdoctoral Fellow in Chemistry
1990	The American Chemical Society Analytical Division Summer Fellowship
1989	The Electrochemical Society Summer Energy Fellowship
1989	Department of Education Fellowship, University of North Carolina
1989	The North Carolina-American Chemical Society Centennial Scholarship
1987	The Charles N. Reilley-Upjohn Award in Analytical Chemistry
1986	Phi Beta Kappa, Sigma Xi
1985	Phi Sigma Iota

B. Selected peer-reviewed publications (in chronological order).

(Publications selected from 80 peer-reviewed publications)

1. S.A. Soper, A.C. Henry, B. Vaidya, M. Galloway, M. Wabuye, and R.L. McCarley, *Surface Modification of Polymer-Based Microfluidic Devices*, *Anal. Chim. Acta.* 2002, 470, 87-99.
2. Vaidya, S.A. Soper, and R.L. McCarley, *Surface Modification and Characterization of Microfabricated Poly(carbonate) Devices: Manipulation of Electroosmotic Flow*, *The Analyst* 2002, 127, 1289-1292.
3. S.L. Caston and R.L. McCarley, *Characteristics of Nanoscopic Band Electrodes*, *J. Electroanal. Chem.* 2002, 529, 124-134.

4. M. Galloway, W. Stryjewski, A. Henry, S.M. Ford, S. Llopis, R.L. McCarley, S.A. Soper, *Contact Conductivity Detection in Poly(methyl methacrylate)-Based Microfluidic Devices for Analysis of Mono- and Polyanionic Molecules*, *Anal. Chem.* 2002, 74, 2407-2415.
5. E.E. Doomes, R.W. Zurales, R.L. McCarley, and E.D. Poliakoff, *Correlations Between Heterocycle Ring Size and X-ray Spectra*, *J. Chem. Phys.* 2003, 119, 4399-4404.
6. E.E. Doomes, P.N. Floriano, R.W. Tittsworth, R.L. McCarley, and E.D. Poliakoff, *Anomalous XANES Spectra of Octadecanethiol Adsorbed on Ag(111)*, *J. Phys. Chem. B* 2003, 107, 10193-10197.
7. Y. C. Xu, B. Vaidya, A. B. Patel, S. M. Ford, R. L. McCarley, and S. A. Soper *Solid-phase reversible immobilization in microfluidic chips for the purification of dye-labeled DNA sequencing fragments*, *Anal. Chem.* 2003, 75, 2975-2984.
8. Y. Wang, B. Vaidya, H. D. Farquar, W. Stryjewski, R. P. Hammer, R. L. McCarley, S. A. Soper, Y. W. Cheng and F. Barany, *Microarrays assembled in microfluidic chips fabricated from poly(methyl methacrylate) for the detection of low-abundant DNA mutations*, *Anal. Chem.* 2003, 75, 1130-1140.
9. M.A. Witek, S. Wei, B. Vaidya, A.A. Adams, L. Zhu, W. Stryjewski, R.L. McCarley and S.A. Soper *Cell Transport via Electromigration in Polymer-based Microfluidic Devices*, *Lab on a Chip* 2004, 4, 464-472.
10. R.L. McCarley, B. Vaidya, S. Wei, A.F. Smith, A.B. Patel, J. Feng, M.C. Murphy and S.A. Soper, *Resist-free Patterning of Surface Architectures in Polymer-based Microanalytical Devices*, *J. Am. Chem. Soc.* 2005, 127, 842-843.
11. S.S. Balamurugan, G.B. Bantchev, Y. Yang, and R.L. McCarley, *Highly Water-Soluble Thermally Responsive Poly(thiophene)-based Brushes*, *Angewandte Chemie* 2005, 44, 4872-4876.
12. W. Ong and R.L. McCarley, *Positive Dendritic Effects on the Electron-Donating Potencies of Poly(propylene imine) Dendrimers*, *Organic Letters* 2005, 7(7), 1287-1290.
13. Situma, Y. Wang, M. Hupert, F. Barany, R.L. McCarley and S.A. Soper, *Fabrication of DNA microarrays onto poly(methyl methacrylate) with ultraviolet patterning and microfluidics for the detection of low-abundant point mutations*, *Anal. Biochem.* 2005, 340(1), 123-135.
14. *Surface-Induced Aggregation of Beta Amyloid Peptide by ω -Substituted Alkanethiol Monolayers Supported on Gold*, *Langmuir* 2005, 21(10), 4464-4470.
15. S. Wei, B. Vaidya, A.B. Patel, S.A. Soper, and R.L. McCarley, *Photochemically Patterned Poly(methyl methacrylate) Microanalytical Devices* *J. Phys. Chem. B.* 2005, 109(35), 16988-16996.
16. W. Ong and R.L. McCarley, *Redox-driven Shaving of Dendrimers* *Chem. Comm.* 2005, (37), 4699-4701.
17. S.A. Soper, M. Hashimoto, C. Situma, M.C. Murphy, and R.L. McCarley, *Fabrication of DNA Microarrays onto Polymer Substrates Using UV Modification Protocols with Integration into Microfluidic Platforms for the Sensing of Low-Abundant DNA Point Mutations*, *Methods* 2005, 37, 103-113.
18. R.P. Hammer, M.A. Etienne, Jed P. Aucoin, and R.L. McCarley, *Stoichiometric Inhibition of Amyloid β -Protein Aggregation with Peptides Containing Alternating α,α -Disubstituted Amino Acids*, *J. Am. Chem. Soc.* 2006, 128, 3522-3523.
19. E.J. Pacsial-Ong, R.L. McCarley, W. Wang, and R.M. Strongin, *Electrochemical Detection of Glutathione Using Redox Indicators*, *Analytical Chemistry* 2006, 78(21), 7577-7581.
W. Ong and R.L. McCarley, *Chemically- and Electrochemically-Mediated Release of Dendrimer End Groups*, *Macromolecules*, 2006, 39(21); 7295-7301.
20. M.A. Witek, S.D. Llopis, A. Wheatley, R.L. McCarley, and S.A. Soper *Purification and preconcentration of genomic DNA from whole cell lysates using photoactivated polycarbonate (PPC) microfluidic chips*, *Nucl. Acids Res.* 2006, 34(10), e74.
21. S. Balamurugan, A. Obubuafu, S.A. Soper, R.L. McCarley, and D.A. Spivak, *Designing Highly Specific Biosensing Surfaces Using Aptamer Monolayers on Gold*, *Langmuir* 2006; 22(14), 6446-6453.
22. A.D. Morara and R.L. McCarley, *TEO-Pyrrole-Terminated Dendrimer Hosts – Synthesis and Characterization*, *Org. Lett.* 2006, 8(10), 1999-2002.

23. G.B. Bantchev, P.S. Russo, R.L. McCarley, and R.P. Hammer, *A Simple, Multi-angle, Multi-correlator Depolarized Dynamic Light Scattering Apparatus*, *Rev. Sci. Instr.* 2006, 77(4), 043902/1-043902/6.
24. X. S. Wu, P. W. Adams, Y. Yang, and R. L. McCarley, *Interface Spin-Orbit Coupling in a Non-centrosymmetric Thin-Film Superconductor*, *Phys. Rev. Lett.* 2006, 96(12), 127002/1-127002/4.
25. G. Chen, S. A. Soper, and R. L. McCarley, *Integration of large-area polymer nanopillar arrays into microfluidic devices using in situ polymerization cast molding*, *Lab on a Chip* **2007**, 7(11), 1424-1427.
26. F. Xu, P. Datta, H. Wang, S. Gurung, M. Hashimoto, S. Wei, J. Goettert, R.L. McCarley, and S.A. Soper, *Polymer Microfluidic Chips with Integrated Waveguides for Reading Microarrays*, *Anal. Chem.* **2007**, 79(23), 9007-9013.
27. G. Chen, S.A. Soper, and R.L. McCarley, *Free-Standing, Erect Ultrahigh-Aspect-Ratio Polymer Nanopillar and Nanotube Ensembles*, *Langmuir* **2007**, 23(23), 11777-11781.
28. G. Chen, R.L. McCarley, C. Situma, S. A. Soper, and J. G. Bolivar, *Functional Template-Derived Poly(methyl methacrylate) Nanopillars for Solid-Phase Biological Reactions*, *Chem. Mater.* **2007**, 19(16), 3855-3857.
29. S. Balamurugan, A. Obubuafo, S. A. Soper, R. L. McCarley, and D. A. Spivak *Effect of Linker Structure on Surface Density of Aptamer Monolayers and their Corresponding Protein Binding Efficiency*, *Anal. Chem.* **2008**, 80(24), 9630–9634
30. J.G. Bolivar, S.A. Soper and R.L. McCarley, *Nitroavidin as a Ligand for the Surface Capture and Release of Biotinylated Proteins*, *Anal. Chem.*, **2008**, 80(23), 9336-9342
31. W. Ong, Y. Yang, A. Cruciano, and R. L. McCarley, *Redox-Triggered Release of a Liposomal Payload*, *J. Am. Chem. Soc.* **2008**, 130(44), 14739 – 14744.
32. A. Obubuafo, S. Balamurugan, H. Shadpour, D. Spivak, R. L. McCarley, and S. A. Soper, *Poly(methyl methacrylate) microchip affinity capillary gel electrophoresis of aptamer-protein complexes for the analysis of thrombin in plasma*, *Electrophoresis* **2008**, 29(16), 3436-3445.
33. S. A. Soper, A. A. Adams, P. Okagbare, J. Feng, M. Hupert, D. Patterson, J. Goettert, R. L. McCarley, M. Murphy, and D. Nikitopoulos, *Highly Efficient Circulating Tumor Cell Isolation from Whole Blood and Label-free Enumeration Using Polymer-Based Microfluidics with an Integrated Conductivity Sensor*, *J. Am. Chem. Soc.* **2008**, 130(27), 8633-8641.

C. Research Support.

Ongoing Research Support

1R21CA135585 (McCarley) 07/01/2009–05/31/2012

National Institutes of Health/National Cancer Institute

Reductase Enzyme-responsive, Self-immolative Nanovehicles

A new family of redox-responsive liposomes that deliver their contents upon application of a reductive stimulus are being developed and evaluated.

Role: Investigator

CHE-0910845 (McCarley) 07/01/2009–06/30/2012

National Science Foundation

Responsive Molecular Assemblies

The major goals of this project are to explore the physical properties of responsive molecular assemblies made in the PI's laboratory using light scattering, NMR, fluorescence spectroscopy, and stopped-flow spectrometry.

Role: Investigator

EPS-0701491 (Co-PI) PI: Steven Soper 2007-2011

National Science Foundation-EPSCoR
Center for BioModular Microsystems

This project is a State-wide effort targeting the fabrication of genetic-based analysis systems using microfabrication methods that lead to modular, polymer-based devices.

Role: Co-Investigator

CTS-0404314 (Co PI) PI: Barry Dellinger 2004-2009

National Science Foundation-Chemical and Transport Systems

NIRT: Combustion-Generated Nanoparticles: The Role of Transition Metals in Nanoparticle and Pollutant Formation

The project revolves around the synthesis and subsequent characterization of template-synthesized metal oxide nanoparticles and their role in the production of dioxins and PAH materials.

Role: Co-Investigator

5R01EB006639-02 (Co-PI) PI: Steven Soper 2007–2011

National Institutes of Health/National Human Genome Research Institute

High Throughput Modular Microfluidic Systems for Drug Discovery/Development

This research focuses on developing new highly integrated polymer BioMEMS platforms to achieve advantages in the screening of libraries of drug candidates using parallelized infrared fluorescence assays.

Role: Co-investigator

Completed Research Support

CHE-0108961 (PI) PI: McCarley 2001-2005

National Science Foundation-Chemistry

Stabilized Molecular Assemblies

The major goals of this project are to synthesize and characterize/evaluate a series of stimuli-responsive dendrimeric hosts.

Role: Investigator

2R01 HG01499-07 (Co-PI) PI: Steven Soper 2003-2007

National Institutes of Health/National Human Genome Research Institute

Modular Microfluidic System for Automated DNA Sequence Analysis

Efforts on this project are directed at the specific application of microsystem technologies and near-infrared spectroscopic methods to high-throughput, high-fidelity genetic screening assays.

Role: Co-investigator

EPS-0346411 (Co-PI) PI: Steven Soper 2004-2007

National Science Foundation-EPSCoR

Center for BioModular Microsystems

This project is a State-wide effort targeting the fabrication of genetic-based analysis systems using microfabrication methods that lead to modular, polymer-based devices.

Role: Co-investigator

R24 CA84625-01 (Co-PI) PI: Steven Soper 2000-2005

National Institutes of Health/National Cancer Institute

The Design and Fabrication of Novel Micro-Instrument Platforms for Performing Genetic-Based Analyses

The thrust of this project is fabrication of miniaturized systems for genetic analysis, with a concentration on fabrication of devices and their integration into functional systems instead of simple components.

Role: Co-investigator

DBI-0138048 (Co-PI) PI: Steven Soper 2001-2005

National Science Foundation-Biology

Single-Cell Proteomics

Miniaturized analytical instrumentation is being constructed for manipulating and evaluating single cells.

Role: Co-Investigator