

Research publications (updated 9/27/2015)

During SLU tenure (note: * denotes corresponding author, † denotes undergraduate research assistant, ‡ denotes graduate research assistant)

1. M.L. Kovarik, † N.J. Torrence, ‡ D.M. Spence, and R.S. Martin, * “Fabrication of Carbon Microelectrodes with a Micromolding Technique and Their Use in Microchip-based Flow Analyses,” *Analyst*, **2004**, *129*, 400-405.
2. M.K. Hulvey, ‡ and R.S. Martin, * “Microchip-Based Analysis Systems: An Undergraduate Laboratory Experiment,” *Chem. Educator*, **2004**, *9*, 1-7.
3. N.A. Lacher, S.M. Lunte, * and R.S. Martin, * “Development of a Microfabricated Palladium Decoupler/Electrochemical Detector for Microchip Capillary Electrophoresis Using a Hybrid Glass/Poly(dimethylsiloxane) Device” *Anal. Chem.*, **2004**, *74*, 1136-1143. (note: co-corresponding authors)
4. A.K. Price, ‡ D.J. Fischer, R.S. Martin, and D.M. Spence, * “Deformation-Induced Release of ATP from Erythrocytes in a Poly(dimethylsiloxane)-Based Microchip with Channels That Mimic Resistance Vessels,” *Anal. Chem.*, **2004**, *76*, 4849-4855.
5. D.M. Spence, * N.J. Torrence, ‡ M.L. Kovarik, † and R.S. Martin, “Amperometric Determination of Nitric Oxide Derived from Pulmonary Artery Endothelial Cells Immobilized in a Microchip Channel,” *Analyst*, **2004**, *129*, 995-1000.
6. B.H. Huynh, B.A. Fogarty, R.S. Martin, and S.M. Lunte, * “On-Line Coupling of Microdialysis Sampling with Microchip-Based Capillary Electrophoresis,” *Anal. Chem.*, **2004**, *76*, 6440-6447.
7. M.L. Kovarik, † M.W. Li, ‡ and R.S. Martin, * “Integration of a Carbon Microelectrode with a Microfabricated Palladium Decoupler for use in Microchip Capillary Electrophoresis/Electrochemistry,” *Electrophoresis*, **2005**, *26*, 202-210.
8. B.A. Fogarty, K.E. Heppert, T.J. Cory, K.R. Hulbutta, R.S. Martin and S.M. Lunte, * “Rapid Fabrication of Poly(dimethylsiloxane)-based Microchip Capillary Electrophoresis Devices using CO₂ Laser Ablation,” *Analyst*, **2005**, *130*, 924-930.
9. C.M. Moore, ‡ S.D. Minteer, * and R.S. Martin, “Microchip-based Ethanol/Oxygen Biofuel Cell,” *Lab Chip*, **2005**, *5*, 218-225
10. M.W. Li, ‡ D.M. Spence, and R.S. Martin, * “A Microchip-Based System for Immobilizing PC 12 Cells and Amperometrically Detecting Catecholamines Released After Stimulation with Calcium,” *Electroanalysis*, **2005**, *17*, 1171-1180.

11. A.K. Price,[‡] R.S. Martin, and D.M. Spence,* “Monitoring Erythrocytes in a Microchip Channel that Narrows Uniformly: Towards an Improved Microfluidic-based Mimic of the Microcirculation,” *J. Chrom. A*, **2006**, *1111*, 220-227.
12. C.D. Kuhnline,[†] M.G. Gangel,[†] M.K. Hulvey,[‡] and R.S. Martin,* “Detecting Thiols in a Microchip Device using Micromolded Carbon Ink Electrodes Modified with Cobalt Phthalocyanine,” *Analyst*, **2006**, *131*, 202-207.
13. M.W. Li,[‡] B.H. Huynh, M.K. Hulvey,[‡] S.M. Lunte and R.S. Martin,* “Design and Characterization of Poly(dimethylsiloxane)-Based Valves for Interfacing Continuous-Flow Sampling to Microchip Electrophoresis,” *Anal. Chem.*, **2006**, *78*, 1042-1051.
14. M.J. Moehlenbrock,[‡] A.K. Price,[‡] and R.S. Martin,* “Use of Microchip-Based Hydrodynamic Focusing to Measure the Deformation-Induced Release of ATP from Erythrocytes,” *Analyst*, **2006**, *131*, 930-937.
15. L.C. Mecker[‡] and R.S. Martin,* “Use of Micromolded Carbon Dual Electrodes with a Palladium Decoupler for Amperometric Detection in Microchip Electrophoresis,” *Electrophoresis*, **2006**, *27*, 5032-5042
16. R.S. Martin, P.D. Root, and D.M. Spence,* “Microfluidic Technologies as Platforms for Performing Quantitative Cellular Analyses in an In Vitro Environment,” *Analyst*, **2006**, *131*, 1197-1206.
17. M.W. Li[‡] and R. S. Martin,* “Integration of Continuous Flow Sampling to Microchip Electrophoresis using Poly(dimethylsiloxane)-based Valves in a Reversibly Sealed Device,” *Electrophoresis*, **2007**, *28*, 2478-2488.
18. L.C. Mecker[‡] and R.S. Martin,* “Coupling Microdialysis Sampling to Microchip Electrophoresis in a Reversibly Sealed Device,” *JALA*, **2007**, *12*, 296-302.
19. M.J. Moehlenbrock,[‡] and R.S. Martin,* “Development of an On-Chip Injector for Microchip-based Flow Analyses using Laminar Flow,” *Lab Chip*, **2007**, *7*, 1589-1596.
20. L.I. Genes, N. Villiere, M.K. Hulvey,[‡] R. S. Martin, and D.M. Spence,* “Addressing a Vascular Endothelium Array with Blood Components using Underlying Microfluidic Channels,” *Lab Chip*, **2007**, *7*, 1256-1259.
21. M.K. Hulvey,[‡] L. Genes, D.M. Spence, and R.S. Martin,* “Fabrication and Evaluation of a 3-Dimensional Microchip Device where Carbon Microelectrodes Individually Address Channels in the Separate Fluidic Layers,” *Analyst*, **2007**, *132*, 1246-1253.

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24. L.C. Mecker[‡] and R.S. Martin,* "Integration of Microdialysis Sampling and Microchip Electrophoresis with Electrochemical Detection," *Anal. Chem.*, **2008**, *80*, 9257-9264.
25. M.K. Hulvey[‡] and R. S. Martin,* "A Microchip-based Endothelium Mimic Utilizing Open Reservoirs for Cell Immobilization and Integrated Carbon Ink Microelectrodes for Detection," *Anal. Bioanal. Chem.*, **2009**, *393*, 599-605.
26. N.G. Batz[‡] and R.S. Martin,* "Selective Detection of Endogenous Thiols Using Microchip-based Flow Analysis and Mercury/Gold Amalgam Microelectrodes," *Analyst*, **2009**, *34*, 372 - 379
27. I.Z. Kiss,* N. Munjal,[†] R.S. Martin, "Synchronized Current Oscillations of Formic Acid Electro-oxidation in a Microchip-based Dual-Electrode Flow Cell," *Electrochimica Acta*, **2009**, *55*, 395-403
28. A.L. Bowen[‡] and R.S. Martin,* "Integration of serpentine channels for microchip electrophoresis with a palladium decoupler and electrochemical detection," *Electrophoresis*, **2009**, *30*, 3347-3354.
29. A.L. Bowen[‡] and R.S. Martin,* "Integration of On-Chip Peristaltic Pumps and Injection Valves with Microchip Electrophoresis and Electrochemical Detection," *Electrophoresis*, **2010**, *31*, 2534-2540.
30. D.C. Kirkpatrick,[†] C. Antwi,[‡] and R.S. Martin,* "Use of Recordable Compact Discs to Fabricate Electrodes for Microchip-based Analysis Systems," *Anal. Methods*, **2010**, *2*, 811-816. (*this was featured on the back cover of the journal*)
31. L.C. Mecker,[‡] L.A. Filla,[‡] and R.S. Martin,* "Use of a Carbon-ink Microelectrode Array for Signal Enhancement in Microchip Electrophoresis with Electrochemical Detection," *Electroanalysis*, **2010**, *22*, 2141 - 2146.
32. A. Selimovic,[‡] A.S. Johnson,[‡] I.Z. Kiss, and R.S. Martin,* "Use of epoxy-embedded electrodes to integrate electrochemical detection with microchip-based analysis systems," *Electrophoresis*, **2011**, *32*, 822-831.

33. C. Antwi,[‡] A.S. Johnson,[‡] A. Selimovic,[‡] and R.S. Martin,* “Use of Microchip Electrophoresis and a Palladium/Mercury Amalgam Electrode for the Separation and Detection of Thiols,” *Anal. Methods*, **2011**, *3*, 1072-1078.
34. P.A. Vogel, S.T. Halpin, R.S. Martin, and D.M. Spence,* “Microfluidic Transendothelial Electrical Resistance Measurement Device that Enables Blood Flow and Postgrowth Experiments,” *Anal. Chem*, **2011**, *83*, 4296–4301.
35. A.G. Cioffi,[†] R.S. Martin, and I.Z. Kiss,* “Oscillations of Nickel Electrodeposition in an Epoxy-Based Microchip Flow Cell,” *J. Electroanal. Chem.*, **2011**, *659*, 92-100.
36. L.A. Filla,[‡] D.C. Kirkpatrick,[†] and R.S. Martin,* “Use of a Corona Discharge to Selectivity Pattern a Hydrophilic/Hydrophobic Interface for Integrating Segmented Flow with Microchip Electrophoresis and Electrochemical Detection,” *Anal. Chem.*, **2011**, *83*, 5996–6003.
37. A.S. Johnson[‡], A. Selimovic,[‡] and R.S. Martin,* “Integration of Microchip Electrophoresis with Electrochemical Detection Using an Epoxy-Based Molding Method to Embed Multiple Electrode Materials,” *Electrophoresis*, **2011**, *32*, 3121–3128.
38. A.S. Johnson,[‡] K.B. Anderson, S.T. Halpin, D.C. Kirkpatrick,[†] D.M. Spence and R. S. Martin, “Integration of multiple components in polystyrene-based microfluidic devices part I: fabrication and characterization,” *Analyst*, **2013**, *138*, 129-136.
39. K.B. Anderson, S.T. Halpin, A.S. Johnson,[‡] R.S. Martin and D.M. Spence, “Integration of multiple components in polystyrene-based microfluidic devices part II: cellular analysis,” *Analyst*, **2013**, *138*, 137-143.
40. A.S. Johnson[‡], A. Selimovic,[‡] and R.S. Martin,* Microchip-based Electrochemical Detection for Monitoring Cellular Systems,” *Anal. Bioanal. Chem.*, **2013**, *405*, 3013–3020.
41. A. Selimovic,[‡] and R.S. Martin,* “Encapsulated Electrodes for Microchip Devices: Microarrays and Platinized Electrodes for Signal Enhancement,” *Electrophoresis*, **2013**, *34*, 2092–2100.
42. K.B. Anderson, S.Y. Lockwood, R. S. Martin, and D.M. Spence,* “A 3D Printed Fluidic Device that Enables Integrated Features,” *Anal. Chem.*, **2013**, *85*, 5622–5626.
43. V. Becirovic,[‡] S.R. Doonan,[†] and R.S. Martin,* “Encapsulation of Fluidic Tubing and Microelectrodes in Microfluidic Devices: Integrating Off-Chip Process and Coupling Conventional Capillary Electrophoresis with Electrochemical Detection,” *Anal. Methods*, **2013**, *5*, 4220–4229.

44. Erkal, J. L.; Selimovic, A.;[‡] Gross, B. C.; Lockwood, S. Y.; Walton, E. L.; McNamara, S.; Martin, R. S.; Spence, D. M.,* “3D printed microfluidic devices with integrated versatile and reusable electrodes,” *Lab Chip* **2014**, *14*, 2023-2032.
45. A. Selimovic,[‡] J.L. Erkal, Jayda L., D.M. Spence, R.S. Martin,* “Microfluidic device with tunable post arrays and integrated electrodes for studying cellular release,” *Analyst*, **2014**, *139*, 5686-5694. (featured on the cover)
46. A.S. Johnson, B.T. Mehl, and R. S. Martin, “Integrated hybrid polystyrene-polydimethylsiloxane device for monitoring cellular release with microchip electrophoresis and electrochemical detection,” *Anal. Methods*, **2015**, *7*, 884 - 893.
47. M.R. Bailey, A.M. Pentecost, A. Selimovic, R.S. Martin, and Z.D. Schultz, “Sheath-Flow Microfluidic Approach for Combined Surface Enhanced Raman Scattering and Electrochemical Detection,” *Anal. Chem.*, **2015**, *87*, 4347–4355.
48. A.M. Pentecost and R.S. Martin, “Fabrication and characterization of all-polystyrene microfluidic devices with integrated electrodes and tubing,” *Anal. Methods*, **2015**, *7*, 2968-2976.

Book Chapters and Review Articles

1. R.S. Martin, P.D. Root, and D.M. Spence,* “Microfluidic Technologies as Platforms for Performing Quantitative Cellular Analyses in an In Vitro Environment,” *Analyst*, **2006**, *131*, 1197–1206. (Tutorial review)
2. R.S. Martin,* “Practical Considerations of Interfacing Amperometric Detection with Microchip Capillary Electrophoresis,” in *Methods in Molecular Biology: Methods and Applications of Lab On-A-Chip Separation Systems*, Chuck Henry, Ed., Humana Press, Totowa, NJ, **2006**, pp. 85-102.
3. S. Pasas, B. Fogarty, B. Huynh, N. Lacher, B. Carlson, R.S. Martin, W. Vandaveer, and S.M. Lunte,* “Detection on Microchips: Principles, Challenges, Hyphenation, and Integration,” in *Separation Methods in Microanalytical Systems*, J.P. Kutter and Y. Fintschenko Eds, CRC Press, Boca Raton, **2006**, pp. 433-498.
4. M.W. Li, A.L. Bowen, N.G. Batz, and R.S. Martin,* “Injection Systems for Microchip-based Analysis Systems,” in *Lab-on-a-Chip Technology* (Eds. Keith E. Herold and Avraham Rasooly), Horizon Scientific Press, **2009**, in press.