

**Richard L. McCreery**  
Department of Chemistry  
National Institute of Nanotechnology  
University of Alberta  
11421 Saskatchewan Drive  
Edmonton, Alberta T6G 2M9, Canada  
(780) 641-1760 *richard.mccreery@ualberta.ca*

**Date of Birth:** October 8, 1948, Los Angeles, California

**Education:** University of California, Riverside, B.S. in Chemistry, 1970  
University of Kansas, Ph.D. in analytical chemistry under Ralph N. Adams, 1974

**Experience:** The Ohio State University, Assistant Professor (1974-1979),  
Associate Professor (1979-1983), Professor of Chemistry (1983-1998)  
Dow Professor of Chemistry, Ohio State University (1998-2006 )  
Professor of Chemistry, University of Alberta, (2006- )  
Senior Research Officer, National Institute for Nanotechnology, (2006- )

Visiting Professor, University of Southampton, 1981  
Associate Editor, Analytical Chemistry, 2005-

**Honors:** NSF Predoctoral Fellow, 1970 - 1973  
Woodrow Wilson Fellow, 1970 - 1971  
Alfred P. Sloan Fellow, 1981 - 1985  
Ohio State University Distinguished Research Award, 1982  
Ashland Oil Foundation Research Award, 1982  
Fellow of the American Association for the Advancement of Science, 1992-  
President, Society of Electroanalytical Chemistry, 1995-1997  
George Rappoport Award, Society of Applied Spectroscopy, 1996  
American Chemical Society Award in Electrochemistry, 2000  
Charles N. Reilley Award, Society of Electroanalytical Chemistry, 2003  
Fellow of the Electrochemical Society, 2003-  
Ernest Yeager Award, Cleveland Electrochemical Society Section, 2006  
Alberta Ingenuity Scholar, 2006- 2011  
Elected Vice President, International Society of Electrochemistry, 2008  
Charles Mann Award, Fed. of Analytical Chemistry and Spec. Societies, 2010

**Research Interests:** Surface spectroscopy, molecular electronics,  
electrochemical kinetics, advanced carbon materials

**Organizations** American Chemical Society  
The American Association for the Advancement of Science  
Society of Applied Spectroscopy  
The Electrochemical Society  
Society of Electroanalytical Chemistry

## Service to the Science Community

- 1978-04 National Institutes of Health Special Study Section (8 meetings)  
1984-85 Divisional Editor, Journal of the Electrochemical Society  
1984- Selection committees for three national awards in chemistry (identities confidential)  
1986-88 National Research Council Committee for Grant Proposal Review  
1987 Host and Organizer, Midwest Universities Analytical Chemistry Conference, Columbus, November 6-8  
1975 Reviewer for National Science Foundation, Army Research Office, Department of Energy, NIH, Guggenheim Foundation, ACS Petroleum Research Fund, etc.  
1975 Reviewer for Journal of American Chemical Society, Science, Analytical Chemistry, Journal of Electroanalytical Chemistry, Journal of Electrochemical Society, Journal of Medicinal Chemistry, Journal of Physical Chemistry, Applied Spectroscopy, Corrosion Science etc.  
1986-1991 Board of Directors, Society of Electroanalytical Chemists  
1991 NSF Postdoctoral Fellowship Evaluation Panel  
1991-94 Honors and Awards Committee, The Electrochemical Society, DeNora Award subcommittee, chairman  
1992-95 Awards Canvassing Committee, American Chemical Society  
1993-6 Lippincott Award Committee, SAS and OSA  
1993-2004 Editorial Board, Applied Spectroscopy  
1994 DOE Review of Hanford Nuclear Waste Monitoring  
1994 NSF Review Panel for Small Business Technology Transfer Proposals  
1995-97 President, Society of Electroanalytical Chemistry  
1997-2002 Board of Directors, Coblenz Society  
2001-2004 Editorial Advisory Board, Analytical Chemistry

## Service to NINT and University of Alberta

- 2006- NINT Clean room Steering committee, chair  
2006- Graduate Curriculum committee, Chemistry  
2006-7 Analytical Faculty Search Committee  
2006- Arranged NINT lunch/seminar program

## Oral Exams and Theses:

- 2006-7 MS: Derek Bleackley (advisor Wong)  
Manuel Smeu (Wolkow)  
Ph.D. Candidacy: Grigory Tikhomirov (Fenniri)  
Donna Gulcev (Lucy)

Supervisory Committees: Jie Ru, Matthew Markiewicz, Lars Laurentius, Grigory Tikhomirov

### Publication List - R. L. McCreery

(\* denotes invited publication, all items refereed except those indicated by a +)

1. R.L. McCreery and D.T. Sawyer, "Gas Solid Chromatography Using Various Salt-modified Activated Aluminas and Magnesium Silicates," *J. Chromatog. Sci.*, **1970**, 8, 122.
2. D.T. Sawyer, R.Y. Komai and R.L. McCreery, "Electrochemical Studies of Flavins and of Metal-flavin Interaction in Aprotic Solvents," *Experientia, Suppl.*, **1971**, 18, 563.
3. D.T. Sawyer and R.L. McCreery, "Electrochemical Studies of the Interactions of Riboflavin and its Reduction Products with Metal Ions in Dimethylsulfoxide," *Inorg. Chem.*, **1972**, 11, 779.
4. R.N. Adams, E. Murrill, R.L. McCreery, L. Blank and M. Karolczak, "6-Hydroxy-dopamine, a New Oxidation Mechanism," *Eur. J. Pharmacol.*, **1972**, 17, 287.
5. A.W. Sternson, R.L. McCreery, B. Feinberg and R.N. Adams, "Electrochemical Studies of Adrenergic Neurotransmitters and Related Compounds," *J. Electroanal. Chem.*, **1973**, 46, 313.
6. R.L. McCreery, R. Dreiling and R.N. Adams, "Voltammetry in Brain Tissue, Quantitative Studies of Drug Interactions," *Brain Research*, **1974**, 73, 23.
7. R.L. McCreery, R. Dreiling and R.N. Adams, "Voltammetry in Brain Tissue, the Fate of 6-hydroxydopamine," *Brain Research*, **1974**, 73, 15.
8. D. C.S. Tse, R.L. McCreery, and R.N. Adams, "Potential Oxidative Pathways of Brain Catecholamines," *J. Med. Chem.*, **1976**, 19, 37.
9. C.L. Blank, R.L. McCreery, R.M. Wightman, W. Chey, R.N. Adams, J.R. Reid, and E.E. Smissman, "Intracyclization Rates of 6-hydroxydopamine and 6-aminodopamine Analogs under Physiological Conditions," *J. Med. Chem.*, **1976**, 19, 178.
10. R.R. Ruffalo, Jr., R.L. McCreery, and P.N. Patil, "A Kinetic Analysis of a Catechol Specific Binding Site in the Microsomal Fraction from the Rabbit Aorta," *Eur. J. Pharmacol.*, **1976**, 38, 221.
11. R.L. McCreery, "Oxidation Reactions of Hydroxylated Chlorpromazine Metabolites," *J. Pharm. Sci.*, **1977**, 66, 367.
12. R.L. McCreery, "Thin Layer Technique for Monitoring Electrogenerated Reactive Intermediates," *Anal. Chem.*, **1977**, 49, 206.
13. H.Y. Cheng and R.L. McCreery, "Potential Dependent Chronoamperometry;

- Experimental Verification,” *J. Electroanal. Chem.*, **1977**, 85, 361.
- 14.\* R.L. McCreery, “Bioelectrochemistry: An Examination of Some Examples”, *CRC critical reviews in Analytical Chemistry*, **1978**, 7, 89.
  15. H.Y. Cheng, P.H. Sackett, and R.L. McCreery, “Kinetics of Chlorpromazine Cation Radical Decomposition in Aqueous Buffers,” *J. Am. Chem. Soc.*, **1978**, 100, 962.
  16. H.Y. Cheng and R.L. McCreery, “Simultaneous Determination of Reversible Potential and Rate Constant for a First-order Ec Reaction by Potential Dependent Chronoamperometry,” *Anal. Chem.*, **1978**, 50, 645.
  17. M. Neptune and R.L. McCreery, “Chemical and Electrochemical oxidation of 7-hydroxychlorpromazine,” *J. Med. Chem.*, **1978**, 21, 362.
  18. H.Y. Cheng, P. Sackett, and R.L. McCreery, “Reactions of Chlorpromazine Cation Radical with Physiologically Occurring Nucleophiles,” *J. Med. Chem.*, **1978**, 21, 948.
  19. M. Neptune and R.L. McCreery, “Characteristics and Reactions of Quinoneimines and Cation Radicals Derived from Hydroxylated Chlorpromazine Derivatives,” *J. Org. Chem.*, **1978**, 43, 5006.
  20. M. Neptune, A.A. Manian, and R.L. McCreery, “Electrochemical Oxidation of Hydroxylated Phenothiazine and Imipramine Derivatives,” *J. Med. Chem.*, **1979**, 22, 196.
  21. R.L. McCreery, R. Pruiksma, and R. Fagan, “Optical Monitoring of Electrogenenerated Species via Specular Reflection at Glancing Incidence”, *Anal. Chem.*, **1979**, 51, 748.
  22. P. Sackett and R.L. McCreery, “Effect of Structure on Phenothiazine Cation Radical Reactions in Aqueous Buffers,” *J. Med. Chem.*, **1979**, 22, 1447.
  23. R. Pruiksma and R.L. McCreery, “Observation of Electrochemical Concentration Profiles Using Absorption Spectroelectrochemistry,” *Anal. Chem.*, **1979**, 51, 2253.
  24. D.R. Henton, R.L. McCreery, and J.S. Swenton, “Anodic Oxidation of 1,4 Dimethoxy Aromatic Compounds. A Facile Route to Functionalized Quinone Bisketals,” *J. Org. Chem.*, **1980**, 45, 369.
  25. J. Skully and R.L. McCreery, “Glancing Incidence External Reflection Spectroelectrochemistry Using a Continuum Source,” *Anal. Chem.*, **1980**, 52, 1885.
  26. P. Rossi, C.W. McCurdy, and R.L. McCreery, “Diffractive Spectroelectrochemistry: Use of Diffracted Light for Monitoring Electrogenenerated Chromophores,” *J. Am. Chem. Soc.*, **1981**, 103, 2524.
  27. R. Pruiksma and R.L. McCreery, “Spectroelectrochemical Observation of Diffusion Profiles by the Parallel Absorption Method,” *Anal. Chem.*, **1981**, 53, 202.

28. R.S. Robinson and R.L. McCreery, "Absorption Spectroelectrochemistry with Microelectrodes." *Anal. Chem.*, **1981**, 53, 997.
29. P.H. Sackett, J.S. Mayausky, T. Smith, S. Kalus, and R.L. McCreery, "Side Chain Effects on Phenothiazine Cation Radical Reactions," *J. Med. Chem.*, **1981**, 24, 1342.
- 30.\* J.S. Mayausky, H.Y. Cheng, P.H. Sackett, and R.L. McCreery, "Spectro-electrochemical Examination of the Reactions of Chlorpromazine Cation Radical with Physiological Nucleophiles," *ACS Advances in Chemistry*, **1982**, Series 201, Chap. 19.
- 31.\* R.L. McCreery, "Optical Diffraction by Electrodes: Use of Fourier Transforms in Spectroelectrochemistry," in Fourier, Hadamard and Hilbert Transforms in Chemistry, A.G. Marshall (Ed.), Plenum, **1982**, pp. 527-548.
32. R.S. Robinson, C.W. McCurdy, and R.L. McCreery, "Microsecond Spectroelectrochemistry by External Reflection from Cylindrical Microelectrodes," *Anal. Chem.*, **1982**, 54, 2356.
33. J. Mayausky and R.L. McCreery, "On the Mechanism of Chlorpromazine Cation Radical Decay in Aqueous Solution," *Act. Chem. Scand. B.* **1982**, 36, 713.
- 34.+ R.L. McCreery, C.W. McCurdy, and P. Rossi, "Diffractive Spectroelectrochemistry," **1983**, U.S. Patent #4,395,312.
35. R.L. McCreery, P.H. Hendra, and M. Fleischmann, "Fiber Optic Probe for Remote Raman Spectroscopy," *Anal. Chem.*, **1983**, 55, 146.
36. J.S. Mayausky and R.L. McCreery, "Spectroelectrochemical Examination of the Reactions of Chlorpromazine Cation Radical with Mono- and Bifunctional Nucleophiles," *J. Electroanal. Chem.*, **1983**, 145, 117.
37. J. Mayausky and R.L. McCreery, "Spectroelectrochemical Examination of Charge Transfer Between Chlorpromazine Cation Radical and Catecholamines," *Anal. Chem.*, **1983**, 55, 308.
38. P. Rossi and R.L. McCreery, "Diffractive Spectroelectrochemistry: A Sensitive Probe of the Diffusion Layer," *J. Electroanal. Chem.*, **1983**, 151, 47.
39. E. Hershenhart, R. D. Knight, and R. L. McCreery, "In Situ Cleaning and Activation of Solid Electrode Surfaces by Pulsed Laser Light," *Anal. Chem.*, **1984**, 56, 2256.
40. S.D. Schwab and R. L. McCreery, "Versatile, Efficient Raman Sampling with Fiber Optics," *Anal. Chem.*, **1984**, 56, 2199.
41. R.S. Robinson and R.L. McCreery, "Submicrosecond Spectroelectrochemistry by

- External Reflection at Microdisk Electrodes," *J. Electroanal. Chem.*, **1985**, 182, 61.
42. C.C. Jan, B.K. Lavine, and R.L. McCreery, "High Sensitivity Spectroelectrochemistry Based on Electrochemical Modulation with Synchronous Detection," *Anal. Chem.*, **1985**, 57, 752.
  43. C.C. Jan, F.T. Gamble, and R.L. McCreery, "Diffusion Layer Imaging: Spatial Resolution of the Electrochemical Diffusion Layer," *Anal. Chem.*, **1985**, 57, 1763.
  44. S. Schwab, K.C. Cummings, and R.L. McCreery, "The Effect of Surface Chemistry on the Morphology, Resistance, and Colloidal Properties of Small Silver Particles," *J. Appl. Phys.*, **1985**, 58, 355.
  45. S.A. Schuette and R.L. McCreery, "Square Wave Voltammetry on Platinum Microdisk Electrodes Using Synchronous Demodulation," *J. Electroanal. Chem.*, **1985**, 57, 1763.
  46. \* + R.L. McCreery, "Spectroelectrochemistry," in Physical Methods in Chemistry, Vol. 2, B. Rossiter (Ed.), John Wiley, **1986**, pp. 591-662.
  47. S.A. Schuette and R.L. McCreery, "Efficient Hydrodynamic Modulation at Microcylinder Electrodes," *Anal. Chem.*, **1986**, 58, 1778.
  48. S.D. Schwab, R. L. McCreery, and F.T. Gamble, "Normal and Resonance Raman Spectroelectrochemistry with Fiber Optics Collection," *Anal. Chem.*, **1986**, 58, 2486.
  49. M. Poon and R.L. McCreery, "*In-situ* Laser Activation of Glassy Carbon Electrodes," *Anal. Chem.*, **1986**, 58, 2745. (Reprinted as "Milestone in Analytical Chemistry," American Chemical Society, 1994).
  50. C.-C. Jan and R.L. McCreery, "High Resolution Spatially Resolved Visible Spectrometry of the Electrochemical Diffusion Layer," *Anal. Chem.*, **1986**, 58, 2771.
  51. S.D. Schwab and R.L. McCreery, "Remote, Long Path Cell for High Sensitivity Raman Spectroscopy," *Appl. Spectros.*, **1987**, 41, 126.
  52. C.C. Jan and R.L. McCreery, "Spectroelectrochemical Analysis of Trace Materials by Diffusion Layer Imaging," *J. Electronanal. Chem.*, **1987**, 220, 41.
  53. M. Poon and R.L. McCreery, "Repetitive *In-situ* Renewal and Activation of Carbon and Platinum Electrodes: Applications to Pulse Voltammetry," *Anal. Chem.*, **1987**, 59, 1615.
  54. R.T. Packard and R.L. McCreery, "High Sensitivity Normal and Resonance Raman Spectroscopy: Applications to Transient Electrochemistry," *Anal. Chem.*, **1987**, 59, 2631.
  55. S.A. Schuette and R.L. McCreery, "Hydrodynamically Modulated Alternating Current Voltammetry," *Anal. Chem.*, **1987**, 59, 2692.

56. R. Bowling and R. L. McCreery, "Diagnosis of Adsorption with Semi-Integral Voltammetry," *Anal. Chem.*, **1988**, 60, 605.
- 57.\* R. L. McCreery, "Electronic and Vibrational Spectroscopy of Electrode Surfaces," *Prog. in Anal. Spectros.*, **1988**, 11, 141.
58. M. Poon and R.L. McCreery, "Laser Activation of Carbon Electrodes: Relationship Between Laser Induced Surface Effects and Electron Transfer Activation," *Anal. Chem.*, **1988**, 60, 1725.
59. R.T. Packard and R.L. McCreery, "Raman Monitoring of Reactive Electrogenerated Species: Kinetics of Halide Addition to Orthoquinones," *J. Phys. Chem.*, **1988**, 92, 6345.
60. R. Bowling, R.T. Packard, and R.L. McCreery, "Raman Spectroscopy of Carbon Electrodes: Correlation Between Defect Density and Heterogeneous Electron Transfer Rate," *J. Electrochem. Soc.*, **1988**, 135, 1605.
61. D.T. Witiak, S.K. Kim, A.K. Tehim, K.D. Sternitzke, R.L. McCreery, S.U. Kim, D.R. Feller, K.J. Romstedt, V.S. Kamanna, and H.A. Newman, "Synthetic aci-reductones: 3,4-Dihydroxy-2H-1-benzopyran-2-ones and their cis- and trans-4a,5,6,7,8,8a-Hexahydro Diastereomers. Antiaggregatory, Antilipidemic, and Redox Properties Compared to Those of the 4-Substituted 2-Hydroxytetronic Acids," *J. Med. Chem.*, **1988**, 31 1437.
62. A.L. Deputy and R.L. McCreery, "Spatially Resolved Spectroelectro-Chemistry for Examining an Electrochemically Initiated Homogeneous Electron Transfer Reaction," *J. Electroanal. Chem.*, **1988**, 257, 57.
63. R. Bowling, R. Packard, and R.L. McCreery, "Activation of Highly Ordered Pyrolytic Graphite for Heterogeneous Electron Transfer: Relationship between Electrochemical Performance and Carbon Microstructure," *J. Am. Chem. Soc.*, **1989**, 111, 1217.
64. H-P. Wu and R.L. McCreery, "Spatially Resolved Absorption Spectro-electrochemistry: Spectra and Concentration Profiles of Species Generated and Consumed at Single and Twin Electrodes," *J. Electrochem. Soc.*, **1989**, 136, 1375.
65. J. Williamson, R. Bowling, and R.L. McCreery, "Near Infrared Raman Spectroscopy with a 783 nm Diode Laser and CCD Array Detector," *Appl. Spectros.*, **1989**, 43, 372.
66. R. Bowling, R.T. Packard, and R.L. McCreery, "Mechanism of Electrochemical Activation of Carbon Electrodes: Role of Graphite Lattice Defects," *Langmuir*, **1989**, 5, 683.
67. R. Rice, C. Allred, and R.L. McCreery, "Fast Heterogeneous Electron Transfer Rates for Glassy Carbon Electrodes without Polishing or Activation Procedures," *J. Electroanal. Chem.*, **1989**, 263, 163.

- 68.\* R.L. McCreery and R.T. Packard, "Raman Monitoring of Dynamic Electrochemical Events," *Anal. Chem.*, **1989**, 61, 775A.
69. R. J. Rice and R.L. McCreery, "Quantitative Relationship between Electron Transfer Rate and Surface Microstructure of Laser-Modified Graphite Electrodes," *Anal. Chem.*, **1989**, 61, 1637.
70. K. Sternitzke, R.L. McCreery, C. Bruntlett, and P.T. Kissinger, "*In Situ* Laser Activation of Glassy Carbon Electrochemical Detectors for Liquid Chromatography: Demonstration of Improved Reversibility and Detection Limits," *Anal. Chem.*, **1989**, 61, 1989.
71. H-P. Wu and R.L. McCreery, "Observation of Concentration Profiles at Cylindrical Microelectrodes by a Combination of Spatially Resolved Absorption Spectroscopy and the Abel Inversion," *Anal. Chem.*, **1989**, 61, 2347.
72. Y. Wang and R. L. McCreery, "Evaluation of a Diode Laser/Charge Coupled Device Spectrometer for Near-Infrared Raman Spectroscopy," *Anal. Chem.*, **1989**, 61, 2647.
73. R. Bowling, R.L. McCreery, C.M. Pharr, and R.C. Engstrom, "Observation of Kinetic Heterogeneity on Highly Ordered Pyrolytic Graphite Using Electrogenerated Chemiluminescence," *Anal. Chem.* **1989**, 61, 2763.
74. M. Callstrom, R.L. McCreery, D. Alsmeyer, and T. Neenan, "Doped Glassy Carbon Materials: Their Synthesis and Investigation of Their Properties," *Polym. Mater. Sci. Eng.*, **1989**, 61, 921.
75. A. Deputy and R.L. McCreery, "Spatially Resolved Absorption Examination of the Redox Catalysis Mechanism: Equilibrium and Near-Equilibrium Cases," *J. Electroanal. Chem.*, **1990**, 285, 1.
76. A. Deputy, H-P. Wu, and R.L. McCreery, "Spatially Resolved Spectro-electrochemical Examination of the Oxidation of Dopamine by Chlorpromazine Cation Radical," *J. Phys. Chem.*, **1990**, 94, 3620.
77. R.J. Rice, N. Pontikos, and R.L. McCreery, "Quantitative Correlations of Heterogeneous Electron Transfer Kinetics with Surface Properties of Glassy Carbon Electrodes," *J. Am. Chem. Soc.* **1990**, 112, 4617.
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80. K.D. Sternitzke and R.L. McCreery, "Laser Microfabrication and Activation of Graphite and Glassy Carbon Electrodes," *Anal. Chem.*, **1990**, 62, 1339.
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- 83.\* R.L. McCreery, "Carbon Electrodes: Structural Effects on Electron Transfer Kinetics," in Electroanalytical Chemistry, A.J. Bard (Ed.), Dekker, NY, **1991**, Vol. 17, pp. 221-374.
84. Y.W. Alsmeyer and R.L. McCreery, "Surface Enhanced Raman Spectroscopy of Carbon Electrodes following Silver Electrodeposition," *Anal. Chem.*, **1991**, 63, 1289.
85. R.S. Robinson, K. Sternitzke, and R.L. McCreery, "Scanning Tunneling Microscopy of Laser Activated Carbon Electrodes Used in Studies of Electrochemical Charge Transfer Reactions," *J. Vac. Sci. Technol. B*, **1991**, 9, 960.
86. R.S. Robinson, K. Sternitzke, M.T. McDermott, and R.L. McCreery, "Morphology and Electrochemical Effects of Defects on Highly Ordered Pyrolytic Graphite," *J. Electrochem. Soc.*, **1991**, 138, 2412.
87. R.J. Rice and R.L. McCreery, "Effects of Wavelength, Pulse Duration, And Power Density on Laser Activation of Glassy Carbon Electrodes," *J. Electroanal. Chem.*, **1991**, 310, 127.
88. Y.W. Alsmeyer and R.L. McCreery, "Surface Enhanced Raman Examination of Carbon Electrodes: Effects of Laser Activation and Electrochemical Pretreatment," *Langmuir*, **1991**, 7, 2370.
89. N.L. Pocard, D.C. Alsmeyer, R.L. McCreery, T.X. Neenan, and M.R. Callstrom, "Nanoscale Platinum(0) Clusters in Glassy Carbon: Synthesis, Characterization, and Uncommon Catalytic Activity," *J. Am. Chem. Soc.*, **1992**, 114, 769.
90. C.D. Allred and R.L. McCreery, "Adsorption of Catechols on Fractured Glassy Carbon Electrode Surfaces," *Anal. Chem.* **1992**, 64, 444.
91. C.D. Newman, G.G. Bret, and R.L. McCreery, "Fiber Optic Sampling Combined with an Imaging Spectrograph for Routine Raman Spectroscopy," *Appl. Spectros.*, **1992**, 46, 262.
92. M.T. McDermott, K. Kneten, and R.L. McCreery, "Anthraquinonedisulfonate Adsorption, Electron-Transfer Kinetics, and Capacitance on Ordered Graphite Electrodes: The Important Role of Surface Defects," *J. Phys. Chem.* **1992**, 96, 3124.

93. N.M. Pontikos and R.L. McCreery, "Microstructural and Morphological Changes Induced in Glassy Carbon Electrodes by Laser Irradiation," *J. Electroanal. Chem.*, **1992**, 324, 229.
94. D.C. Alsmeyer and R.L. McCreery, "*In Situ* Raman Monitoring of Electrochemical Graphite Intercalation and Lattice Damage in Mild Aqueous Acids," *Anal. Chem.* **1992**, 64, 1528.
95. K.R. Kneten and R.L. McCreery, "Effects of Redox System Structure on Electron-Transfer Kinetics at Ordered Graphite and Glassy Carbon Electrodes," *Anal. Chem.*, **1992**, 64, 2518.
96. N.L. Pocard, D.C. Alsmeyer, R.L. McCreery, T.X. Neenan, and M.R. Callstrom, "Doped Glassy Carbon: A New Material for Electrocatalysis," *J. Mater. Chem.*, **1992**, 2, 771.
- 97.+ R.L. McCreery, "NIR/CCD Raman Spectroscopy: Second Battle of a Revolution?," *Proc. SPIE-Int. Soc. Opt. Eng.*, **1992**, 1439, 25.
98. R.L. McCreery, M.R. Callstrom, D.C. Alsmeyer, M.T. McDermott, and K.R. Kneten, "Application of Raman Spectroscopy to the Study of Carbon Surfaces Including Platinum-Modified Doped Glassy Carbon," *Proc. Electrochem. Soc.*, **1992**, 92, 324.
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101. M.T. McDermott, C.A. McDermott, and R.L. McCreery, "Scanning Tunneling Microscopy of Carbon Surfaces: Relationships between Electrode Kinetics, Capacitance, and Morphology for Glassy Carbon Electrodes," *Anal. Chem.*, **1993**, 65, 937.
102. C.J. Frank, R.L. McCreery, D.C.B. Redd, and T.S. Gansler, "Detection of Silicone in Lymph Node Biopsy Specimens by Near-Infrared Raman Spectroscopy," *Appl. Spectros.*, **1993**, 47, 387.
103. R.K. Jaworski and R.L. McCreery, "Laser-Induced Transient Currents on Glassy Carbon Electrodes," *J. Electrochem. Soc.*, **1993**, 140, 1360.
104. H.D. Hutton, W. Huang, D.C. Alsmeyer, J. Kometani, R.L. McCreery, T.X. Neenan, and M.R. Callstrom, "Synthesis, Characterization, and Electrochemical Activity of Halogen-Doped Glassy Carbon," *Chem. Mater.*, **1993**, 5, 1110.

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108. C.J. Frank, D.C.B. Redd, T.S. Gansler, and R.L. McCreery, "Characterization of Human Breast Biopsy Specimens with Near-IR Raman Spectroscopy," *Anal. Chem.*, **1994**, 66, 319.
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110. K.K. Cline, M.T. McDermott, and R.L. McCreery, "Anomalously Slow Electron Transfer at Ordered Graphite Electrodes: Influence of Electronic Factors and Reactive Sites," *J. Phys. Chem.*, **1994**, 98, 5314.
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208. R.L. McCreery, "Electron Transport and Redox Reactions in Molecular Electronic Junctions" *ChemPhysChem* **2009**, 10, 2387-2391.

### Chemistry Courses Taught at University of Alberta

Winter, 2007 Chemistry 415, Electroanalytical Chemistry  
 Winter, 2008 Chemistry 417, Analytical Spectroscopy  
 Fall, 2008 Chemistry 415, Analytical Electrochemistry  
 Winter, 2009 Chemistry 523, Analytical Chemistry Techniques for Practicing Scientists  
 Fall, 2009: RLM led a complete reorganization of the graduate curriculum in Analytical Chemistry, resulting in modular "core" and "advanced" courses, with the intent to provide all Analytical graduate students with a firm basis in advanced electrochemistry, mass spect, optical spectroscopy, and separations, plus the opportunity to take specialized modules in a wide range of topics. RLM will teach Optical Spectroscopy I (7 weeks) when the plan is implemented in the 2009-10 academic year.

### Students advised by R.L. McCreery, with their permanent positions

Name	Degree	Position
Hung-Yuan Cheng	Ph.D.. 1978	Smith Kline Beecham
Marilvn Szentirmav	Ph.D.. 1979	Cntr for Bioanal.Resch
Patricia Sackett	Ph.D.. 1979	The Pillsburv Companv

Richard Pruiksma	Ph.D.. 1980	practicing medicine in Texas
Joan Skully	M.S., 1980	homemaker
Terry Smith Jackson	M.S.. 1982	OSU Newark
Barry Lavine	M.S.. 1982	Clarkson University
Jack S. Mavauskv	Ph.D.. 1982	Monsanto
Paula Melaragno <sup>a</sup>	Ph.D.. 1982	Denison University
Robert Robinson <sup>b</sup>	Ph.D.. 1984	Bell Communications
Scott D. Schwab	Ph.D.. 1986	Ethyl Petroleum Inc.
Chwu-Ching Jan <sup>b</sup>	Ph.D.. 1986	Allied Signal
Sheila A. Schuette	Ph.D.. 1987	Monsanto Agricultural Co.
Melanie Poon	Ph.D.. 1987	Dow Chemical
Richard Packard	Ph.D., 1988	Sherex, Inc.
Huan-Ping Wu	Ph.D.. 1989	Yellow Springs Instrument
Robert Bowling	Ph.D.. 1989	Dow Chemical
Kent Sternitzke	Ph.D.. 1990	Alcon Laboratory
Andrew Deutv	Ph.D.. 1990	Miles Laboratory
Liqun Fu	M.S.. 1990	Detroit Central Tool
Ronald Rice	Ph.D.. 1990	Procter & Gamble
Daniel C. Alsmever <sup>d</sup>	Ph.D.. 1992	Eastman Chemical
Yan Wang Alsmever <sup>d</sup>	Ph.D.. 1992	Eastman Chemical
Li Li	M.S.. 1992	Procter and Gamble
Nicholas Pontikos	Ph.D.. 1992	Seagate Technology
Christie McDermott <sup>a,c</sup>	Ph.D.. 1992	University of Alberta
Mark McDermott <sup>d</sup>	Ph.D.. 1993	University of Alberta
Kristin Kneten Cline <sup>d</sup>	Ph.D.. 1993	Wittenberg University
Daniel Zavitz	M.S.. 1993	high school teacher. N.Y.
Christopher J. Frank <sup>b,e</sup>	Ph.D.. 1994	Procter & Gamble
Wenhua Huang	Ph.D.. 1994	Mechanical Technologies
Mark Frvling <sup>d</sup>	Ph.D.. 1994	General Mills
Olivier Schueller	Ph.D.. 1995	Harvard Univ.postdoc
Mark Kagan <sup>f</sup>	Ph.D. 1996	International Paper
Peihong Chen	Ph.D. 1996	Smith. Kline. Beecham
Angela Horn	M.S. 1996	Pharmacy Graduate School
Yi-Chun Liu	Ph.D. 1997	Headway Technology
Jun Zhao	Ph.D. 1997	Chromex. Inc.
Kristin Frost	M.S. 1998	Law School
Kenneth Rav	Ph.D. 1998	Exxon. Houston
Tzu-Chi Kuo	Ph.D. 1999	Dow Chemical Co.
Hsueh-Hui Yang	Ph.D. 2000	Industrial Position in Taiwan
Lin Xia	PhD 2000	Wveth Labs
Stacy DuVall	PhD 2000 <sup>d</sup>	Roche Pharmaceutical

Jeremv Ramsev	PhD. 2001 <sup>d</sup>	Naval Research Lab
Srikanth Ranganathan	PhD 2001	General Electric. India
William Clark	PhD 2002	Wittenberg University
Franklin Anariba	PhD 2005	Singapore Nanotech
Aletha Nowak	PhD 2004	Procter and Gamble
William McGovern	PhD 2005	Ashland Chemical
Haihe Liang	M.S. 2006	Semiconductor industrv
Hong Tian	PhD 2008	Postdoctoral research
Jing Wu	PhD 2008	Postdoc, U Texas Austin

- a. University Fellow
- b. Winner of Chemistry Dissertation Award (one winner/year)
- c. Awarded ACS Analytical Chemistry Fellowship (4/year nationally)
- d. Industrial Fellowship for Dissertation Year
- e. Winner of Society of Applied Spectroscopy National Student Award (one/year nationally)
- f. Presidential fellow

### **INVITED LECTURES AT SCIENTIFIC MEETINGS**

- 1975: 1. ACS National Meeting, Philadelphia, Symposium on Biological Electrochemistry  
2. First Chemical Congress of The North American Continent, Symposium on Chemistry of Electrode Surfaces
- 1976: Gordon Conference on Analytical Chemistry, New Hampshire
- 1977: Electrochemical Society National Meeting, Philadelphia, Symposium on Future Aspects of Electrochemistry
- 1978: ACS Regional Meeting, Indianapolis, Symposium on Analytical Electrochemistry
- 1980: Electrochemical Society National Meeting, St. Louis, Symposium on Organic Electrochemistry
- 1981: 1. National ACS meeting, Atlanta, Symposium on Biological Electrochemistry  
2. National Electrochemical Society Meeting, Minneapolis, Symposium on Spectro-electrochemistry of Biological Systems
- 1982: 1. ACS National meeting, symposium to honor Ralph Adams  
2. National Electrochemical Society meeting, two lectures in symposium on Biological

### Redox Systems

3. Gordon Conference on Analytical Chemistry
  4. ACS course on surface science, lecture on Raman Spectroscopy
- 1983: Organizer and chairman of a symposium entitled "Mechanistic and Analytical Electrochemistry of Biological Systems," Regional ACS meeting, Oxford, Ohio
- 1984: 1. Pittsburgh Conference, First Reilley award symposium  
2. 165th Electrochemical Society National Meeting, Cincinnati, two lectures in symposia on microelectrodes and bioelectrochemistry  
3. American Chemical Society Summer Analytical Symposium, Washington  
4. Eastern Analytical Symposium, New York
- 1985: 1. Pittsburgh Conference, New Orleans  
2. International Electroanalytical Symposium, Chicago
- 1986: 1. Gordon Conference on Electrochemistry  
2. NSF Microelectrode workshop, Salt Lake City  
3. National ACS meeting, New York  
4. Organized and chaired a symposium on Biological Electrochemistry, Regional ACS meeting, Bowling Green, Ohio  
5. Speaker at Local ACS Meeting, Evansville, Indiana  
6. Academy of Pharmaceutical Science National Meeting, Washington
- 1987: 1. Eastern Analytical Symposium, New York  
2. Organized Spectroelectrochemistry Symposium for Japanese/American Electrochemical Society Meeting, Honolulu  
3. National Capital Electrochemical Society Meeting, Washington, D.C.
- 1988: 1. Society of Analytical Chemistry of Pittsburgh (Joint with local Electrochemical Society meeting)  
2. Chairman and Speaker, Fifth Reilley Award Symposium, Pittsburgh Conference on Analytical Chemistry, New Orleans  
3. Third Chemical Congress of North America, Toronto  
4. ACS Summer Analytical Symposium, Stanford University  
5. International Society of Electrochemistry, Glasgow  
6. National ACS meeting, Los Angeles  
7. FACSS meeting, Boston (2 lectures)
- 1989: 1. Gordon Conference on Electrochemistry, Ventura, California  
2. Society of Applied Spectroscopy, Cincinnati, OH  
3. Pittsburgh Conference on Analytical Chemistry, Atlanta, GA.  
4. ACS Summer Analytical Symposium, Blacksburg, VA  
5. Gordon Conference on Analytical Chemistry, New Hampshire  
6. Organizer of Kendall Award Symposium, ACS National Meeting, Dallas, TX.  
7. Symposium on Modified Electrodes, ACS National Meeting, Dallas, TX

8. Conference on Modern Methods in Electrochemistry, Bielsko, Poland
  9. Japan/U.S. Spectroelectrochemistry Symposium, Honolulu
  10. Organizer and Speaker, Electrochemical Society National Meeting, Hollywood, Florida, (speaker in symposia on sensors, in-situ electrode characterization and high speed electrochemistry)
  11. ACS National Meeting, Miami, Electrochemistry Award Symposium
- 1990:
1. ACS National Meeting, Washington, Symposium on Diode Lasers
  2. Gordon Conference on Vibrational Spectroscopy, New Hampshire
  3. ACS Frontiers of Chemistry: Materials by Design conference, Columbus
  4. International Conference on Scientific Imaging, Cayman Islands
- 1991:
1. Symposium on Solid Electrodes, ACS National Meeting, Atlanta
  2. Symposium on Fundamental Processes, Electrochemical Society National Meeting, Washington
  3. Pittsburgh Spectroscopy Award Symposium (honoring R.P. Van Duyne), Pittsburgh Conference, Chicago
  4. FACSS, Anaheim, symposia on array detectors and Surface Raman Spectroscopy
  5. DOE Symposium on Oxygen Reduction and In-situ spectroelectrochemistry, Cleveland
- 1992:
1. SPIE, Los Angeles, symposium on laser applications in analytical spectroscopy
  2. Pittsburgh Conference, New Orleans, symposia on diode lasers and carbon materials.
  3. FACSS, Philadelphia, Symposium on Industrial Raman Spectroscopy
  4. Conference on Scientific Imaging, Cayman Islands
- 1993:
1. Gordon Conference on Electrochemistry, Ventura
  2. Pittsburgh Conference, symposium on array detectors in spectroscopy, Atlanta
  3. Central Regional ACS meeting, Pittsburgh
  4. Electrochemical Society National Meeting, New Orleans
  5. Eastern Analytical Symposium, New York
- 1994:
1. Engineering Foundation Conference on Interfacial Phenomena, Kona, Hawaii
  2. Association of Official Analytical Chemists National Meeting, Philadelphia
- 1995:
1. SPIE National meeting, Symposium on Biomedical Optics, San Jose
  2. FACSS National Meeting, Cincinnati, Three invited symposium presentations
  3. National AOAC meeting, Nashville, Symposium on Raman Spectroscopy
- 1996:
1. European Science Foundation Workshop, Copenhagen
  2. International Conference on Raman Spectroscopy, Pittsburgh
  3. Electrochemical Society, Cleveland section
  4. FACSS National Meeting, Kansas City, three invited symposium presentations
- 1997:
1. Great Lakes Regional ACS meeting, Midland, Michigan
  2. Joint International Society of Electrochemistry/Electrochemical Society Meeting,

Paris, France

3. FACSS National Meeting, short course on Raman Spectroscopy, and Symposium on Industrial Raman spectroscopy, Providence, Rhode Island
  4. Eastern Analytical Symposium, Somerset, New Jersey
  5. American Association of Pharmaceutical Science, short course on Raman spectroscopy
  6. Electrochemistry of Carbon and Its Allotropes, Cleveland, Speaker and advisory board
- 1998:
1. Pittsburgh conference, New Orleans
  2. Heyrovsky Discussions, Prague, Plenary Lecturer
  3. Symposium on Diamond Electrodes, Tokyo, principal speaker
  4. FACSS National Meeting, symposia on Biomedical spectroscopy and drug analysis
- 1999:
1. American Chemical Society, Columbus Section
  2. Electrochemical Society National Meeting, Seattle, 3 invited talks
  3. Japanese Society of Analytical Chemistry National Meeting, Kobe
  4. Society of Applied Spectroscopy, Chicago Section, Workshop on Raman Spectroscopy
  5. FACSS National meeting, short course on Analytical Raman Spectroscopy
- 2000:
1. Gordon Conference on Aqueous Corrosion
  2. Gordon Conference on Synthetic Diamond Films
  3. From Femto to Tera-amps Conference, Southampton, England
  4. Central Region ACS meeting, Covington, KY, symposium on biosensors
  5. Awards Symposium, National ACS meeting, Washington, DC.
  6. Electrochemical Society National Meeting, Phoenix, symposia on Carbon electrodes and Aqueous Corrosion
- 2001:
1. AFOSR Review meeting on aqueous corrosion, Florida
  2. Process Analytical Chemistry Meeting, Wilmington, Delaware
- 2002:
1. Tri-Service Corrosion Conference, San Antonio
  2. Pittcon 2002, New Orleans, Symposium on Long Range Electron Transfer
  3. CIMTEC 2002 conference on advanced materials, Florence, Italy
  4. XVI National Chemistry Conference, Konya, Turkey
  5. National Electrochemical Society meeting, Salt Lake City, two symposia
- 2003:
1. Gordon Conference on Electrochemistry, Ventura, CA
  2. Pittcon 2003, Orlando, C.N. Reilley Award Address
  3. Pittcon 2003, Organizer of two Nanostructures symposia, speaker in one.
  4. Alberta regional ECS meeting, Edmonton
  5. Tri-service Corrosion Conference, Las Vegas
  6. Eastern Analytical Symposium, Somerset, New Jersey
  7. Miami Nanotechnology Symposium, Oxford, Ohio



- 2004: 1. Electrochemical Society National Meeting, San Antonio  
2. Carbon 2004, Providence, R.I., Keynote lecture  
3. International Conference on Electrode Processes, Szczyrk, Poland
- 2005: 1. Pittcon 2005, Orlando, Symposium on Carbon Surface Chemistry  
2. Pittcon 2005, Organizer of Ralph N. Adams Award symposium  
3. Frontiers in Nanoscience, Snowbird, Utah  
4. Carbons for a Green Planet, Pennsylvania State University  
5. Faraday Discussion on Molecular Wires, Manchester, England  
6. Federation of Analytical Chemistry and Spectroscopy Societies  
National Meeting, Quebec City
- 2006: 1. ECHEMS meeting, La Palma, Spain, Keynote lecture  
2. Symposium on Analytical Chemistry, Canakkale, Turkey, Plenary Lecture  
3. Electrochemical Society International Meeting, Cancun
- 2007: 1. Third International Conference on Advanced Materials and Nanotechnology  
Wellington, New Zealand, Plenary lecture  
2. Canadian Society of Chemistry Annual Meeting, - Post-Modern Electrochemistry”  
Symposium, Winnipeg  
**Error! Reference source not found.**, Purdue University  
4. **Error! Reference source not found.**, Chemistry of Electronic Materials  
Mount Holyoke College, Massachusetts  
5. China/Canada Symposium on Analytical Chemistry, Edmonton  
6. Nanotechnology short course, National Institute for Nanotechnology  
7. International Society of Electrochemistry, Banff, tutorial on Nanotechnology  
8. Materials Research Society, symposium on carbon electronics, Boston
- 2008: 1. International Society for Theoretical Chemical Physics, Vancouver,  
Plenary Lecture.  
2. 20<sup>th</sup> Canadian Materials Science Conference, Edmonton  
3. Canadian Society of Chemistry, organized symposium on Nanoscale  
Phenomena in Electrochemistry  
4. Gordon Research Conference on Electrodeposition  
5. American Chemical Society National Meeting, Philadelphia  
6. Analytical Chemistry Conference, Hsinchu, Taiwan  
7. International Chemical Conference, Taipei, Taiwan, Plenary Lecture
- 2009: 1. Pittcon 2009 Symposia, Chicago, Invited Speaker  
2. ISE 7<sup>th</sup> Spring Meeting, Szczyrk, Poland, Plenary Lecture

## **INVITED SEMINARS AND COLLOQUIA**

1977: University of Cincinnati

1978: University of Delaware

1980: 1. University of Kansas  
2. University of Oklahoma  
3. University of California, Riverside  
4. Technicon Instruments, New York

1981: 1. University of North Carolina, Chapel Hill  
2. University of Southampton, England

1982: 1. Indiana University  
2. Texas A&M University

1984: 1. Chevron Research Company  
2. Youngstown State University  
3. University of Pittsburgh  
4. Northwestern University  
5. Smith, Kline and French, Philadelphia

1985: 1. Dow Chemical, Michigan  
2. Pennsylvania State University  
3. University of Tennessee  
4. Duquesne University  
5. University of Kansas

1986: 1. Kent St. University  
2. Stanford University Industrial Affiliates Program  
3. University of California, Berkeley  
4. Utah State University  
5. University of Utah  
6. University of Nebraska  
7. University of Kansas

1987: 1. State University of New York, Buffalo  
2. University of Texas, Austin  
3. Texas A&M University  
4. University of Houston  
5. University of West Virginia  
6. National Bureau of Standards

- 1988: 1. Purdue University  
2. Iowa State University (departmental and divisional lectures)  
3. Case Western Reserve University  
4. Union Carbide, Parma, OH
- 1989: 1. University of Cincinnati  
2. University of Delaware  
3. Tufts University  
4. IBM, Endicott, New York  
5. University of Warsaw, Poland  
6. University of Southampton, England  
7. University of Michigan
- 1990: 1. University of Arizona  
2. University of California, Riverside (dept and divisional)
- 1991: 1. Guelph-Waterloo Graduate Center  
2. Chromex Corporation, Albuquerque  
3. Bell Communications Research  
4. Indiana U. Purdue U., Indianapolis  
5. Indiana University, Bloomington  
6. Ohio University, Athens
- 1992 1. Kansas State University  
2. University of Kansas  
3. Dow Chemical Company, Midland
- 1993: 1. University of Florida  
2. University of North Carolina, Chapel Hill  
3. Duke University  
4. Los Alamos National Laboratory  
5. Kansas State University
- 1994: 1. Northwestern University  
2. University of New Mexico  
3. Pennsylvania State University (SACP lecturer)  
4. Michigan State University  
5. Texas A&M University  
6. University of Utah  
7. University of Wyoming  
8. Massachusetts Institute of Technology  
9. Hoffman LaRoche, Nutley, N.J.  
10. Union Carbide, Charleston, W.V.

- 1995: 1. Society of Applied Spectroscopy Tour Speaker, California, Nevada, Arizona, New Mexico Sections  
2. Wabash College  
3. Acton Corporation, Boston  
4. Chromex, Inc, Albuquerque
- 1996: 1. University of South Dakota, Haines Lecture  
2. Florida State University  
3. University of Louisville  
4. Symposium on Biosensor Interfaces, University of Tuebingen, Germany
- 1997: 1. University of Oklahoma, J. Clarence Karcher Lecture  
2. Abbott Laboratories, Chicago  
3. Procter and Gamble, Cincinnati, short course on Raman Spectroscopy  
4. National Institute on Standards and Technology  
5. Bowling Green State University, Ohio
- 1998: 1. University of Georgia  
2. Illinois State University  
3. University of Tokyo  
4. Waseda University, Tokyo  
5. Utah State University  
6. Air Force Institute of Technology
- 1999: 1. University of Kyoto, Japan  
2. Southern Illinois University  
3. Seoul National University, Korea  
4. Sogang University, Korea  
5. Northwestern University
- 2000: 1. Iowa State University  
2. Clemson University
- 2001: 1. University of California, Riverside, Analytical seminar  
2. Northwestern University Theory Seminar
- 2002: 1. University of California, Riverside, departmental colloquium
- 2003: 1. University of Wisconsin, Madison  
2. Iowa State University, departmental and divisional seminars  
3. University of Alberta, Edmonton  
4. ZettaCore, Inc., Denver
- 2004: 1. University of California at Irvine, seminar  
2. Washington State University, seminar

3. University of California, San Diego, seminar
  4. California Institute of Technology, Pasadena, seminar
  5. University of Oregon, Eugene, seminar
  6. National Institute of Standards and Technology, CSTL colloquium
  7. University of Vermont, Department of Chemistry
- 2005:
1. University of West Virginia, Department of Chemistry
  2. Applied Materials, Santa Clara, California
  3. Stanford University
  4. University of Manitoba
  5. University of Alberta/National Institute for Nanotechnology
  6. North Carolina State University
  7. University of North Carolina, Chapel Hill
  8. Vanderbilt University, Conover Lecture
- 2006:
1. Arizona State University
  2. University of Arizona
  3. University of Northern Florida
  4. ZettaCore, Inc.
- 2007:
1. University of Victoria, British Columbia
  2. Steacie Institute for Molecular Sciences, Ottawa
  3. Biomedical Research Institute, Montreal
- 2008:
1. University of Lethbridge, Canada
  2. Molecular Forum Lecture, Chinese Academy of Sciences, Beijing
  3. Xiamen University, China
  4. University of Calgary
- 2009:
1. University of Twente, Netherlands
  2. High Tech Campus, Netherlands
  3. Michigan State University
  4. University of Guelph
  5. Xerox Research Corporation of Canada

**Extramural Research Grants Received:**

(RLM was sole principal investigator unless noted otherwise)

Research Corporation	Electrochemistry of Catecholamines 1974-75	\$6,600
NIMH	Electrochemistry of Psychoactive Drugs, 1976-78	\$38,501
NIMH	Electrochemistry of Psychoactive Drugs, 1978-81	\$87,874
NSF	Diffraction Spectroelectrochemistry 3/1/79 - 2/28/82	\$128,680
Alfred P. Sloan Fellowship	1981-85	\$20,000
NSF	Diffraction Spectroelectrochemistry 4/1/82 - 9/30/85	\$185,477
Technicon Instruments	Trace Organic Analysis by a Combination of Optical and Electrochemical Methods 4/1/81 - 5/31/83	\$51,963
NSF	Raman and Spatially Resolved Spectroelectrochemistry 7/1/85 - 12/31/88	\$289,621
Chevron Research Company	Unrestricted gift 1982-85	\$22,500
NSF (Materials Research)	Materials Research Laboratory, Charge Transfer at Interfaces. RLM was one of 14 P.I.'s in a project totaling \$2.27 M over 6 years. Total amount directly to RLM group for the period 7/1/81 - 7/1/88	\$238,900
Petroleum Research Fund	Laser Activation of Electro-chemical Processes 9/1/86 - 8/31/89	\$52,500
Ohio Research Challenge	Spectroscopy of Electrode/Solution Interfaces 6/1/86 - 10/1/87 (Joint with Gordon Renkes, Ohio Northern University)	\$37,570
Dow Chemical Company	Unrestricted gifts for Fiber Optic Raman Research 1985 – 89	\$39,000

Air Force Office of Scientific Research	Laser Activation of Electrochemical Charge Transfer Kinetics 12/1/87 - 11/30/90	\$398,519
Air Force Office of Scientific Research	Symposium on Spectroelectrochemistry, Honolulu 11/19/87-11/20/87	\$4,300
NSF (Analytical Chemistry)	Raman and Spatially Resolved Spectroelectrochemistry 2/15/89 - 1/30/92	\$215,372
NSF (Materials Chemistry)	Doped Glassy Carbon Materials: Their Synthesis and Investigation of Their Properties, 9/1/90-8/31/94 (Joint with Matthew Callstrom and Thomas Neenan. \$352K total, \$93K for McCreery group)	\$93,000
Air Force Office of Scientific Research	In-situ Laser Activation of Electrochemical Charge Transfer Kinetics, 3/1/91- 2/28/94	\$450,265
NSF (Analytical Chemistry)	Surface Raman Spectroelectrochemistry of Carbon Electrodes, 4/1/92-3/31/95	\$227,000
Hoffman La Roche	Unrestricted gift 12/94-12/95	\$12,000
William Keck Foundation	Multiuser Vibrational Spectroscopy Facility. (RLM is PI, co-PI's: P.Dutta, T. Gustafson, U. Ozkan), 1/95-12/95 (\$180K additional OSU contribution)	\$450,000
NSF (Analytical and Surface Chemistry)	Surface Raman Spectroelectrochemistry of Carbon Electrodes 4/1/95 - 3/31/98	\$281,000
NSF (Small Business Technology Transfer)	Development of on-line Raman Spectrometer for the Pharmaceutical Industry, 9/1/95-8/31/96	\$52,500
Air Force Office of Scientific Research	Mechanism of Aluminum Alloy Corrosion and the Role of Chromate Inhibitors, 9/1/96-8/31/01, \$5 million for eight investigators	\$950,000 (to RLM group)
NSF (Analytical and Surface Chemistry)	Raman Spectroscopy and Electrochemical Reactivity of Carbon Electrodes, 3/1/99-2/28/02	\$404,000

Strategic Environmental Research and Development Program	Critical Factors for the Transition from Chromate to Chromate-Free Corrosion Protection, 2/1/99- 1/31/03, Six investigators, \$1.46 million total	\$200,000 (to RLM group)
Air Force Office of Scientific Research	Instrumentation for Corrosion characterization and monitoring	\$133,000 (to RLM group)
NSF Instrumentation for Materials Research	Acquisition of multiuser X-ray Photoelectron Spectrometer 9/1/01 - 8/31/01	\$600,000 total (\$300K from NSF, RLM was PI, with 4 co-PI's)
NSF (Analytical and Surface Chemistry)	Raman Spectroscopy of Carbon based Molecular Electronic Junctions 10/1/02-12/31/05	\$476,000
Air Force Office of Scientific Research	Mechanisms and Inhibition of Oxygen Reduction on Lightweight Alloys 7/1/02 to 12/31/05	\$437,960 (G.Frankel, co-PI)
ZettaCore, Inc	Charge storage in molecular junctions with carbon, silicon, and metallic contacts. 1/1/03 to 12/31/05	\$470,000
ZettaCore, Inc	Molecular Memory (in Alberta) 11/1/06 to 12/31/07	\$85,000 USD
NSF (Analytical and Surface Chemistry)	In-situ spectroscopy of carbon-based molecular electronic junctions 1/1/06-12/31/08	\$539,000 USD
Alberta Ingenuity Scholar Award	Hybrid Microelectronics based on Molecular Heterojunctions, 9/1/2006 – 8/31/2011	\$1,066,000 (CAD) \$300,000 UofA match
CFI/Alberta Equipment grant program	Hybrid Device Facility August 2007- July 2008	\$611,912 (CAD)
NSERC Discovery Grant	Optical Properties of Molecular Electronic Junctions, April 1, 2007 – March 31, 2010	\$186,000 (CAD)
National Research Council Nanotechnology program	Unification of Molecular and Conventional Electronics (4 PIs) October 2008-March 2011	\$125,00 (CAD) to RLM group