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Education

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|----------------|--|-----------------------|
| Post | University of North Carolina (Chapel Hill) | 1992-1994 |
| Doctoral | Research Director: R. Mark Wightman <u>Research Project</u> : Analytical Applications of Electrochemiluminescence | |
| Graduate | North Carolina State University (Raleigh), Ph.D. Major/Minor: Analytical/Inorganic Research Advisor: Edmond F. Bowden <u>Thesis Title</u> : The Interfacial Behavior of Strongly Adsorbed Cytochrome <i>c</i> | March 1992 |
| Under-graduate | University of Central Florida (Orlando, Florida) B.S. <i>Summa Cum Laude</i> , Forensic Science B.S. <i>Summa Cum Laude</i> , Chemistry | Aug. 1987 May 1987 |

Professional Positions

Dean's Fellow, Virginia Commonwealth University, Humanities and Sciences, 2010-2011
Professor, Analytical Chemistry, Virginia Commonwealth University, 2006+
Associate Professor, Analytical Chemistry, Virginia Commonwealth University, 2005
Associate Professor, Analytical Chemistry, Kansas State University, 2000-2005
Assistant Professor, Analytical Chemistry, Kansas State University, 1994-2000
Forensic Internship, Orlando Regional Crime Laboratory, May - August 1987

Other Experience, Honors, and Professional Memberships

American Chemical Society
Electrochemical Society
National Science Foundation Panelist
National Science Foundation CAREER Award recipient, 1996
College of Humanities and Sciences Distinguished Scholar Award, 2010
Editorial Advisory Board for *Chemistry of Materials*, Jan. 2006-
Editorial Advisory Board for *New Journal of Glass and Ceramics* (NJGC), 2011-

Publications

65. Profile Control in Surface Amine Gradients Prepared by Controlled-Rate Infusion. Balamurali Kannan, Dong Dong, Daniel A Higgins, Maryanne M. Collinson. *Langmuir*, **2011**, 27 (5), pp 1867–1873.
64. Spatiotemporal Evolution of Fixed and Mobile Dopant Populations in Silica Thin-Film Gradients as Revealed by Single Molecule Tracking. Chenchen Cui, Alec Kirkemide, Chenchen Cui, Alec Kirkemide, Balamurali Kannan, Maryanne M. Collinson, and Daniel A. Higgins *J. Phys. Chem. C*, **2011**, 115 (3), pp 728–735
63. The Stability of Nonporous and Macroporous Titania Thin Films in Aqueous Electrolyte Solutions”, Hema Aluri and M.M. Collinson. *Journal of Electroanalytical Chemistry*, **2011**, 651, 2, 143-149.
62. Photothermal Deoxygenation of Graphite Oxide with Laser Excitation in Solution and Graphene-Aided Increase in Water Temperature. Victor Abdelsayed, Sherif Moussa, Hassan M. Hassan,

- Hema S. Aluri, Maryanne M. Collinson, and M. Samy El-Shall*. *J. Phys. Chem. Letters*, **2010**, *1* (19), pp 2804–2809.
61. Well-Defined Hierarchical Templates for Multimodal Porous Material Fabrication. Bo Zhao and Maryanne Collinson, *Chemistry of Materials*, **2010**, *22*(14), 4312-4319.
 60. Fluorescence Spectroscopy Studies of Silica Film Polarity Gradients Prepared by Infusion-Withdrawal Dip-Coating. Fangmao Ye, Chenchen Cui, Alec Kirkemide, Dong Dong, Maryanne M. Collinson, and Daniel A. Higgins, *Chemistry of Materials*, **2010**, *22* (9), 2970-2977
 59. Imprinted Functionalized Silica. Maryanne M. Collinson, for “*The Supramolecular Chemistry of Organic-Inorganic Hybrid Materials*”, Knut Rurack and Ramón Martínez-Mañez, Editors, Wiley: New York **2010**. ISBN: 978-0-470-37621-854.
 58. Single Molecule Studies of Oligomer Extraction and Uptake of Dyes in Poly(dimethylsiloxane) Films" Lange, Jeffrey; Collinson, Maryanne; Culbertson, Christopher; Higgins, Daniel, *Analytical Chemistry*, **2009**, *81*(24), 10089-10096.
 57. Bio-inspired chemical reactors for growing aligned gold nanoparticle-like wires, Zhe-Xue Lu, Lynn Wood, Dennis Ohman, and Maryanne Collinson. *Chem. Commun.*, **2009**, 4200 - 4202.
 56. What Can Be Learned from Single Molecule Spectroscopy? Applications to Sol-Gel-Derived Silica Materials. Fangmao Ye, Maryanne M. Collinson and Daniel A. Higgins. *Physical Chemistry Chemical Physics*, **2009**, *11*, 66–82.
 55. Analytical Chemistry with Silica Sol Gels: Traditional Routes to New Materials for Chemical Analysis. Alain Walcarius and Maryanne M. Collinson. *Annual Review of Analytical Chemistry*, Volume 2, **2009**, 121-143.
 54. Self-Supporting Nanopore Membranes with Controlled Pore Size and Shape. Zhe-Xue Lu, Arya Namboodiri, and Maryanne M. Collinson. *ACS Nano*, **2008**, *2*(5), 993-999.
 53. Electrodeposited Silicate Films: Importance of Supporting Electrolyte. Maryanne M. Collinson, Daniel A. Higgins, Roshna Kommidi, and Debbie Campbell-Rance. *Analytical Chemistry*, **2008**, *80*, 651-656.
 52. Following the Growth Process in Macroporous Methylsilsesquioxane Films at the Single Pore Level by Confocal Correlation Spectroscopy. Hanjiang Dong, Fangmao Ye, Daniel A. Higgins, and Maryanne M. Collinson. *Chemistry of Materials*, **2007**, *19*, 6528-6535.
 51. Molecular Orientation and Its Influence on Autocorrelation Amplitudes in Single-Molecule Imaging Experiments. Fangmao Ye, Maryanne M. Collinson, and Daniel A. Higgins, *Analytical Chemistry*, **2007**, *79*, 6465-6472.
 50. Electrochemistry: An Important Tool to Study and Create New Sol-Gel Derived Materials. Collinson, M.M. *Accounts of Chemical Research*, **2007**, *40*, 777-783.
 49. Probing Chemical Interactions at the Single Molecule Level in Mesoporous Silica Thin Films. Fangmao Ye, Daniel A. Higgins, and Maryanne M. Collinson. *Journal of Physical Chemistry C*, **2007**, *111*, 6772-6780.
 48. Creating Aligned Arrays of Bacillus Megaterium in Sol-Gel Matrices. Liu, S.; Wood, L.F., Ohman, D.E.; Collinson, M.M. *Chemistry of Materials*, **2007**, *19*, 2752-2756.
 47. Single Molecule Spectroscopy Studies of Diffusion in Mesoporous Silica Thin Films. Yi Fu, William G. Sanders, Maryanne M. Collinson, and Daniel A. Higgins. *J. Phys. Chem B*, **2006**, *110*, 9164-9170.
 46. Exciting New Directions in the Intersection of Functionalized Sol-Gel Materials with Electrochemistry. Walcarius, A., Mandler, D., Cox, J., Collinson, M.M., Lev, O. *J. Materials Chemistry*, **2005**, *15*, 3663-3689.
 45. Gaining Insight into the Nanoscale Properties of Sol-Gel Derived Silicate Thin Films by Single Molecule Spectroscopy. Higgins, D.A., Collinson, M.M. *Langmuir*, **2005**, *21*, 9023-31. Also made the cover for this issue of *Langmuir*.

44. Phase Separation in Organically Modified Silicate Films as Probed by Phase Imaging Atomic Force Microscopy. Striova, J.; Higgins, D.A.; Collinson, M.M. *Langmuir*, **2005**, *21*, 6137-6141.
43. Controlling Diffusion in Sol-Gel Derived Monoliths. Kanungo, M.; Collinson, M.M. *Langmuir*, **2005**, *21*, 827-829.
42. Single Molecule Studies of Diffusion by Oligomer-Bound Dyes in Organically Modified Sol-Gel Derived Silicate Films. Martin-Brown, S.A., Saroja, G.; Collinson, M.M.; Higgins, D.A. *Analytical Chemistry*, **2005**, *77*, 486.
41. Template Directed Formation of Hemispherical Cavities of Varying Depth and Diameter in a Silicate Matrix Prepared by the Sol-Gel Process. Kanungo, M.; Deepa, P.N. Collinson, M.M. *Chemistry of Materials*, **2004**, *16*, 5535-5541.
40. Single Molecule Spectroscopy Studies of Microenvironmental Acidity in Silicate Thin Films. Fu, Yi; Collinson, M.M.; Higgins, D.A. *Journal of the American Chemical Society*, **2004**, *126*, 13838-13844.
39. Structural Transformation of Template-Synthesized Mesoporous Silica with Addition of Chloroform. Yoshio Kobayashi and Maryanne M. Collinson. *Journal of the Ceramic Society of Japan*, **2004**, *112*, 347-349.
38. Synchrotron Infrared Microspectroscopy Reveals Localized Heterogeneities in an Organically Modified Silicate Film. Wetzel, David L., Striova, Jana, Higgins, Daniel A., Collinson, Maryanne M.. *Vibrational Spectroscopy*, **2004**, *35*, 153-158.
37. Fabrication of Two-Dimensionally Ordered Macroporous Silica Materials with Controllable Dimensions. Kanungo, M., Collinson, M.M. *Chemical Comm*, **2004**, 549-549.
36. Diffusion of Redox Probes in Hydrated Sol-Gel Derived Glasses. Effect of Gel Structure. Kanungo, M., Collinson, M.M. *Analytical Chemistry*, **2003**, *75*(23), 6555-6559.
35. Electrochemically Deposited Sol-Gel Derived Silicate Films as a Viable Alternative in Thin Film Design. Deepa, P.N., Kanungo, M., Claycomb, G, Sherwood, Peter M.A., Collinson, M.M.. *Analytical Chemistry* **2003**, *75*, 5399-5405.
34. Electrodeposition of Silicate Films from Ludox Colloidal Silica. Collinson, M.M., Moore, N., Deepa, P.N., Kanungo, M. *Langmuir*, **2003**, *19*, 7669-7672.
33. Single Molecule Spectroscopic Studies of Nanoscale Heterogeneity in Organically Modified Silicate Thin Films. Higgins, D.A., Collinson, M.M., Saroja, G., Bardo, A.M. *Chem. Mater.*, **2002**, *14*, 3734-3744.
32. Recent Trends in Analytical Applications of Organically Modified Silicate Materials. Collinson, M.M. *Trends in Analytical Chemistry*, **2002**, *21*, 30-38.
31. Diffusion and Reactivity of Ruthenium (II) tris(bipyridine) and Cobalt (II) tris(bipyridine) in Organically Modified Silicates. Collinson, M.M., Novak, B. *Journal of Sol-Gel Science and Technology*, **2002**, *23*, 215-220.
30. The Effects of Drying Time and Humidity on the Stability of Silicate Films Prepared by the Sol-Gel Process, Collinson, M.M., Wang, H., Makote, R., Khramov, A.N. *J. Electroanalytical Chemistry*, **2002**, *519*, 65-71.
29. Preparation and Characterization of Macroporous Silicate Films. Khramov, A.N., Munos, J., Collinson, M.M. *Langmuir*, **2001**, *17*, 8112-8117.
28. Nanoscale Properties and Matrix-Dopant Interactions in Dye-Doped Organically-Modified Silicate Thin Films. Bardo, A.M., Collinson, M.M., Higgins, D.A. *Chem. Mater.* **2001**, *13*, 2713-2721.
27. Sol-Gel preparation of macroporous silica films by templating with polystyrene microspheres. Khramov, A.N., Collinson, M.M. *Chem. Commun.* **2001**, *8*, 767-768.
26. Sol-Gels and Electrochemistry: Research at the Intersection. Collinson, M.M., Howells, A.R.. *Anal. Chem.* **2000**, *72*, 702A-709A.

25. Diffusion of Redox Probes in Hydrated Sol-Gel Derived Glasses. Howells, A.R., Zambrano, P.J., Collinson, M.M. *Anal. Chem.* **2000**, 72, 5265-5271.
24. Electrogenenerated Chemiluminescence of Tris(2,2'-bipyridyl) Ruthenium (II) Ion Exchanged in Nafion-Silica Composite Films. Khramov, A.N.; Collinson, M.M. *Anal. Chem.* **2000**, 72, 2943-2948.
23. Electrochemiluminescence of Ruthenium (II) tris(bipyridine) in Sol-Gel Derived Glasses. Collinson, M.M., Novak, B., Martin, S.A., Taussig, J.S. *Anal. Chem.* **2000**, 72(13), 2914-2918.
22. Single Molecule Studies of Sol-Gel Derived Silicate Films. Microenvironments and Film Drying Conditions. Mei, E.; Bardo, A.M.; Collinson, M.M.; Higgins, D.A. *J. Phys. Chem. B.* **2000**, 104, 9973-9980.
21. Sol-Gel Strategies for the Preparation of Selective Materials for Chemical Analysis. Collinson, M.M. *Critical Reviews in Analytical Chemistry*, **1999**, 29, 289-311.
20. Solid-State Electrogenenerated Chemiluminescence from Gel-Entrapped Ruthenium (II) Tris(bipyridine) and Tripropylamine, Collinson, M.M.; Taussig, J.; Martin, S.M. *Chem. Mater*, **1999**, 11, 2594-2599.
19. Functional-Group Effects on the Ion-Exchange Properties of Organically Modified Silicates. Wei, H., Collinson, M.M. *Anal. Chim. Acta* **1999**, 397, 113-121. (special issue)
18. Organically Modified Silicate Films for Stable pH Sensors. Makote, R.; Collinson, M.M. *Anal. Chim. Acta*, **1999**, 394, 2/3, 195-200.
17. Solid-State Electrogenenerated Chemiluminescence in Sol-Gel Derived Monoliths, Collinson, M.M.; Martin, S.A. *Chem. Commun.*, **1999**, 10, 899-900.
16. Measurement of the Diffusion Coefficients of Redox Probes Encapsulated within Sol-Gel Derived Silica Monoliths Using Ultramicroelectrodes. Collinson, M.M., Zambrano, P., Wang, H., Taussig, J. *Langmuir*, **1999**, 15, 662-668.
15. Template Recognition in Inorganic-Organic Hybrid Films Prepared by the Sol-Gel Process. Makote, R.; Collinson, M.M. *Chem. Mater.* **1998**, 10, 2440-2445.
14. Dopamine Recognition in Templated Silicate Films. Makote, R.; Collinson, M.M. *Chemical Communications* **1998**, 3, 425-426.
13. Analytical Applications of Organically Modified Silicates. Collinson, M.M. *Mikrochimica Acta*, **1998**, 129, 149-165.
12. Electrochemical Characterization of Inorganic-Organic Hybrid Films Prepared from Ferrocene Modified Silanes. Wang, J., Collinson, M.M. *J. Electroanal. Chem.*, **1998**, 455, 125.
11. Microheterogeneity in Dye Doped Silicate and Polymer Films. Wang, H., Bardo, A.M., Collinson, M.M., Higgins, D.A. *J. Phys. Chem. B*, **1998**, 102, 7231-7237.
10. The Electroactivity of Redox Probes Encapsulated within Sol-Gel Derived Silicate Films. Collinson, M.M., Rausch, C.G., Voigt, A. *Langmuir* **1997**, 13, 7245-7251.
9. Permselectivities and Ion-Exchange Properties of Organically Modified Sol-Gel Electrodes. Hsueh, C., Collinson, M.M. *J. Electroanal. Chem.*, **1997**, 420, 243-249.
8. Collinson, M.M., Wightman, R.M. Observation of Individual Chemical Reactions in Solution, *Science* **1995**, 268, 1883-5.
7. Pastore, P.; Magno, F, Collinson, M.M., Wightman, R.M. Simulation of Electrochemiluminescence Produced by a High-Frequency Square-Wave Potential Waveform. Effects of Ohmic Drop and Cell Time Constant on Electrode Potential, Current, and Light Emission. *J. Electroanal. Chem.* **1995**, 397, 19-26.
6. Collinson, M.M., Pastore, P., Wightman, R.M. Evaluation of Ion-Annihilation Reaction Kinetics with High-Frequency Generation of Electrochemiluminescence, *J. Phys. Chem.*, **1994**, 98, 11942-11947.
5. Collinson and R.M. Wightman, High-Frequency Generation of Electrochemiluminescence at Microelectrodes, *Anal. Chem.*, **1993**, 65, 2576-2582.

4. Collinson, M.M., Pastore, P., Maness, K.M., Wightman, R.M. Electrochemiluminescence Interferometry at Microelectrodes, *J. Am. Chem. Soc.*, **1994**, *116*, 4095-4096.
3. Collinson, M.; Bowden, E.F. Chronoabsorptometric Determination of Adsorption Isotherms for Cytochrome *c* on Tin Oxide Electrodes, *Langmuir* **1992**, *8*, 2552-2559.
2. Collinson, M.; Bowden, E.F.; Tarlov M.J. Voltammetry of Covalently Immobilized Cytochrome *c* on Self-Assembled Monolayer Electrodes, *Langmuir* **1992**, *8*, 1247-1250.
1. Collinson, M.; Bowden, E.F. UV-Visible Spectroscopy of Adsorbed Cytochrome *c* on Tin Oxide, *Anal. Chem.* **1992**, *64*, 1470-1476.

Other Publications

1. Template-directed preparation of nano- and micron sized pores in self-supporting organic-inorganic hybrid membranes. Zhe-Xue Lu and Maryanne M. Collinson, *Polymer Preprints* **2008**, *49(2)*, 570. **Invited**
2. Review: "Sol-Gel Derived Chemical Sensors," Maryanne M. Collinson, *McGraw-Hill 2002 Yearbook of Science & Technology*, **2002**. **Invited**
3. "Structure, Chemistry, and Applications of Sol-Gel Derived Materials". Collinson, M.M. Book Chapter in "Handbook of Advanced Electronic and Photonic Materials", Vol. 5, 2001. **Invited**.
4. Book Review: Electrochemistry. by Carl H. Hamann, A. Hamnett, and W. Vielstich, Wiley-VCH: New York, 1998. Collinson, M.M., *J. Am. Chem. Soc.*, **1999**, *121*, 8413.
5. Collinson, M.; Willit, J.L; Bowden, E.F. Electron Transfer Reactions of Irreversibly Adsorbed Cytochromes on Solid Electrodes. In Charge and Field Effects in Biosystems II, M.J. Allen, S.F. Cleary, and F. M. Hawkrige, Eds., Plenum: New York, **1989**, 63-76.

Collaborators

Dr. Dennis Ohman and Dr. Lynn Wood, Microbiology, VCU
 Dr. Kevin Ward, Emergency Medicine, VCU
 Dr. Dexian Ye, Physics, VCU
 Dr. Dan Higgins, Professor, Chemistry, Kansas State University