

CURRICULUM VITAE

CHARLES R. MARTIN

Colonel Allan R. and Margaret G. Crow Professor of Chemistry
Fellow of the Electrochemical Society
University Distinguished Professor
Professor of Anesthesiology
Director, Center for Research at the Bio/Nano Interface
Senior Editor, *Nanomedicine*
University of Florida
Gainesville, FL 32611
352-392-8205
crmartin@chem.ufl.edu

FORMAL HIGHER EDUCATION

Postdoctoral - University of Texas at Austin, 1980 to 1981.
Research Advisor - Allen J. Bard.

Graduate - University of Arizona, 1975 to 1980.
Research Advisor - Henry Freiser. Ph.D. in Chemistry, September 1980.

Undergraduate - Centre College of Kentucky, 1971 to 1975. B.S. in Chemistry, June 1975.
Graduated with high distinction, Phi Beta Kappa.

PROFESSIONAL APPOINTMENTS

University of Florida

University of Florida Distinguished Professor, July 2006 to present.
University of Florida Research Foundation Professorship, March 2005 – February 2008.
Department of Anesthesiology, Professor, September 2003 to present.
Department of Chemistry - Colonel Allan R. and Margaret G. Crow Professor of Chemistry,
September 2003 to present. Professor of Chemistry, August 1999 to present.
Director – Center for Research at the Bio/Nano Interface, January 2000 to present.

Department of Chemistry, Colorado State University - Professor, July 1990 to July 1999.

Department of Chemistry, Texas A&M University - Professor, April 1989 to June 1990. Assoc.
Professor, September 1986 to March 1989. Assist. Professor, September 1981 to August 1986.

HONORS

Awards

Charles N. Reilley Award of the Society for Electroanalytical Chemistry, March 2009

Senior Faculty Research Award, University of Florida Chapter of Sigma Xi, March 2008

Nano 50 Award from Nanotech Briefs, June 2007

University of Florida Distinguished Professor, July 2006 to present

Finalist for 2006 World Technology Award in Materials and Fellow of the World Technology Network

ISI's Highly Cited Author Ranking in Materials Science, 2005 <http://isihighlycited.com/>

Finalist, Feynman Award in Experimental Nanotechnology, 2005

Fellow of the Electrochemical Society, 2005

University of Florida Research Foundation Professorship, 2005-2008

Florida Award of the Florida Section of the American Chemical Society, May 5, 2005

Colonel Allan R. and Margaret G. Crow Professorship in Chemistry, 2004

Carl Wagner Memorial Award of the Electrochemical Society, October 20, 1999

National Research Council Travel Award for attending the 30th International Congress of Pure and Applied Chemistry, Manchester, United Kingdom, September 9-13, 1985

ACS award for outstanding local ACS membership drive, January 1984

Robert A. Welch Fellow, University of Texas at Austin, 1980

Graduated with High Distinction, Centre College, 1975

Phi Beta Kappa - Centre College, 1975

Nelson Allen Undergraduate Chemistry Award, Centre College, 1974

Journal Editor

Senior Editor for the journal *Nanomedicine*, April 1, 2006 to present

Editorial Advisory Boards

Chemistry of Materials, January 1997 to December 2002

Advanced Materials, March 1998 to April 2008

Small, April 2004 to April 2008

Nanomedicine, December 2005 to present

Journal of Bionanoscience, January 2006 to present

Current Drug Discovery Technologies January 2008 to present

Science of Advanced Materials July 2008 to present

Lectureships

Hansen-Walkup Lecture, Centre College, Danville, Kentucky, October 30, 1989. "Electronically Conductive Polymers."

Graves Science Lecture, Shenandoah College, Winchester, Virginia, February 23, 1990. "Micro and Nanostructures in Chemistry, Electrochemistry and Materials Science."

Kilpatrick Symposium on Nanoscience and Technology, Illinois Institute of Technology, Chicago, IL, October 3, 2001. "Nanotube Membranes for Bioseparations and Sensors."

Lubrizol Lecture, 61st Frontiers in Chemistry Lecture Series, Case Western Reserve University, Cleveland, OH, March 28, 2002. "Templated Nanotubes in Chemical and Bioseparations and Analysis."

Velmer A. Fassel Lecture, Iowa State University, Ames, Iowa, May 24, 2002. "The Bio/Nano Interface – Templated Nanotubes for Bioseparations and Sensors."

Frontiers in Chemical Research, Texas A&M University, November 1-3, 2004, "Template Synthesis of Nanomaterials."

"XYZ for the rest" of us plenary lecture, Electrochemical Society meeting, Denver, CO, May 7, 2006, "Bio/Nanoscience and Electrochemistry for the Rest of Us."

Pittsburgh Conference Lectures, University of Pittsburgh, Pittsburgh, PA May 7 and 8, 2007, "Nanoscience in Bioanalytical Chemistry: Parts 1 and 2."

PROFESSIONAL AND SCIENTIFIC SOCIETIES

American Chemical Society
Electrochemical Society
Society for Electroanalytical Chemistry
American Association for the Advancement of Science

CONTRACTS AND GRANTS

"Nanotube Biosensors for Protein-Toxin Analytes," C.R. Martin, PI. Army Research Office, \$390,000, October 1, 2006 to December 31, 2009.

"Semiochemical-Mediated Nano-Taggants," Y.C Cao, PI, C.R. Martin co-PI. Office of Naval Research, \$1,087,637, November 1, 2008 to October 31, 2011. Martin commitment is \$350,000.

"Center of Excellence, Center for Nano/Bio Sensors," B. Moudgil, PI. State of Florida, April 1 2007 to March 3, 2010. Martin commitment is \$150,000.

"Science of Precision Multifunctional Nanostructures for Electrical Energy Storage," G. Rubloff, (University of Maryland), PI, C.R. Martin, co-PI. Department of Energy, Energy Frontier Research Centers. August 1, 2009 to July 31, 2014, Martin commitment, \$150,000 per year.

"Integrative Approaches To Discover Pathogenesis-Associated Proteins From The Causal Agent Of Citrus Greening Disease And Build New Diagnostic Tools," E.W. Triplett, PI. Florida Citrus Advanced Technology Program, June 1, 2009 to May 31, 2012, , \$930,311. Martin commitment \$100,000 per year.

PUBLICATIONS

Ten especially important papers. The complete list is below.

1. Martin, C.R.; Siwy, Z.S. "Learning Nature's Way - Biosensing with Synthetic Nanopores," *Science*, **2007**, 317, 331-332.
2. Sexton, L.T.; Horne, L.P.; Sherrill, S.A.; Bishop, G.W.; Baker, L.A.; Martin, C.R. "Resistive-Pulse Studies of Proteins and Protein/Antibody Complexes Using a Conical Nanotube Sensor," *J. Am. Chem. Soc.*, **2007**, 129, 13144 - 13152.
3. Siwy, Z.; Kosinska, I.D.; Fulinski, A.; Martin, C.R. "Asymmetric Diffusion through Synthetic Nanopores," *Phys. Rev. Lett.* **2005**, 94, 048102, 1-4.

4. Kohli, P.; Harrell, C.C.; Cao, Z.; Gasparac, R.; Tan, W.; Martin, C.R. "DNA Functionalized Nanotube Membranes with Single-Base Mismatch Selectivity," *Science*, **2004**, 305, 984-986.
5. Martin, C.R.; Kohli, P. "The Emerging Field of Nanotube Biotechnology," *Nature Reviews Drug Discovery*, **2003**, 2, 29-37.
6. Lee, S.B.; Mitchell, D.T.; Trofin, L.; Nevanen, T.K.; Soderlund, H.; Martin, C.R. "Antibody-Based Bio/Nanotube Membranes for Enantiomeric Drug Separations," *Science*, **2002**, 296, 2198-2200.
7. Che, G.; Fisher, E.R.; Martin, C.R. "Carbon Nanotubule Membranes for Electrochemical Energy Storage and Production," *Nature*, **1998**, 393, 346-349.
8. Jirage, K.B.; Hulteen, J.C.; Martin, C.R. "Nanotubule-Based Molecular-Filtration Membranes," *Science*, **1997**, 278, 655-658.
9. Nishizawa, M.; Menon, V. P.; Martin, C. R. "Metal Nanotubule Membranes with Electrochemically Switchable Ion-Transport Selectivity," *Science*, **1995**, 268, 700-702.
10. Martin, C. R. "Nanomaterials - A Membrane-Based Synthetic Approach," *Science*, **1994**, 266, 1961-1966. This paper has been cited over 1,700 times.

Complete Publication List

1. Mukaibo, H.; Johnson, E.A.; Martin, C.R. "Gene Delivery to the *Chlamydomonas Reinhardtii* Chloroplast using Template-Synthesized Gold Microneedle Arrays," *J. Am. Chem. Soc.* Submitted.
2. Mukaibo, H.; Horne, L.P.; Park, D.; Martin, C.R. Controlling the length of conical pores etched in ion-tracked polyethylene terephthalate (PET) membranes," *Small*, **2009**, 5.
3. Martin, C.R. "How We Got Here, Where We Are Going And Being A Cog In Something Turning," *Nanomedicine*, **2009**, 4, 1,2.
4. Kececi, K. Sexton, L.T.; Buyukserin, F.; and Martin, C.R. "Resistive-Pulse Detection of Short Double-Stranded DNAs Using a Chemically Functionalized Conical Nanopore Sensor," *Nanomedicine*, **2008**, 3, 787-796.
5. Wang, J; Martin, C.R. "A New Drug-Sensing Paradigm Based On Ion-Current Rectification In A Conically Shaped Nanopore," *Nanomedicine*, **2008**, 3, 13-21.
6. Buyukserin, F.; Medley, C.D.; Mota, M.O.; Kececi, K.; Rogers, R.R.; Tan, W.; Martin, C.R. "Antibody Functionalized Nano Test Tubes Target Breast Cancer Cells," *Nanomedicine*, **2008**, 3, 283-392.
7. Sexton, L.T.; Horne, L.P.; Sherrill, S.A.; Bishop, G.W.; Baker, L.A.; Martin, C.R. "Resistive-Pulse Studies of Proteins and Protein/Antibody Complexes Using a Conical Nanotube Sensor," *J. Am. Chem. Soc.*, **2007**, 129, 13144 - 13152.
8. Sexton, L.T.; Horne, L.P.; Martin, C.R. "Biosensing with Nanopores and Nanotubes," in "Molecular- and Nano-Tubes," Oliver Hayden, Ed. Springer, **2007**.
9. Martin, C.R.; Siwy, Z.S. "Learning Nature's Way - Biosensing with Synthetic Nanopores," *Science*, **2007**, 317, 331-332.

10. Sexton, L.T.; Horne, L.P.; Martin, C.R. "Developing Synthetic Conical Nanopores for Biosensing Applications," *Molecular BioSystems*, **2007**, 3, 667-685.
11. Xu, F.; Wharton, J.E.; Martin, C.R. "Template Synthesis of Carbon Nanotubes with Diamond-Shaped Cross-Sections," *Small*, **2007**, 3, 1718-1722.
12. Buyukserin, F.; Kohli, P.; Wirtz, M.O.; Martin, C.R. "Electroactive Nanotubes Membranes and Redox-Gating," *Small*, **2007**, 3, 266-270.
13. Wharton, J.E.; Sexton, L.T.; Jin, P.; Horne, L.P.; Sherrill, S.A.; Mino, W.K.; Martin, C.R. "A Method For Reproducibly Preparing Synthetic Nanopores For Resistive-Pulse Biosensors," *Small*, **2007**, 3, 1424-1430.
14. Baker, L.A.; Martin, C.R. "Nanotube-Based Membrane System," in *Nanotechnology for Biology and Medicine*, Tuan Vo-Dinh, Ed. CRC Press: Boca Raton, **2007**; Chapter 9.
15. Ervin, E.N.; White, H.S.; Baker, L.A.; Martin, C.R. "A.C. Impedance Imaging of High-Resistance Membrane Pores using a Scanning Electrochemical Microscope. Application of Membrane Electrical Shunts to Increase Measurement Sensitivity and Image Contrast," *Anal. Chem.* **2006**, 78, 6535-6541.
16. Martin, C.R. "*Nanomedicine* - A great first year, and with your help, a bright future ahead," *Nanomed.* **2007**, 2, 265-266.
17. Buyukserin, F.; Kang, M.; Martin, C.R. "Plasma-Etched Nanopore Polymer Films and their use as Templates to Prepare Nano Test Tubes," *Small*, **2007**, 3, 106-110.
18. Baker, L. A.; Martin, C. R. "Nanotube Membranes for Biotechnology," in *NanoBioTechnology: bioinspired devices and materials of the future*, I. Levy; O. Shoseyov Eds. Humana Press, NJ, **2007**.
19. Siwy, Z.S.: Martin, C.R. "Tuning Ion Current Rectification in Synthetic Nanotubes," *Lecture Notes in Physics* (Springer), in press. in H. Linke and Alf Månsson (Eds.): *Controlled Nanoscale Motion*, Lecture Notes in Physics Vol. 711, p. 349-366, Springer, Berlin and Heidelberg, **2007**.
20. Hillebrenner, H.; Buyukserin, F.; Stewart, J.; Martin, C.R. "Biofunctionalization and Capping of Template Synthesized Nanotubes," *J. Nanosci. Nanotech.*, **2007**, 7, 2211-2221.
21. Choi, Y.; Baker, L.A.; Hillebrenner H.; Martin, C.R. "Biosensing with Conically Shaped Nanopores and Nanotubes," *Phys. Chem. Chem. Phys.*, **2006**, 8, 4976 - 4988.
22. Scopece, P.; Baker, L.A.; Ugo, P.; Martin, C.R. "Conical Nanopore Membranes: Solvent Shaping of Nanopores," *Nanotechnology*, **2006**, 17, 3951-3956.
23. Hillebrenner, H.; Buyukserin, F.; Stewart, J.D.; Martin, C.R. "Template Synthesized Nanotubes for Biomedical Delivery Applications," *Nanomedicine* **2006**, 1, 39-50.
24. Martin, C.R. "Welcome to *Nanomedicine*," *Nanomedicine* **2006**, 1, 5.
25. Harrell, C.C.; Choi, Y.; Baker, L.A.; Siwy, Z.S.; Martin C.R. "Resistive-Pulse DNA Detection with a Conical Nanopore Sensor," *Langmuir*, **2006**, 22, 10837-10843.
26. Hillebrenner, H.; Kang, M.; Buyukserin, F.; Motta, M.; Stewart, J.D.; Martin, C.R. "Corking Nano Test Tubes by Chemical Self-Assembly," *J. Am. Chem. Soc.* **2006**, 128, 4236-4237.

27. Martin, C.R.; Sides, C.R.; Xu F., "Toward a 3D Nanostructured Battery," *Electrochemical Society Transactions*, **2006**, 1, 13-36.
28. Baker, L.A.; Choi, Y.; Martin, C.R. "Nanopore Membranes for Biomaterials Synthesis, Biosensors and Bioseparations," *Curr. Nanosci.* **2006**, 2, 243-255.
29. Harrell, C.C.; Siwy, Z.; Martin, C.R. "Conical Nanopore Membranes – Controlling the Nanopore Shape," *Small*, **2006**, 2, 194-198.
30. Martin, C.R.; Baker, L.A. "Expanding the Molecular Electronics Toolbox," Invited Commentary, *Science*, **2005**, 309, 67,68.
31. Heins, E.A.; Siwy, Z.S.; Baker, L.A.; Martin, C.R. "Detecting Single Porphyrin Molecules in a Conically Shaped Synthetic Nanopore," *Nano Lett.*, **2005**, 5, 1824-1829.
32. Kang, M.; Troffin, L.; Mota, M.; Martin, C.R. "Protein Capture in Silica Nanotube Membrane 3-D Microwell Arrays," *Anal. Chem.*, **2005**, 77, 6243-6249.
33. Baker, L.A.; Pu, J. Martin, C.R. "Biomaterials and Biotechnologies Based on Nanotube Membranes," *Crit. Rev. Solid State and Mater. Sci.*, **2005**, 30, 183-205.
34. Odom, D.J.; Baker, L.A.; Martin, C.R. "Solvent-Extraction and Langmuir-Adsorption-Based Transport in Chemically Functionalized Nanopore Membranes," *J. Phys. Chem.*, **2005**, 109, 20887-20894.
35. Heins, E.A.; Baker, L.A.; Siwy, Z.S.; Mota, M.O.; Martin, C.R. "The Effect of Crown Ether on Ion Currents through Synthetic Membranes Containing a Single Conically Shaped Nanopore," *J. Phys. Chem.*, **2005**, 109, 18400-18407.
36. Hou, S.; Wang, J.; Martin, C.R. "Template-Synthesized DNA Nanotubes" *J. Am. Chem. Soc.*, **2005**, 127, 8586-8587.
37. Kang, M.; Yu, S.; Li, N.; Martin, C.R. "Nanowell-Array Surfaces Prepared by Argon Plasma Etching through a Nanopore Alumina Mask" *Langmuir*, **2005**, 21, 8429-8438.
38. Sides, C.R.; Martin, C.R. "Deposition into Templates," in Electrochemistry at the Nanoscale, S. Virtanen and P. Schmuki, Eds. Kluwer Science Publishing Group, **2006**.
39. Hou, S.; Wang, J.; Martin, C.R. "Template-Synthesized Protein Nanotubes" *Nano Lett.* **2005**, 5, 231-234.
40. Siwy, Z.; Troffin, L.; Kohli, P.; Baker, L.A.; Trautmann, C.; Martin, C.R. "Protein Biosensors Based on Biofunctionalized Conical Gold Nanotubes," *J. Am. Chem. Soc.*, **2005**, 127, 5000-5001.
41. Kohli, P.; Martin, C.R. "Transporting and Separating Molecules using Tailored Nanotube Membranes," in Handbook of Membrane Separations: Chemical, Pharmaceutical and Biotechnological Applications, A.K. Pabby, A.M. Sastre and S.S.H. Rizvi, Eds.
42. Harrell, C.C.; Kohli, P.; Siwy, Z.; Martin, C.R. "DNA-Nanotube Artificial Ion Channels," *J. Am. Chem. Soc.*, **2004**, 126, 15646-15647.
43. Sides, C.R.; Martin, C.R. "Nanomaterials in Li-ion Battery Electrode Design," in Modern Aspects of Electrochemistry, R.E. White, Ed. Kluwer Academic / Plenum Publishers.

44. Siwy, Z.; Kosinska, I.D.; Fulinski, A.; Martin, C.R. "Asymmetric Diffusion through Synthetic Nanopores," *Phys. Rev. Lett.* **2005**, 94, 048102, 1-4.
45. Kohli, P.; Harrell, C.C.; Cao, Z.; Gasparac, R.; Tan, W.; Martin, C.R. "DNA Functionalized Nanotube Membranes with Single-Base Mismatch Selectivity," *Science*, **2004**, 305, 984-986.
46. Kang, M.; Yu, S.; Li, N.; Martin, C.R. "Nanowell-Array Surfaces," *Small*, **2005**, 1, 69-72.
47. Croce, F.; Sides, C.R.; Young, V.Y.; Martin, C.R.; Scrosatti, B. "A High-Rate, Nanocomposite LiFePO₄/Carbon Cathode," *Electrochem. Solid State Lett.* **2005**, 8, A484-A487.
48. Lee, S.; Zhang, Y.; White, H.S.; Harrell, C.C.; Martin, C.R. "Electrophoretic Capture and Detection of Nanoparticles at the Opening of a Membrane Pore using Scanning Electrochemical Microscopy," *Anal. Chem.* **2004**, 76, 6108-6155.
49. Martin, C.R.; Siwy, Z. "Molecular Filters – Pores within Pores." Invited commentary, *Nature Materials*, **2004**, 3, 284-285.
50. Siwy, Z.; Heins, E.; Harrell, C.C.; Kohli, P.; Martin, C.R. "Conical Nanotube Ion-Current Rectifiers – The Role of Surface Charge," *J. Am. Chem. Soc.* **2004**, 126, 10,850-10,851.
51. Kohli, P.; Martin, C.R. "Template-Synthesized Nanotubes for Biotechnology and Biomedical Applications," *J. Drug Deliv. Sci. Tech.*, **2005**, 15, 49-57.
52. Sides, C.R.; Martin, C.R. "Nanostructured Electrodes and the Low-Temperature Performance of Li-Ion Batteries," *Adv. Mater.*, **2005**, 17, 125-128.
53. Hou, S.; Harrell, C.C.; Trofin, L.; Martin, C.R. "Layer-by-Layer Nanotube Template Synthesis," *J. Am. Chem. Soc.*, **2004**, 126, 5674-5675.
54. Miller, S.A.; Martin, C.R. "Redox Modulation of Electroosmotic Flow in a Carbon Nanotube Membrane," *J. Am. Chem. Soc.*, **2004**, 126, 6226-6227.
55. Gasparac, R.; Kohli, P.; Paulino, M.O.M.; Trofin, L.; Martin, C.R. "Template Synthesis of Nano Test Tubes," *Nano Letters*, **2004**, 4, 513-516.
56. Yamada, K.; Gasparac, R.; Martin, C.R. "Electrochemical and Transport Properties of Templated Gold/Polypyrrole-Composite Microtube Membranes," *J. Electrochem. Soc.*, **2004**, 151, E14-E19.
57. Lee, S.B.; Mitchell, D.T.; Trofin, L.; Nevanen, T.K.; Soderlund, H.; Martin, C.R. "Template-Synthesized Bio-Nanotubes for Separations and Biocatalysis," in "Carrier-Based Drug Delivery," Svenson, S. Ed. *ACS Symposium Series 879*, **2004**, chap. 8.
58. Trofin, L.; Lee, S.B.; Mitchell, D.T.; Martin, C.R. "A Ligand-Gated Ion-Channel Mimetic Nanopore Membrane with an On-board Transmembrane Microbattery," *J. Nanosci. Nanotech.*, **2004**, 4, 239-244.
59. Gasparac, R.; Mitchell, D.T.; Martin, C.R. "Electrokinetic DNA Transport in a Nanopore Membrane," *Electrochimica Acta.*, **2004**, 49, 847-850.
60. Li, N; Yu, S; Harrell, C; Martin, C, R. "Conical-Nanopore Membranes - Preparation and Transport Properties", *Anal. Chem.*, **2004**, 76, 2025-2030.
61. Kohli, P.; Martin, C.R. "Smart Nanotubes for Biotechnology," *Curr. Pharm. Biotech.*, **2005**, 6, 35-47.

62. Kohli, P.; Wharton, J.; Braide, O.; Martin, C.R. "Template Synthesis of Gold Nanotubes in an Anodic Alumina Membrane," *J. Nanosci. Nanotech.*, **2004**, 4, 605-610.
63. Kohli, P.; Wirtz, M.; Martin, C.R. "Nanotube Membrane Based Biosensors ", *Electroanal.* **2004**, 16, 9-18.
64. Miller, S.; Martin C.R. "Carbon Nanotubes: Electroosmotic Flow Control of in Membranes", *Encycl. of Nanosci.* J.A. Schwarz, C. Contescu, K. Putyera, Eds.; Marcel Dekker, Inc.: New York, **2004**, pp. 519-528.
65. Martin, C.R.; Kohli, P. "Smart Nanotubes for Biotechnology and Biocatalysis," *Encycl. of Nanosci.* J.A. Schwarz, C. Contescu, K. Putyera, Eds.; Marcel Dekker, Inc.: New York, **2004**, pp. 3655-3666.
66. Wirtz, M.; Martin, C.R. "Nanotube Sensors," *Encycl. Nanosci.*, J.A. Schwarz, C. Contescu, K. Putyera, Eds.; Marcel Dekker, Inc.: New York, **2004**, pp. 2667-2676.
67. Martin, C.R.; Kohli, P. "The Emerging Field of Nanotube Biotechnology," *Nature Reviews Drug Discovery*, **2003**, 2, 29-37.
68. Harrell, C.; Lee, S.; Martin, C.R. "Synthetic Single Nanopore and Nanotube Membranes," *Anal. Chem.*, **2003**, 75, 6861 - 6867.
69. Kohli, P.; Martin, C.R. "Smart Nanotubes for Biomedical and Biotechnological Applications," *Drug News Perspec.*, **2003**, 16, 566-573.
70. Yu, S.; Lee, S.B.; Martin, C.R. "Electrophoretic Protein Transport in Gold Nanotube Membranes," *Anal. Chem.*, **2003**, 75, 1239-1244.
71. Yu, S.; Wharton, J.; Li, N.; Martin, C.R. "Nano Wheat Fields Prepared by Plasma-Etching Gold Nanowire-Containing Membranes," *Nano Letters*, **2003**, 3, 815-818.
72. Wirtz, M.; Martin, C.R. "Template Fabricated Gold Nanowires and Nanotubes," *Adv. Mat.*, **2003**, 15, 455-458.
73. Li, N.; Mitchell, D.T.; Lee, K-P.; Martin, C.R. "A Nanostructured Honeycomb Carbon Anode," *J. Electrochem. Soc.*, **2003**, 150, A979-984.
74. Martin, C.R.; Kohli P. "Template Synthesized Nanotubes for Bioseparations and Biocatalysis," Proceedings of the Twentieth Annual Membrane/Separations Technology Planning Conference, November 18-19 **2002**.
75. Mitchell, D.T.; Lee, S.B.; Trofin, L.; Li, N.; Nevanen, T.K.; Soderlund, H.; Martin, C.R. "Smart Nanotubes for Bioseparations and Biocatalysis," *J. Am. Chem. Soc.*, **2002**, 124, 11864-11865.
76. Lee, S.B.; Martin, C.R. "Electromodulated Molecular Transport in Gold-Nanotube Membranes," *J. Am. Chem. Soc.*, **2002**, 124, 11850-11851.
77. Lee, S.B.; Mitchell, D.T.; Trofin, L.; Nevanen, T.K.; Soderlund, H.; Martin, C.R. "Antibody-Based Bio/Nanotube Membranes for Enantiomeric Drug Separations," *Science*, **2002**, 296, 2198-2200.
78. Wirtz, M.; Miller, S.A.; Martin, C.R. "Transport Properties of Template-Synthesized Gold and Carbon Nanotube Membranes," *Internat. J. Nano.*, **2002**, 1, 255-268.

79. Chai, D.; Genders, D.; Weinberg, N.; Zappi, G.; Bernasconi, E.; Lee, J.; Roletto, J.; Sogli, L.; Walker, D.; Martin, C.R.; Menon, V.; Zelenay, P., Zhang, H. "Ceftibuten: Development of a Commercial Process Based on Cephalosprin C. Part IV. Pilot-Plant Scale Electrochemical Reduction of 3-Acetoxyethyl-7(R)-glutaroylaminoceph-3-em-4-carboxylic Acid 1 (S)-Oxide," *Organic Process Research & Development*, **2002**, 6, 178-183.
80. Bernasconi, E.; Genders, D.; Lee, J.; Longoni, D.; Martin, C.R.; Menon, V.; Roletto, J.; Sogli, L.; Walker, D.; Zappi, G.; Zelenay, P., Zhang, H. "Ceftibuten: Development of a Commercial Process Based on Cephalosporin C. Part II. Process for the Manufacture of 3-Exomethylene-7(R)-glutaroylaminocepham-4-carboxylic Acid 1(S)-Oxide," *Organic Process Research & Development*, **2002**, 6, 158-168.
81. Wirtz, M.; Martin, C.R. "Nanotube Membrane Sensors: Resistive Sensing and Ion Channel Mimetics," *Sensors Update*, **2002**, 11, 35-64.
82. Wirtz, M.; Parker, M.; Kobayashi, Y.; Martin, C.R. "Template-Synthesized Nanotubes for Chemical Separations and Analysis," *Chemistry, A European Journal*, **2002**, 16, 3572-3578.
83. Sides, C.R.; Li, N.; Patrissi, C.J.; Scrosati, B.; Martin, C.R. "Nanoscale Materials for Li-ion Batteries," *MRS Bulletin*, **2002**, 27, 604-607.
84. Wirtz, M.; Parker, M.; Kobayashi, Y.; Martin, C.R. "Molecular Sieving and Sensing with Gold Nanotube Membranes," *Chemical Record*, **2002**, 4, 259-267.
85. Wirtz, M.; Yu, S.; Martin, C.R. "Template Synthesized Gold Nanotube Membranes for Chemical Separations and Sensing," *Analyst*, **2002**, 127, 871-879.
86. Steinle, E.D.; Mitchell, D.T.; Wirtz, M.; Lee, S.B.; Young, V.Y.; Martin, C.R. "Ion-Channel Mimetic Micropore and Nanotube Membrane Sensors," *Anal. Chem.*, **2002**, 74, 2416-2422.
87. Gasparac, R.; Martin, C.R. "The Effect of Protic Doping Level on the Anticorrosion Characteristics of Polyaniline in Sulfuric Acid Solutions," *J. Electrochem. Soc.*, **2002**, 149, B409-B413.
88. Miller, S.A.; Young, V.Y.; Martin, C.R. "Electroosmotic Flow in Template-Prepared Carbon Nanotube Membranes," *J. Am. Chem. Soc.*, **2001**, 123, 12335-12342.
89. Miller, S.A.; Martin, C.R. "Controlling the Rate and Direction of Electroosmotic Flow in Template-Prepared Carbon Nanotubule Membranes," *J. Electroanal. Chem.*, **2002**, 522, 66-69.
90. Yu, S.; Lee, S.B.; Kang, M.; Martin, C.R. "Size-Based Protein Separations in Poly(ethylene glycol)- Derivatized Gold Nanotubule Membranes," *Nano Letters*, **2001**, 1, 495-498.
91. Lee, S.B.; Martin, C.R. "Controlling the Transport Properties of Gold Nanotubule Membranes Using Chemisorbed Thiols," *Chemistry of Materials*, **2001**, 13, 3236-3244.
92. Martin, C.R.; Nishizawa, M.; Jirage, K.B.; Kang, M. "Transport Properties of Gold Nanotubule Membranes," *J. Phys. Chem. B*, **2001**, 105, 1925-1934.
93. Kang, M.; Martin, C.R. "Investigations of Potential-Dependent Fluxes of Ionic Permeates in Gold Nanotubule Membranes Prepared via the Template Method," *Langmuir*, **2001**, 17, 2753-2759.
94. Martin, C.R.; Nishizawa, M.; Jirage, K.B.; Kang, M.; Lee, S.B. "Controlling Ion-Transport Selectivity in Gold Nanotubule Membranes" *Adv. Mat.*, **2001**, 13, 1351-1362.

95. Lee, S.B.; Martin, C.R. "pH-Switchable, Ion-Permselective Gold Nanotubule Membranes Based on Chemisorbed Cysteine," *Anal. Chem.*, **2001**, 73, 768-775.
96. Patrissi, C.J.; Martin, C.R. "Improving the Volumetric Energy Densities of Nanostructured V₂O₅ Electrodes Prepared Using the Template Method," *J. Electrochem. Soc.*, **2001**, 148, A1247-A1253.
97. Gasparac, R.; Martin, C.R. "Investigations of the Mechanism of Corrosion Inhibition by Polyaniline – PANI-Coated Stainless Steel in Sulfuric Acid Solution," *J. Electrochem. Soc.*, **2001**, 148, B138-B145.
98. Li, N.; Martin, C.R. "A High Rate, High Capacity, Nanostructured Sn-Based Anode Prepared Using Sol-Gel Template Synthesis," *J. Electrochem. Soc.* **2001**, 148, A164-A170.
99. Martin, C.R.; Li, N.; Scrosati, B. "Nanomaterial-Based Li-Ion Battery Electrodes," *J. Power Sources*, **2001**, 97-98, 240-243.
100. Mikat, J.; Orgzall, I.; Sapp, S.; Martin, C.R.; Hochheimer, H.D. "Optical Investigations of Conducting Polypyrrole Under Pressure," *High Press. Res.* **2000**, 18, 305-310.
101. Brunetti, B.; Ugo, P.; Moretto, L.M.; Martin, C.R. "Electrochemistry of Phenothiazine and Methylviologen Biosensor Electron-transfer Mediators at Nanoelectrode Ensembles," *J. Electroanal. Chem.*, **2000**, 491, 166-174.
102. Li, N.; Martin, C.R.; Scrosati, B. "A High-Rate, High-Capacity, Nanostructured Tin Oxide Electrode for Lithium-Ion Battery Applications," *Electrochem. Solid State Lett.*, **2000**, 3, 316-318.
103. Bayley, H.; Martin, C.R. "Resistive-Pulse Sensing From Microbes to Molecules," *Chem. Rev.*, Sensors Thematic Issue, **2000**, 100, 2575-2594.
104. Li, N.; Patrissi, C.J.; Martin, C.R. "Rate Capabilities of Nanostructured LiMn₂O₄ Electrodes in Aqueous Electrolyte." *J. Electrochem. Soc.*, **2000**, 147, 2044-2049.
105. Gasparac, R.; Stupnisek-Lisac, E.; Martin, C.R. "In Situ and Ex Situ Studies of Imidazole and its Derivatives as Copper Corrosion Inhibitors, Part II - AC Impedance, XPS and SIMS Studies," *J. Electrochem. Soc.* **2000**, 147, 991-998.
106. Gasparac, R.; Stupnisek-Lisac, E.; Martin, C.R. "In Situ Studies of Imidazole and its Derivatives as Copper Corrosion Inhibitors, Part I – Activation Energies and Thermodynamics of Adsorption," *J. Electrochem. Soc.*, **2000**, 147, 548-551.
107. Gasparac, R., Stupnisek-Lisac, E., Martin, C.R. "Imidazole and its Derivatives as Inhibitors for Prevention of Corrosion of Copper," in *Electrochemical Approach to Selected Corrosion and Corrosion Control Studies*, P.L. Bonora and F. Deflorian, Eds., *EFC Book Series No. 28*, **2000**, pp. 20-36.
108. Jirage, K.B.; Hulteen, J.C.; Martin, C.R. "Effects of Thiol Chemisorption on the Transport Properties of Gold Nanotubule Membranes," *Anal. Chem.*, **1999**, 71, 4913-4918.
109. Che, G., Miller, S.A., Fisher, E.R., Martin, C.R. "An Electrochemically-Driven Actuator Based on a Nanostructured Carbon Material," *Anal. Chem.*, **1999**, 71, 3187-3191.
110. Nishizawa, M.; Fukuzaki, R.; Sunagawa, T.; Martin, C.R.; Yoneyama, H. "Electrochemical Formation of Polyaniline-analogue Monolayer on Au Electrode", *Langmuir*, **1999**, 15, 6807-6812.

111. Kobayashi, Y., Martin, C.R. "Highly-Sensitive Methods for Electroanalytical Chemistry Based on Nanotubule Membranes," *Anal. Chem.*, **1999**, 71, 3665-3672.
112. Sapp, S.A.; Mitchell, D.T.; Martin, C.R. "Using Template-Synthesized Micro- and Nanowires as Building Blocks for Self-Assembly of Supramolecular Architectures," *Chem. Mater.* **1999**, 11, 1183-1185.
113. Patrissi, C.J.; Martin, C.R. "Sol-Gel-Based Template Synthesis and Li-Insertion Rate Performance of Nanostructured Vanadium Pentoxide," *J. Electrochem. Soc.* **1999**, 146, 3176-3180.
114. Cepak, V.M.; Martin, C.R. "Preparation of Polymeric Micro-and Nanostructures Using A Template-Based Deposition Method," *Chem. Mater.* 1999, 11, 1363-1367.
115. Chambliss, C.K.; Odom, M.A.; Martin, C.R.; Moyer, B.A.; Strauss, S.H. "Rapid and Selective Redox-Recyclable Anion-Exchange Materials Containing Polyalkylated Ferricenium Anion Exchange Sites," *Inorg. Chem. Comm.*, **1998**, 1, 435-438.
116. Chambliss, C.K.; Martin, C.R.; Strauss, S.H.; Moyer, B.A. "Comparison of the Lipophilic Redox-Recyclable Extractant [Fe(-C₅H₃(s-C₇H₁₅)₂)] [NO₃] with N(n-C₇H₁₅)₄[NO₃] for Liquid-Liquid Anion Exchange of ⁹⁹TcO₄⁻ Sol. Ext. Ion Exch., **1999**, 17, 553-584.
117. Sapp, S.A.; Lakshmi, B.B.; Martin, C.R. "Template Synthesis of Bismuth Telluride Nanowires," *Adv. Mat.*, **1999**, 11, 402-404.
118. Cepak, V.M.; Martin, C.R. "Preparation and Stability of Template Synthesized Metal Nanorod Sols in Organic Solvents," *J. Phys. Chem.*, **1998**, 102, 9985-9990.
119. Jirage, K.B.; Martin, C.R. "New Developments in Membrane-Based Chemical Separations," *Trends in Biotechnology (TIBTECH)*, **1999**, 17, 197-200.
120. Mikat, J.; Orgzall, I.; Lorenz, B.; Sapp, S.; Martin, C.R.; Burris, J.L.; Hochheimer, H.D. "High Pressure Low-Temperature Electrical Properties of Template-Synthesized Polypyrrole at Low Synthesis Temperature: Dimensional Crossover Under Pressure," *Physica B*, **1999**, 265, 154-159.
121. Che, G.; Lakshmi, B.B.; Martin, C.R.; Fisher, E.R. "Metal Nanocluster-Filled Carbon Nanotubes: Catalytic Properties and Possible Applications in Electrochemical Energy Storage and Production," *Langmuir*, **1999**, 15, 750-758.
122. Ugo, P.; Moretto, L.M.; Mazzocchin, G.A.; Guerriero, P.; Martin, C.R. "Electrochemical Preparation and Characterization of an Anion-Permselective Ultrathin-Film Composite Membrane for Sensor Technology," *Electroanalysis*, **1998**, 10, 1168-1173.
123. Che, G.; Fisher, E.R.; Martin, C.R. "Carbon Nanotubule Membranes for Electrochemical Energy Storage and Production," *Nature*, **1998**, 393, 346-349.
124. Hulteen, J. C.; Martin, C. R. "Introducing Chemical Transport Selectivity into Gold Nanotubule Membranes," *J. Amer. Chem. Soc.*, **1998**, 120, 6603-6604.
125. Che, G.; Lakshmi, B. B.; Martin, C.R.; Fisher, E.R.; Ruoff, R.A. "Chemical Vapor Deposition Based Synthesis of Carbon Nanotubes and Nanofibers Using a Template Method," *Chem. Mater.*, **1998**, 10, 260-267.

126. Moretto, L.M.; Ugo, P.; Zanata, M.; Guerriero, P.; Martin, C.R. "Nitrate Biosensor Based on the Ultra-thin Film Composite Membrane Concept," *Anal. Chem.* **1998**, 70, 2163-2166.
127. DeVito, S.; Martin, C.R. "Toward Colloidal Dispersions of Template-Synthesized Polypyrrole Nanotubules," *Chem. Mater.* **1998**, 10, 1738-1741.
128. Jirage, K.B.; Hulteen, J.C.; Martin, C.R. "Nanotubule-Based Molecular-Filtration Membranes," *Science*, **1997**, 278, 655-658.
129. Kuwabata, S.; Tsumura, N.; Goda, S.; Martin, C.R.; Yoneyama, H. "Charge-discharge Properties of Composite of Synthetic Graphite and Poly(3-n-hexylthiophene) as an Anode Active Material in Rechargeable Lithium-ion Batteries," *J. Electrochem. Soc.*, **1998**, 145, 1415-1420.
130. Jirage, K.B.; Martin, C.R. "Molecular Filtration in Nanotubule Membranes: Sorting Molecules on the Basis of Size and Chemistry," *Biological Molecules in Nanotechnology*, (IBC) **1998**, Chapter 12, pp. 133-138.
131. Kuwabata, S.; Idzu, T.; Martin, C.R.; Yoneyama, H. "Charge-discharge Properties of Composite Films of Polyaniline and Crystalline V_2O_5 Particles," *J. Electrochem. Soc.*, **1998**, 145, 2707-2710.
132. Che, G.; Jirage, K.B.; Fisher, E.R.; Martin, C.R.; Yoneyama, H. "Chemical-Vapor Deposition-Based Template Synthesis of Microtubular TiS_2 Battery Electrodes," *J. Electrochem. Soc.*, **1997**, 144, 4296-4302.
133. Lakshmi, B.B.; Patrissi, C.J.; Martin, C.R. "Sol-Gel Template Synthesis of Semiconductor Oxide Micro- and Nanostructures," *Chem. Mater.*, **1997**, 9, 2544-2550.
134. Cepak, V.M.; Hulteen, J.C.; Che, G.; Jirage, K.B.; Lakshmi, B.B.; Fisher, E.R.; Martin, C.R. "Fabrication and Characterization of Concentric Tubular Composite Micro- and Nanostructures Using the Template Synthesis Method," *J. Mater. Res.*, **1998**, 13, 3070-80.
135. Hong, J.M.; Anderson, P.E.; Quain, J.; Martin, C.R. "Selectively-Permeable Ultrathin Film Composite Membranes Based on Molecularly-Imprinted Polymers," *Chem. Mater.*, **1998**, 10, 1029-1033.
136. Mitchell, D.T.; Martin, C. R. "Template-Synthesized Nanomaterials in Electrochemistry," *Electroanalytical Chemistry*, A. J. Bard and I. Rubinstein, Eds., **1999**, vol. 21, 1-74.
137. Hulteen, J. C.; Chen, H.X.; Chambliss; Martin, C. R. "Template Synthesis of Carbon Nanotubule and Nanofiber Arrays," *Nanostructured Mater.*, **1997**, 9, 133-136.
138. Martin, C. R.; Mitchell, D. T. "Nanomaterials in Analytical Chemistry," *Anal. Chem.*, **1998**, 70, 322A-327A.
139. Chambliss, C. K.; Odom, M. A.; Morales, C. M. L.; Martin, C. R.; Strauss, S. H. "A Strategy for Separating and Recovering Aqueous Ions: Redox-Recyclable Ion-Exchange Materials Containing a Physisorbed, Redox-Active, Organometallic Complex," *Anal. Chem.*, **1998**, 70, 757-765.
140. Lakshmi, B.; Martin, C.R. "Enantioseparation Using Apoenzymes Immobilized in a Porous Polymeric Membrane," *Nature*, **1997**, 388, 758-760.

141. Hulteen, J. C.; Patrissi, C. J.; Miner, D. L.; Crosthwait, E. R.; Oberhauser, E. B.; Martin, C. R. "Changes in the Shape and Optical Properties of Gold Nanoparticles Contained within Alumina Membranes due to Low Temperature Annealing," *J. Phys. Chem.*, **1997**, 101, 7727-7731.
142. Zelenay, P.; Menon, V.; Zhang, H.; Martin, C. R.; Walker, D.; Lee, J.; Bernasconi, E.; Sogli, L. "Electroreduction of Cephalosporin C and Related Compounds," *Electrochemical Society Proceedings*, **1997**, 97-6, 45-47.
143. Kobayashi, Y.; Martin, C.R. "Toward a Molecular Coulter Counter," *J. Electroanal. Chem.*, **1997**, 431, 29-33.
144. Nishizawa, M.; Mukai, K.; Kuwabata, S.; Martin, C. R.; Yoneyama, H. "Template Synthesis of Polypyrrole-coated Spinel LiMn₂O₄ Nanotubules and Their Properties as Cathode Active Materials for Lithium Batteries," *J. Electrochem. Soc.*, **1997**, 144, 1923-1927.
145. Parthasarathy, R. V.; Menon, V. P.; Martin, C. R. "Unusual Gas-Transport Selectivity in a Partially-Doped Form of the Conductive Polymer Polypyrrole," *Chem. Mater.*, **1997**, 9, 560-566.
146. Hornyak, G. L.; Patrissi, C. J.; Martin, C. R. "Fabrication, Characterization and Optical Properties of Gold-Nanoparticle/Porous-Alumina Composites: The Non-Scattering Maxwell-Garnett Limit," *J. Phys. Chem B.*, **1997**, 101, 1548-1555.
147. Hornyak, G. L.; Patrissi, C. J.; Martin, C. R.; Valmalette, J-C; Dutta, J.; Hofmann, H. "Dynamical Maxwell-Garnett Optical Modeling of Nanogold-Porous Alumina Composites: Mie and Kappa Influence on Absorption Maxima," *Nanostructured Mater.*, **1997**, 9, 575-578.
148. Hornyak, G. L.; Patrissi, C. J.; Martin, C. R. "Finite Sized Oblate and Ortho-Prolate Metal Nanoparticles: Optical Theory and Potential as Surface Enhanced Raman Spectroscopic Substrates," *Nanostructured Mater.*, **1997**, 9, 705-708.
149. Hornyak, G. L.; Patrissi, C. J.; Oberhauser, E. B.; Martin, C. R.; Valmalette, J-C; Lemaire, L.; Dutta, J.; Hofmann, H. "Effective Medium Theory Characterization of Au/Ag Nanoalloy-Porous Alumina Composites," *Nanostructured Mater.*, **1997**, 9, 571-574.
150. Hornyak, G. L.; Martin, C. R. "Optical Properties of a Family of Au-Nanoparticle-Containing Alumina Membranes in which the Nanoparticle Shape Is Varied from Needle-Like (Prolate) to Spheroid, to Pancake-Like (Oblate)" *Thin Solid Films*, **1997**, 300, 84-88.
151. Lakshmi, B. B.; Dorhout, P. K.; Martin, C. R. "Sol-Gel Template Synthesis of Semiconductor Nanostructures," *Chem. Mater.*, **1997**, 9, 857-862.
152. Cepak, V. M.; Hulteen, J. C.; Che, G.; Jirage, K. B.; Lakshmi, B. B.; Fisher, E. R.; Martin, C. R. "Chemical Strategies for Template Syntheses of Composite Micro and Nanostructures," *Chem. Mater.*, **1997**, 9, 1065-1067.
153. Hulteen, J. C.; Martin, C. R. "A General Template-Based Method for the Preparation of Nanomaterials," *J. Mater. Chem.*, **1997**, 7(7), 1075-1087.
154. Hulteen, J. C.; Martin, C. R. "Template Synthesis of Nanoparticles in Nanoporous Membranes," in Nanoparticles in Solids and Solutions, J. Fendler, Ed., Wiley, **1998**, Chapter 10, pp. 235-260,
155. Martin, C. R. "Template Polymerization of Conductive Polymer Nanostructures" in Handbook of Conducting Polymers, 2nd Ed., J. R. Reynolds, T. Skotheim and R. Elsenbaumer, Eds., Marcel Dekker, Inc., **1997**, Chap. 16, pp. 409-421.

156. Orgzall, I.; Lorenz, B.; Ting, S. T.; Hor, P.-H.; Menon, V. P.; Martin, C. R.; Hochheimer, H. D. "Thermopower and High Pressure Electrical Conductivity Measurements of Template Synthesized Polypyrrole," *Phys. Rev. B.*, **1996**, 54, 6654.
157. Martin, C. R.; Foss, C. A., Jr. "Chemically Modified Electrodes" in Laboratory Techniques in Electroanalytical Chemistry, P. T. Kissinger and W. R. Heineman, Editors, **1996**, Marcel Dekker, Inc., New York, Ch 13, pp. 403-442.
158. Parthasarathy, R. V.; Martin, C. R. "Enzyme and Chemical Encapsulation in Polymeric Microcapsules," *J. Appl. Polym. Sci.*, **1996**, 62, 875-886.
159. Menon, V.; Lei, J.; Martin, C. R. "Investigation of Molecular and Supramolecular Structure in Template-Synthesized Polypyrrole Tubules and Fibrils," *Chem. Mater.* **1996**, 8, 2382-2390.
160. Martin, C. R. "Membrane-Based Synthesis of Nanomaterials," special issue on nanostructured materials, *Chem. Mater.*, **1996**, 8, 1739-1746.
161. Hulteen, J. C.; Menon, V. P.; Martin, C. R. "Template Preparation of Nanoelectrode Ensembles--Achieving the 'Pure-Radial' Electrochemical-Response Limiting Case," *J. Chem. Soc., Faraday Trans. 1*, **1996**, 92, 4029-4032.
162. Ugo, P.; Moretto, L. M.; Bellomi, S.; Menon, V. P.; Martin, C. R. "Ion Exchange Voltammetry at Polymer Film Coated Nanoelectrode Ensembles," *Anal. Chem.* **1996**, 68, 4160-4165.
163. Aranda, P.; Chen, W.-J.; Martin, C. R. "Water Transport Across Polystyrenesulfonate/Alumina Composite Membranes," *J. Membr. Sci.*, **1995**, 99, 185-195.
164. Martin, C. R., "Template Synthesis of Electronically Conductive Polymer Nanostructures," *Acc. Chem. Res.*, **1995**, 28, 61-68.
165. Lorenz, B.; Spatz, J. P.; Hochheimer, H. D.; Menon, V.; Parthasarathy, R.; Martin, C. R.; Bechtold, J.; Hor, P.-H. "High Pressure Conductivity Study of Template Synthesized Polypyrrole: Observation of a Crossover from Three- to One- Dimensional Variable Range Hopping," *Phil. Mag.B*, **1995**, 71, 929-940.
166. Chen, W.-J.; Martin, C. R. "Highly Methanol-Selective Membranes for the Pervaporation Separation of Methyl *t*-Butyl Ether/Methanol Mixtures," *J. Membr. Sci.*, **1995**, 104, 101-108.
167. Lei, J.; Martin, C. R. "Investigations of the Chemical Interactions between Molecular Oxygen and Pristine (Undoped) Polypyrrole," *Chem. Mater.*, **1995**, 7, 578-584.
168. Chen, W.-J.; Aranda, P.; Martin, C. R. "Pervaporation Separation of Ethanol/Water Mixtures by Polystyrenesulfonate/Alumina Composite Membranes," *J. Membr. Sci.*, **1995**, 107, 199-207.
169. Hornyak, G. L.; Phani, K. L. N.; Kunkel, D. L.; Menon, V. P.; Martin, C. R. "Fabrication, Characterization and Optical Theory of Aluminum Nanometal/Nanoporous Membrane Thin Film Composites," Proc. 2nd Intl. Conf. Nanostructured Mater., Schaefer, H.-E.; Würschum, R.; Gleiter, H.; Tsakalokos, T., Eds. **1995**, 6, 839-842.
170. Nishizawa, M.; Menon, V. P.; Martin, C. R. "Metal Nanotubule Membranes with Electrochemically Switchable Ion-Transport Selectivity," *Science*, **1995**, 268, 700-702.
171. Martin, C. R.; Parthasarathy, R. V., "Polymeric Microcapsule Arrays," *Adv. Mater.* **1995**, 7, 487-488.

172. Menon, V. P.; Martin, C. R. "Fabrication and Evaluation of Nanoelectrode Ensembles," *Anal. Chem.*, **1995**, 67, 1920-1928.
173. Parthasarathy, R. V.; Phani, K. L. N.; Martin, C. R. "Template Synthesis of Graphitic Nanotubules," *Adv. Mater.*, **1995**, 7, 896-897.
174. Van Dyke, L. S.; Brumlik, C. J.; Liang, W.; Lei, J.; Martin, C. R.; Yu, Z.; Li, L.; Collins, G. J. "Modification of Fluoropolymer Surfaces with Electronically Conductive Polymers," *Synth. Met.*, **1994**, 62, 75-81.
175. Martin, C. R.; Ballarin, B.; Brumlik, C. J.; Lawson, D. R. "Biosensors Based on Ultrathin Film Composite Membranes," *Diagnostic Biosensor Polymers*, A. Usmani and N. Akmal, Eds, ACS Books, Washington, DC, **1994**, 158-168.
176. Brumlik, C. J.; Menon, V. P.; Martin, C. R. "Template Synthesis of Metal Microtubule Ensembles Utilizing Chemical, Electrochemical and Vacuum Deposition Techniques," *J. Mater. Res.*, **1994**, 9, 1174-1183.
177. Brumlik, C. J.; Parthasarathy, A.; Chen, W.-J.; Martin, C. R. "Plasma Polymerization of Sulfonated Fluorochlorocarbon Ionomer Films," *J. Electrochem. Soc.*, **1994**, 141 (9), 2273-2279.
178. Foss, C. A, Jr.; Hornyak, G. L.; Stockert, J. A.; Martin, C. R. "Template- Synthesized Nanoscopic Gold Particles: Optical Spectra and the Effects of Particle Size and Shape," *J. Phys. Chem.*, **1994**, 98, 2963-2971.
179. Kuwabata, S.; Martin, C. R. "Investigation of the Gas-Transport Properties of Polyaniline," *J. Membr. Sci.*, **1994**, 91, 1-12.
180. Parthasarathy, R. V.; Martin, C. R. "Synthesis of Polymeric Microcapsule Arrays and Their Use for Enzyme Immobilization," *Nature*, **1994**, 369, 298-301.
181. Martin, C. R.; Parthasarathy, R.; Menon, V. "Template Synthesis of Electronically Conductive Polymers--Preparation of Thin Films," *Electrochim. Acta*, **1994**, 39, 1309-1313.
182. Parthasarathy, R. V.; Martin, C. R. "Template-Synthesized Polyaniline Microtubules," *Chem. Mater.*, **1994**, 6, 1627-1632.
183. Spatz, J. P.; Lorenz, B.; Weishaupt, K.; Hochheimer, H. D.; Menon, V.; Parthasarathy, R.; Martin, C. R.; Bechtold, J.; Hor, P.-H. "Observation of Crossover from Three- to Two-Dimensional Variable Range Hopping in Template- Synthesized Polypyrrole and Polyaniline," *Phys. Rev. B*, **1994**, 50, 14888-14892.
184. Kuwabata, S.; Martin, C. R. "Mechanism of the Amperometric Response of a Proposed Glucose Sensor Based on a Polypyrrole-Tubule-Impregnated Membrane," *Anal. Chem.*, **1994**, 66, 2757-2762.
185. Martin, C. R.; Menon, V. P.; Parthasarathy, R. V. "Conductive Polymer Microstructures--Synthesis and Applications," *Polym. Prepr.*, **1994**, 35, 229-230.
186. Parthasarathy, A.; Brumlik, C. J.; Martin, C. R.; Collins, G. E. "Interfacial Polymerization of Thin Polymer Films onto the Surface of a Microporous Hollow-Fiber Membrane," *J. Membr. Sci.*, **1994**, 94, 249-254.
187. Chen, W.-J.; Martin, C. R. "Gas-Transport Properties of Sulfonated Polystyrenes," *J. Membr. Sci.*, **1994**, 95, 51-61.

188. Martin, C. R. "Nanomaterials - A Membrane-Based Synthetic Approach," *Science*, **1994**, 266, 1961-1966.
189. Lorenz, B.; Spatz, J. P.; Hochheimer, H. D.; Menon, V.; Parthasarathy, R.; Martin, C. R.; Bechtold, J.; Hor, P.-H. "High Pressure Conductivity Study of Template Synthesized Polypyrrole," *Proc. XXXII European High Pressure Res. Group Conf.*, Brno, Czech Republic, Aug. 29-Sept. 1, 1994, 73-76. J. Kamarád, Z. Arnold, A. Kapicka, Eds.
190. Lei, J.; Menon, V. P.; Martin, C. R. "Chemical Preparation of Conductive Polypyrrole-Polytetrafluoroethane Composites," *Polym. Adv. Technol.*, **1993**, 4, 124-132.
191. Martin, C. R.; Liang, W.; Menon, V.; Parthasarathy, R.; Parthasarathy A. "Electronically Conductive Polymers as Chemically-Selective Layers for Membrane-Based Separations," *Synth. Met.*, **1993**, 55-57, 3766-3773.
192. Lawson, D. R.; Liang, W.; Martin, C. R. "Inorganic and Biological Electron Transfer across an Electronically Conductive Composite Polymer Membrane," *Chem. Mater.*, **1993**, 5, 400-402.
193. Foss, C. A., Jr.; Hornyak, G. L.; Stockert, J. A.; Martin, C. R. "Optically Transparent Nanometal Composite Membranes," *Adv. Mater.*, **1993**, 5 (2), 135-136.
194. Martin, C. R.; Parthasarathy, R.; Menon, V. "Template Synthesis of Electronically Conductive Polymers - A New Route for Achieving Higher Electronic Conductivities," *Synth. Met.*, **1993**, 55-57, 1165-1170.
195. Foss, Jr., C. A.; Feldheim, D.L.; Lawson, D. R.; Dorhout, P. K.; Elliott, C. M.; Martin, C. R.; Parkinson, B. A. "Transition Metal Chelate-Fulleride Compounds: Electrocrystallization of Semiconducting $[Ru(bpy)_3](C_{60})_2$," *J. Electrochem. Soc.*, **1993**, 140(5), L84-L86.
196. Feldheim, D. L.; Lawson, D. R.; Martin, C. R. "Influence of the Sulfonate Counteranion on the Thermal Stability of Nafion® Perfluorosulfonate Membranes," *J. Polym. Sci., Part B: Polym. Phys.*, **1993**, 31, 953-957.
197. Colón, J. L.; Martin, C. R. "Luminescence Probe Studies of Ionomers. 3. Distribution of Decay Rate Constants for Tris(bipyridyl)ruthenium(II) in Nafion Membranes," *Langmuir*, **1993**, 9, 1066-1070.
198. Van Dyke, L. S.; Kuwabata, S.; Martin, C. R. "A Simple Chemical Procedure for Extending the Conductive State of Polypyrrole to More Negative Potentials," *J. Electrochem. Soc.*, **1993**, 140, 2754-2759.
199. Klein, J. D.; Herrick, II, R. D.; Palmer, D.; Sailor, M. J.; Brumlik, C. J.; Martin, C. R. "Electrochemical Fabrication of Cadmium Chalcogenide Microdiode Arrays," *Chem. Mater.*, **1993**, 5, 902-904.
200. Foss, C. A., Jr.; Hornyak, G. L.; Stockert, J. A.; Martin, C. R. "Template Synthesis and Optical Properties of Small Metal Particle Composite Materials: Effects of Particle Shape and Orientation on Plasmon Resonance Maxima," *Proc. Mater. Res. Soc. Symp. on Nanometals*, Boston, Mass., **1993**, 286, 431-436.
201. Parthasarathy, A.; Brumlik, C. J.; Martin, C. R. "Electrochemical Investigations of Oxygen Transport and Proton Conductivities in Perfluorosulfonate Ionomeric Membranes," *Polym. Mater.: Sci. Eng.*, **1993**, 68, 117-118.

202. Martin, C. R.; Lawson, D. R.; Liang, W. "Concerted Ion and Electron Transfer Across Electronically Conductive Polymer Membranes," *Proc. Mater. Res. Soc. Symp. on Polymer Electrolytes and Electrodes*, Boston, Massachusetts, **1993**, 293, 153-157.
203. Martin, C. R.; Ballarin, B.; Brumlik, C. J.; Lawson, D. R.; Liang, W.; Van Dyke, L. S. "Chemical Sensors Based on Ultrathin Film Composite Membranes--A New Concept in Sensor Design," *Proc. - Electrochem. Soc.*, **1993**, 93-7, 819-31.
204. Lei, J.; Cai, Z.; Martin, C. R. "Effect of Reagent Concentrations Used to Synthesize Polypyrrole on the Chemical Characteristics and Optical and Electronic Properties of the Resulting Polymer," *Synth. Met.*, **1992**, 46, 53-69.
205. Martin, C. R.; Liu, C.; Liang, W.; Chen, W.-J. "Synthesis and Gas-Transport Properties of Ultrathin Film Composite Membranes," *Polym. Prepr.*, **1991**, 32, 294-295.
206. Cai, Z.; Martin, C. R. "Electrochemical Investigations of Electronically Conductive Polymers. VII. Charge Transport in Lightly Doped Polypyrrole," *Synth. Met.*, **1992**, 46, 165-179.
207. Lei, J.; Liang, W.; Brumlik, C. J.; Martin, C. R. "A New Interfacial Polymerization Method for Forming Metal/Conductive Polymer Schottky Barriers," *Synth. Met.*, **1992**, 47, 351-359.
208. Brumlik, C. J.; Martin, C. R.; Tokuda, K. "Microhole Array Electrodes Based on Microporous Alumina Membranes," *Anal. Chem.*, **1992**, 64, 1201-1203.
209. Lei, J.; Liang, W.; Martin, C. R. "Infrared Investigations of Pristine, Doped and Partially-Doped Polypyrrole," *Synth. Met.*, **1992**, 48, 301-312.
210. Lei, J.; Martin, C. R. "Infrared Investigations of Pristine Polypyrrole - Is the Polymer called Polypyrrole Really Poly(Pyrrole-Co-Hydroxypyrrole)?" *Synth. Met.*, **1992**, 48, 331-336.
211. Parthasarathy, A.; Srinivasan, S.; Appleby, A. J.; Martin, C. R. "Temperature Dependence of the Electrode Kinetics of Oxygen Reduction at the Platinum/Nafion® Interface--A Microelectrode Investigation," *J. Electrochem. Soc.*, **1992**, 139, 2530-2537.
212. Martin, C. R.; Van Dyke, L. S.; Cai, Z. "Template Synthesis--A Method for Enhancing the Ionic and Electronic Conductivity in Electronically Conductive Polymers," *Electrochim. Acta*, **1992**, 37(9), 1611-1613.
213. Lawson, D. R.; Feldheim, D. L.; Foss, C. A.; Dorhout, P. K.; Elliott, C. M.; Martin, C. R.; Parkinson, B. A. "Near-IR Absorption Spectra for the Buckminsterfullerene Anions: An Experimental and Theoretical Study," *J. Electrochem. Soc.*, **1992**, 139, L68-L71.
214. Ballarin, B.; Brumlik, C. J.; Lawson, D. R.; Liang, W.; Van Dyke, L. S.; Martin, C. R. "Chemical Sensors Based on Ultrathin Film Composite Membranes--A New Concept in Sensor Design," *Anal. Chem.*, **1992**, 64, 2647-2651.
215. Foss, C. A., Jr.; Tierney, M. J.; Martin, C. R. "Template-Synthesis of Infrared-Transparent Metal Microcylinders: Comparison of Optical Properties with the Predictions of Effective Medium Theory," *J. Phys. Chem.*, **1992**, 96, 9001-9007.
216. Liang, W.; Lei, J.; Martin, C. R. "Effect of Synthesis Temperature in the Structure, Doping Level and Charge-Transport Properties of Polypyrrole," *Synth. Met.*, **1992**, 52, 227-239.
217. Parthasarathy, A.; Srinivasan, S.; Appleby, A. J.; Martin, C. R. "Pressure Dependence of the Oxygen Reduction Reaction at the Platinum Microelectrode/Nafion® Interface: Electrode Kinetics and Mass Transport," *J. Electrochem. Soc.*, **1992**, 139, 2856-2862.

218. Parthasarathy, A.; Srinivasan, S.; Appleby, A. J.; Martin, C. R. "Electrode Kinetics of Oxygen Reduction at Carbon-Supported and Unsupported Platinum Microcrystallite/Nafion® Interfaces," *J. Electroanal. Chem.*, **1992**, 339, 101-121.
219. Allcock, H. R.; Dodge, J. A.; Van Dyke, L. S.; Martin, C. R. "Polyphosphazenes Bearing Polymerizable Pyrrole, Thiophene and Furan Side Groups: Synthesis and Chemical Oxidation," *Chem. Mater.*, **1992**, 4, 780-788.
220. Van Dyke, L. S.; Brumlik, C. J.; Martin, C. R.; Yu, Z.; Collins, G. J. "UV Laser Ablation of Electronically Conductive Polymers," *Synth. Met.*, **1992**, 52, 299-304.
221. Foss, C. A., Jr.; Hornyak, G. L.; Stockert, J. A.; Martin, C. R. "Optical Properties of Composite Membranes Containing Arrays of Nanoscopic Gold Cylinders," *J. Phys. Chem.*, **1992**, 96, 7497-7499.
222. Lawson, D. R.; Feldheim, D. L.; Foss, C. A.; Dorhout, P. K.; Elliott, C. M.; Martin, C. R.; Parkinson, B. A. "Near-IR Absorption Spectra for the C₇₀ Fullerene Anions," *J. Phys. Chem.*, **1992**, 96, 7175-7177.
223. Martin, C. R.; Van Dyke, L. S. "Mass and Charge Transport in Electronically Conductive Polymers," in Murray, R. W., Ed. *Molecular Design on Electrode Surfaces*, **1992**, John Wiley & Sons, Inc., New York, 403-424.
224. Tierney, M. J.; Martin, C. R. "New Electorelease Systems Based on Microporous Membranes," *J. Electrochem. Soc.*, **1990**, 137, 3789-3793.
225. Parthasarathy, A.; Martin, C. R.; Srinivasan, S. "Investigations of the O₂ Reduction Reaction at the Platinum/Nafion® Interface Using a Solid State Electrochemical Cell," *J. Electrochem. Soc.*, **1991**, 138, 916-921.
226. Martin, C. R.; Van Dyke, L. S.; Cai, Z.; Liang, W. "Template Synthesis of Organic Microtubules," *J. Am. Chem. Soc.*, **1990**, 112, 8976-8977.
227. Cai, Z.; Martin, C. R. "Electrochemical Investigations of Electronically Conductive Polymers. Part VI. Mechanism of the Redox Reactions for the Electronically Conductive Form of Polypyrrole," *J. Electroanal. Chem.*, **1991**, 300, 35-50.
228. Liang, W.; Martin, C. R. "Template-Synthesized Polyacetylene Fibrils Show Enhanced Supermolecular Order," *J. Am. Chem. Soc.*, **1990**, 112, 9666-9668.
229. Lawson, D. R.; Tierney, M. J.; Cheng, I. F.; Van Dyke, L. S.; Espenscheid, M. W.; Martin, C. R. "Use of a Coulometric Assay Technique to Study the Variables Affecting Deuterium Loading Levels Within Palladium Electrodes," *Electrochim. Acta*, **1991**, 36, 1515-1522.
230. Martin, C. R.; Cai, Z.; Van Dyke, L. S.; Liang, W. "Template Synthesis of Conducting Polymers - Enhanced Conductivity, Enhanced Supermolecular Order, Interesting Microstructures," *Polym. Mater.: Sci. Eng.*, **1991**, 64, 204-206.
231. Martin, C. R. "Template Synthesis of Polymeric and Metal Microtubules," *Adv. Mater.*, **1991**, 3, 457-459.
232. Liu, C.; Chen, W.-J.; Martin, C. R. "Electrochemical Synthesis of Ultrathin Film Composite Membranes," *J. Membr. Sci.*, **1992**, 65, 113-128.

233. Liu, C.; Martin, C. R. "Composite Membranes from Photochemical Synthesis of Ultrathin Polymer Films," *Nature*, **1991**, 352, 50-52.
234. Liang, W.; Martin, C. R. "Gas Transport in Electronically Conductive Polymers," *Chem. Mater.*, **1991**, 3, 390-391.
235. Cai, Z.; Lei, J.; Liang, W.; Menon, V.; Martin, C. R. "Molecular and Supramolecular Origins of Enhanced Electronic Conductivity in Template-Synthesized Polyheterocyclic Fibrils. 1. Supramolecular Effects," *Chem. Mater.*, **1991**, 3, 960-967.
236. Martin, C. R.; Liu, C.; Liang, W.; Chen, W.-J.; Lawson, D. R. "Ultrathin Film Composite Membranes for Sensor Applications," *Polym. Mater.: Sci. Eng.*, **1991**, 64, 286-287.
237. Brumlik, C. J.; Martin, C. R. "Template Synthesis of Metal Microtubules," *J. Am. Chem. Soc.*, **1991**, 113, 3174-3175.
238. Parthasarathy, A.; Davé, B.; Srinivasan, S.; Appleby, A. J. and Martin, C. R. "The Platinum Microelectrode/Nafion® Interface: An Electrochemical Impedance Spectroscopic Analysis of Oxygen Reduction Kinetics and Nafion® Characteristics," *J. Electrochem. Soc.*, **1992**, 139, 1634-1641.
239. Martin, C. R.; Cai, Z.; Van Dyke, L. S.; Liang, W. "Template Synthesis of Electronically Conductive Polymers," *Polym. Prepr.*, **1991**, 32, 89-90.
240. Colón, J. L.; Yang, C.-Y.; Clearfield, A.; Martin, C. R. "Photophysics and Photochemistry of Tris(2,2'-bipyridyl)ruthenium(II) within the Layered Inorganic Solid Zirconium Phosphate Sulfophenylphosphonate," *J. Phys. Chem.*, **1990**, 94, 874-882.
241. Liu, C.; Martin, C. R. "Ion-Transporting Composite Membranes. II. Ion Transport Mechanism in Nafion®-Impregnated Gore-Tex Membranes," *J. Electrochem. Soc.*, **1990**, 137, 510-515.
242. Martin, C. R.; Penner, R. M.; Van Dyke, L. S. "Electrochemical Investigation of Electronically Conductive Polymers" in Bergbreiter, D. E.; Martin C. R., Eds. *Functional Polymers*, Plenum Press, New York, **1989** pp. 119-139.
243. Mebrahtu, T.; Rodriguez, J. F.; Bothwell, M. E.; Cheng, I. F.; Lawson, D. R.; McBride, J. R.; Martin, C. R.; Soriaga, M. P. "Observations on the Surface Composition of Palladium Cathodes after D₂O Electrolysis in LiOD Solutions," *J. Electroanal. Chem.*, **1989**, 267, 351-357.
244. Colón, J. L.; Thakur, D. S.; Yang, C.-Y.; Clearfield, A.; Martin, C. R. "X-ray Photoelectron Spectroscopy and Catalytic Activity of α -Zirconium Phosphate and Zirconium Phosphate Sulfophenylphosphonate," *J. Catalysis*, **1990**, 124, 148-159.
245. Tierney, M. J.; Martin, C. R. "Electroreleasing Composite Membranes for Delivery of Insulin and Other Biomacromolecules," *J. Electrochem. Soc.*, **1990**, 137, 2005-06.
246. Liu, C.; Espenscheid, M. W.; Chen, W.-J.; Martin, C. R. "Electrochemical Synthesis of Ultrathin-Film Composite Membranes," *J. Am. Chem. Soc.*, **1990**, 112, 2458-9.
247. Van Dyke, L. S.; Martin, C. R. "Fibrillar Electronically Conductive Polymers Show Enhanced Rates of Charge Transport," *Synth. Met.*, **1990**, 36, 275-281.
248. Van Dyke, L. S.; Martin, C. R. "Electrochemical Investigations of Electronically Conductive Polymers. 4. Controlling the Supramolecular Structure Allows Charge Transport Rates to be Enhanced," *Langmuir*, **1990**, 6, 1118-1123.

249. Cheng, I. F.; Schimpf, J. M.; Martin, C. R. "Ultramicroelectrode Ensembles. Part V. Sealing Defects Between the Ensemble Elements and the Host Membrane with Octadecyltrichlorosilane," *J. Electroanal. Chem.*, **1990**, 284, 499-505.
250. Liu, C.; Martin, C. R. "Ion-Transporting Composite Membranes. III. Selectivity and Rate of Ion-Transport in Nafion®-Impregnated Gore-Tex Membranes Prepared by a High Temperature Solution-Casting Method," *J. Electrochem. Soc.*, **1990**, 137, 3114-3120.
251. Espenscheid, M. W.; Martin, C. R. "Ion Exchange Voltammetry with Electroactive Ionomers," *Electroanalysis*, **1989**, 1, 93-95.
252. Penner, R. M.; Martin, C. R. "Electrochemical Investigation of Electronically Conductive Polymers. 2. Evaluation of Charge-Transport Rates in Polypyrrole Using an Alternating Current Impedance Method," *J. Phys. Chem.*, **1989**, 93, 984-989.
253. Martin, C. R.; Penner, R. M.; Van Dyke, L. S.; Cai, Z. "Ion and Charge-Transport in Electronically Conductive Polymers," *Polym. Prepr.*, **1989**, 30 (1), 424-425.
254. Penner, R. M.; Van Dyke, L. S.; Martin, C. R. "Electrochemical Evaluation of Charge-Transport Rates in Electronically Conductive Polymers," *Solid State Ionics*, **1989**, 32/33, 553-566.
255. Cheng, I. F.; Whiteley, L. D.; Martin, C. R. "Ultramicroelectrode Ensembles. Comparison of Experimental and Theoretical Responses and Evaluation of Electroanalytical Detection Limits," *Anal. Chem.*, **1989**, 61, 762-766.
256. Tierney, M. J.; Martin, C. R. "Transparent Metal Microstructures," *J. Phys. Chem.*, **1989**, 93, 2878-2880.
257. Moore, R. B., III; Martin, C. R. "Morphology and Chemical Properties of the Dow Perfluorosulfonate Ionomers," *Macromolecules*, **1989**, 22, 3594-3599.
258. Cai, Z.; Martin, C. R. "Electronically Conductive Polymer Fibers with Mesoscopic Diameters Show Enhanced Electronic Conductivities," *J. Am. Chem. Soc.*, **1989**, 111, 4138-4139.
259. Martin, C. R.; Tierney, M. J.; Cheng, I. F.; Van Dyke, L. S.; Cai, Z.; McBride, J. R.; Brumlik, C. J. "Nano- and Micro-Structures in Chemistry, Electrochemistry and Materials Science," Nanostructure Physics and Fabrication, Academic Press, NY, **1989**, 461-465.
260. Whiteley, L. D.; Martin, C. R. "Fresh Look at Transport in Perfluorosulfonate Ionomers: Ultramicroelectrode Investigations of Nafion® and the Dow Ionomers," *J. Phys. Chem.*, **1989**, 93, 4650-4658.
261. Cai, Z.; Liu, C.; and Martin, C. R. "Measuring Conductivities of Highly Conductive Membranes," *J. Electrochem. Soc.*, **1989**, 136, 3356-3361.
262. Whiteley, L. D.; Martin, C. R. "Ionomer Film-Coated Electrodes as Electrochemical Sensors," *Mol. Cryst. Liq. Cryst.*, **1988**, 160, 359-376.
263. Moore, R. B., III; Martin, C. R. "Chemical and Morphological Properties of Solution-Cast Perfluorosulfonate Ionomers," *Macromolecules*, **1988**, 21, 1334-1339.
264. Lawson, D. R.; Whiteley, L. D.; Martin, C. R.; Szentirmay, M. N.; Song, J. I. "Oxygen Reduction at Nafion® Film-Coated Platinum Electrodes: Transport and Kinetics," *J. Electrochem. Soc.*, **1988**, 135, 2247-2253.

265. Martin, C. R.; Whiteley, L. D.; Lawson, D. R.; Szentirmay, M. N. "New Electrochemical Applications of Perfluorosulfonate Ionomers," *Polym. Prepr.*, **1988**, 29, (2), 442-443.
266. Penner, R. M.; Van Dyke, L. S.; Martin, C. R. "Electrochemical Evaluation of Charge-Transport Rates in Polypyrrole," *J. Phys. Chem.*, **1988**, 92, 5274-5282.
267. Cheng, I. F.; Martin, C. R. "Ultramicrodisk Electrode Ensembles Prepared by Incorporating Carbon Paste into a Microporous Host Membrane," *Anal. Chem.*, **1988**, 60, 2163-2165.
268. Colón, J. L.; Yang, C.-Y.; Clearfield, A.; Martin, C. R. "Optical Investigations of the Chemical Microenvironment Within the Layered Solid Zirconium Phosphate Sulphophenylphosphonate," *J. Phys. Chem.*, **1988**, 92, 5777-5781.
269. Whiteley, L. D.; Martin, C. R. "Perfluorosulfonate Ionomer Film Coated Electrodes as Electrochemical Sensors: Fundamental Investigations," *Anal. Chem.*, **1987**, 59, 1746-1751.
270. Martin, C.R. in "Ultramicroelectrodes," Fleischmann, M.; Pons, S.; Rolison, D. R.; Schmidt, P. P., Eds. Datatech Systems, Inc. Morganton, NC, **1987**.
271. Penner, R. M.; Martin, C. R. "Preparation and Electrochemical Characterization of Ultramicroelectrode Ensembles," *Anal. Chem.*, **1987**, 59, 2625-2530.
272. Szentirmay, M. N.; Campbell, L. F.; Martin, C. R. "Silane Coupling Agents for Attaching Nafion® to Glass and Silica," *Anal. Chem.*, **1986**, 58, 661-662.
273. Espenscheid, M. W.; Ghatak-Roy, A. R.; Moore, R. B., III; Penner, R. M.; Szentirmay, M. N.; Martin, C. R. "Sensors from Polymer Modified Electrodes," *J. Chem. Soc., Faraday Trans. 1*, **1986**, 82, 1051-1070.
274. Ghatak-Roy, A. R.; Martin, C. R. "Electromodulated Ion Exchange Chromatography," *Anal. Chem.*, **1986**, 58, 1574-1575.
275. Penner, R. M.; Martin, C. R. "Controlling the Morphology of Electronically Conductive Polymers," *J. Electrochem. Soc.*, **1986**, 133, 2206-2207.
276. Penner, R. M.; Martin, C. R. "Electronically Conductive Composite Polymer Membranes," *J. Electrochem. Soc.*, **1986**, 133, 310-315.
277. Macfarlane, R. D.; McNeal, C. J.; Martin, C. R. "Mass Spectrometric Study of Ion Adsorption on Poly(ethyleneterephthalate) and Polypropylene Surfaces," *Anal. Chem.*, **1986**, 58, 1091.
278. Moore, R. B., III; Martin, C. R. "Procedure for Preparing Solution-Cast Perfluorosulfonate Ionomer Films and Membranes," *Anal. Chem.*, **1986**, 58, 2569-2570.
279. Martin, C. R. "Electromodulated Ion Exchange Chromatography," *Anal. Chem.*, **1986**, 58, 1574.
280. Prieto, N. E.; Martin, C. R. "Luminescence Probe Studies of Nafion® Polyelectrolytes," *J. Electrochem. Soc.*, **1984**, 131, 751-755.
281. Szentirmay, M. N.; Martin, C. R. "Chemical Properties and Film Casting of Radiation-Grafted Ion Containing Polymers," *J. Electrochem. Soc.*, **1984**, 131, 1652-1657.
282. Alvarez-Roa, E. R.; Prieto, N. E.; Martin, C. R. "Luminescence Titrations of Polyelectrolytes," *Anal. Chem.*, **1984**, 56, 1939-1944.

283. Szentirmay, M. N.; Martin, C. R. "Ion-Exchange Selectivity of Nafion® Films on Electrode Surfaces," *Anal. Chem.*, **1984**, 56, 1898-1902.
284. Moore, R. B., III; Wilkerson, J. E.; Martin, C. R. "High-Performance Liquid Chromatographic Studies of the Ion-Exchange Selectivity of Nafion®," *Anal. Chem.*, **1984**, 56, 2572-2575.
285. Penner, R. M.; Martin, C. R. "Ion Transporting Composite Membranes. I. Nafion®-Impregnated Gore-Tex," *J. Electrochem. Soc.*, **1985**, 132, 514-515.
286. Nagy, G.; Gerhardt, G. A.; Oke, A. F.; Rice, M. E.; Adams, R. N.; Moore, R. B., III; Szentirmay, M. N.; Martin, C. R. "Ion Exchange and Transport of Neurotransmitters in Nafion® Films on Conventional and Microelectrode Surfaces," *J. Electroanal. Chem.*, **1985**, 188, 85-94.
287. Espenscheid, M. W.; Martin, C. R. "Electroactive Ion Exchange Polymers," *J. Electroanal. Chem.*, **1985**, 188, 73-84.
288. Szentirmay, M. N.; Prieto, N. E.; Martin, C. R. "Luminescence Probe Studies of Ionomers. 1. Steady-State Measurements from Nafion® Membrane," *J. Phys. Chem.*, **1985**, 89, 3017-3023.
289. Szentirmay, M. N.; Prieto, N. E.; Martin, C. R. "Luminescence Probe Studies of Ionomers--II. Steady State Measurements from Sulphonated Polyethylene and Teflon Membranes," *Talanta*, **1985**, 32, 745-749.
290. Martin, C. R.; Rubinstein, I.; Bard, A. J. "The Heterogeneous Rate Constant for the Ru(bpy)₃^{2+/3+} Couple at a Glassy Carbon Electrode in Aqueous Solution," *J. Electroanal. Chem.*, 151, **1983**, 267-271.
291. Rubinstein, I.; Martin, C. R.; Bard, A. J. "Electrogenerated Chemiluminescent Determination of Oxalate," *Anal. Chem.*, **1983**, 55, 1580-1582.
292. Jordan, E. A.; Martin, C. R.; Macfarlane, R. D.; McNeal, C. J. "Ion-Containing Polymers: A New Matrix for ²⁵²Cf-Plasma Desorption Mass Spectrometry," *Internat. J. Mass. Spectr.*, **1983**, 53, 345.
293. Martin, C. R.; Dollard, K. A. "Effect of Hydrophobic Interactions of the Rates of Ionic Diffusion in Nafion® Films at Electrode Surfaces," *J. Electroanal. Chem.*, **1983**, 159, 127-135.
294. Martin, C. R.; Rhoades, T. A.; Ferguson, J. A. "Dissolution of Perfluorinated Ion Containing Polymers," *Anal. Chem.*, **1982**, 54, 1639-1641.
295. Martin, C. R.; Rubinstein, I.; Bard, A. J. "Polymer Films on Electrodes 9. Electron and Mass Transfer in Nafion® Films Containing Ru(bpy)₃^{2+/3+}," *J. Am. Chem. Soc.*, **1982**, 104, 4817.
296. Martin, C. R., "Current Trends in Ion-Selective Electrodes," *Trends Anal. Chem.*, **1982**, 1, 175-179.
297. Martin, C. R.; Freiser, H. "Ion-Selective Electrodes Based on an Ionic Polymer," *Anal. Chem.*, **1981**, 53, 902.
298. Martin, C. R.; Freiser, H. "Response Characteristics of Ion Selective Electrodes Based on Dinonylnaphthalenesulfonic Acid," *Anal. Chem.*, **1980**, 52, 562-564.
299. Martin, C. R.; Freiser, H. "Coated Wire Ion Selective Electrodes and Their Application to the Teaching Laboratory," *J. Chem. Educ.*, **1980**, 57, 512-514.

300. Martin, C. R.; Freiser, H. "Ion-Selective Electrode for the Determination of Phencyclidine," *Anal. Chem.*, **1980**, 52, 1772-1774.
301. Martin, C. R.; Freiser, H. "Microcomputer-Controlled Potentiometric Analysis System," *Anal. Chem.*, **1979**, 51, 803.

INVITED LECTURES

1. "Nano Test Tubes – Synthesis, Capping, Biofunctionalization and Biodegradation" Pittcon 2009 Chicago, IL March 11, 2009
2. "Counting Molecules With Nanotubes - A New Paradigm In Biosensor Design," Pittcon 2008, New Orleans, LA, March 4, 2008.
3. "3-D Nanostructured Li-ion Batteries" Plenary lecture at International Conference on Polymer Batteries-Fuel Cells, PBFC-2007, Rome, Italy, June 11-15, 2007
4. "Nanoscience in Bioanalytical Chemistry, 1, Fabrication and Biofunctionalization of Nanotube Membranes," University of Pittsburgh, Pittsburgh Conference Lecture, May 7, 2006.
5. "Nanoscience in Bioanalytical Chemistry, 2, Sensing and Single-Molecule Counting with Nanotube Sensors," University of Pittsburgh, Pittsburgh Conference Lecture, May 7, 2006.
6. "Nanotube and Nanopore Biosensors," Pittcon 2006, Orlando, FL, March 13, 2006.
7. "Nanoscience in Bioanalytical Chemistry," University of California at Irvine, February 7, 2006.
8. "Nanoscience in Bioanalytical Chemistry," Michigan State University, November 10, 2005.
9. "Toward a Nanostructured Li-Ion Battery," Electrochemical Society Meeting, Los Angeles, CA October 18, 2005.
10. "Nanoscience in Bioanalytical Chemistry," Centre College, Danville, KY, October 13, 2005.
11. "Nanoscience in Bioanalytical Chemistry," HRL, Malibu, CA, July 18, 2005.
10. "Nanoscience in Bioanalytical Chemistry," Florida Section ACS Meeting, Orlando, FL, May 6, 2005.
11. "The Advantages of Nanostructured Li-Ion Battery Electrodes," DARPA workshop, Washington, DC, April 29, 2005,
12. "Nanoscience in Bioanalytical Chemistry," University of Michigan, Ann Arbor, MI, April 18, 2005.
13. "Nanotube-Based Artificial Voltage-Gated Ion Channels," Pittcon 2005, Orlando, FL, March 2, 2005.
14. "Biosensing with Nanotube Membranes," Pittcon 2005, Orlando, FL, March 1, 2005.
15. "Electrochemistry of Nanotube-Based Ion-Channel Mimics," Gordon Conference on Electrochemistry, February 12, 2005.
16. "Frontiers in Chemical Research," Texas A&M University, November 1-3, 2004, "Template Synthesis of Nanomaterials."

17. "Biofunctionalized Nanotubes for Bioseparations and Biosensing," Cornell University, Ithaca, NY October 7, 2004.
18. "Bioconjugated Nanotubes for Biosensing and Bioseparations," Biomedical Engineering Roundtable, U.S. National Academies, Washington, DC, October 1, 2004.
19. "Short Course on Nanotechnology," University of Venice, Venice Italy, July 12 and 13, 2004.
20. "DNA Biofunctionalized Nanotube Membranes," Georgia Institute of Technology, Atlanta, GA, May 20, 2004.
21. 20."DNA Biofunctionalized Nanotube Membranes," Department of Materials Science and Engineering, University of Florida, Gainesville, FL, March 30, 2004.
22. "DNA and Protein Transport in Synthetic Nanopore Membranes," American Physical Society Meeting, Montreal, March 23, 2004.
23. "Moving Biomolecules Through Nanotubes," PitCon 2004, Chicago, IL March 8, 2004.
24. "Nanotube Membranes and the Bio/Nano Interface," Massachusetts Institute of Technology, Cambridge, MA February 12, 2004.
25. "NIRT for Biomedical Nanotube Technology," National Science Foundation NIRT Review Meeting, December 16, 2003.
26. "Template-Synthesized Nanotubes and Nanowires for Bioseparations and Analyses," Brown University, Providence, RI, October 23, 2003.
27. "Moving Biomolecules Through Nanotubes," Glaxo Smith Kline, Raleigh, NC, October 7, 2003.
28. "Moving Biomolecules through Nanotubes," University of North Carolina, Chapel Hill, NC, October 6, 2003.
29. "Template-Synthesized Nanomaterials and the Bio/Nano Interface," University of Pennsylvania, Philadelphia, PA, September 29, 2003.
30. "Nanotube Membranes," American Chemical Society National Meeting, New York, NY, September 11, 2003.
31. "Moving Biomolecules through Nanotubes," Northwestern University, Evanston, IL, May 29, 2003.
32. "Moving Biomolecules through Nanotubes," University of Pennsylvania, Philadelphia, PA, April 29, 2003.
33. "The Bio/Nano Interface – Nanotube Membranes for Chemical and Bioseparations," Pittsburgh Conference, Orlando, Florida, March 9-13, 2003.
34. "Nanomaterials in Li-Ion Battery Research and Development," International Battery Association Memorial Symposium, Waikoloa, Hawaii, January 7-10, 2003.
35. "The Bio/Nano Interface – Templated Nanotubes for Bioseparations and Sensors," International Symposium on Bioanalysis, Biotechnology and Nanotechnology, Chagsha, China, June 17-22, 2002

36. "Electromodulated Transport in Nanotube Membranes," University of Southampton, England, May 31, 2002
37. "The Bio/Nano Interface – Templated Nanotubes for Bioseparations," Template Synthesis of Nanostructures Meeting, London, England, May 29, 2002
38. "The Bio/Nano Interface – Templated Nanotubes for Bioseparations and Sensors," Iowa State University, Ames, Iowa, May 24, 2002.
39. "Smart Nanotubes for Bioseparations and Biocatalysis," AVS Topical Conference, Understanding and Operating in Threat Environments, Monterey, CA, May 1-2, 2002.
40. "The Bio/Nano Interface-Nanotubes in Biosensors and Bioseparations," Particles 2002, Orlando, FL, April 22, 2002.
41. "Smart Nanotubules for Biocatalysis, Encapsulation, and Extraction," American Chemical Society National Meeting, Orlando, Florida, April 8, 2002.
42. "Templated Nanotubes in Chemical and Bioseparations and Analysis," Lubrizol Company, Cleveland, OH, March 28, 2002.
43. Lubrizol Lecture, 61st Frontiers in Chemistry Lecture Series, "Templated Nanotubes in Chemical Bioseparations and Analysis," Case Western Reserve University, Cleveland, OH, March 28, 2002.
44. "Templated Nanotubes in Chemical and Bio Separations and Analysis," Foresite Institute Conference on Nanotechnology, Santa Clara, California, November 9-11, 2001.
45. Kilpatrick Symposium on Nanoscience and Technology, "Nanotube Membranes for Bioseparations and Sensors," Illinois Institute of Technology, Chicago, IL, October 3, 2001.
46. "Electroosmotic Flow in Carbon Nanotube Membranes," Potters Lodge Meeting on Electrochemistry, Blue Mountain Lake, New York, September 5-9, 2001.
47. "Nanotubule Membranes in Biochemical Separations and Sensors," Defense Science Research Council Meeting, Portland, Oregon, July 9, 2001.
48. "Template-Synthesized Nanotubes for Chemical Separations and Analysis," Gordon Conference on Analytical Chemistry, New London, Connecticut, June 24-28, 2001.
49. "Nanotube Membranes for Sensing and Separations," University of Venice, Venice, Italy, May 14, 2001
50. "Nanotubule Membranes in Chemical and Biochemical Separations and Sensors," Gordon Conference on Sensors and Interfacial Design, Il Ciocco, Italy, May 6-10, 2001.
51. "Nanotube Membranes for Sensing and Separation," University of Venice, Venice, Italy, May 2, 2001.
52. "Template-Synthesized Nanotubules in Bio Separations and Analyses," University of Illinois, April 6, 2001.
53. "Research at the Bio/Nano Interface," Particles 2001, Orlando, FL, February 29, 2001.
54. "Nanotubule Membranes – Fundamentals and Applications in Electrochemical Energy and Stochastic Sensing," ONR Review Meeting, Annapolis, MD, February 20, 2001.

55. "Nanotube Membranes and Smart Nanotubules for Extraction and Biocatalysis," Surromed, Inc., Palo Alto, CA, January 24, 2001
56. "Nanotubule Membranes for Chemical Separations and Sensors," Nanocon, Tucson, AZ, December 20, 2000.
57. "Nanotubule Membranes – Fundamentals and Applications in Electrochemical Energy and Stochastic Sensing," ONR Review Meeting, Cool Fort, WV, November 10, 2000.
58. "Template-Prepared Bio/Nano Tubules for Chemical Separations and Analysis," Electrochemical Society Meeting, Phoenix, AZ, October 29, 2000.
59. "Nanomaterials in Secondary Battery Research and Development," Workshop on High Power Electrochemical Sources, Rethymnon, Crete, October 3, 2000.
60. "Nanomaterials – Template Synthesis and Applications in Membranes and Electrochemical Energy Production," University of California at Berkeley, Berkeley, CA, September 28, 2000.
61. "Ultrathin Film Composite Membranes,": Hewlett Packard, Corvallis, OR, September 27, 2000.
62. "Nanomaterial-Based Li-ion Battery Electrodes," 10th International Meeting on Li Batteries, Como, Italy, June 1, 2000.
63. "Nanomaterials - Evolving Applications in Membranes, Energy Production, and Analytical Chemistry." ACS National Meeting, San Francisco, CA, March 26, 2000.
64. "Molecular Filtration Using Nanotubule Membranes," Chemistry for a Cleaner Environment Conference, Santa Fe, NM, January 31, 2000.
65. "Nanomaterials in Secondary Battery Research and Development," Duracell, Needham, MA, January 7, 2000.
66. "Template Preparation of and Self-Assembly of Nanostructures," DARPA "MicroElectrochemical Foundry Workshop," Arlington, VA, December 9,10, 1999.
67. "Nanobatteries and Nanomaterials in Secondary Battery Research and Development," Office of Naval Research "Grand Challenge" Conference, Arlington, VA, November 16, 1999.
68. "Nanomaterials in Electrochemistry," Carl Wagner Memorial Award Presentation, Electrochemical Society Meeting, Honolulu, Hawaii, October 19, 1999.
69. "Template Synthesis of Nanomaterials," International Society of Electrochemistry, Pavia, Italy, September 7, 1999
70. "Nanomaterials in Secondary Battery Research and Development," International Society of Electrochemistry, Pavia, Italy, September 6, 1999
71. "Self-Assembly of Template-Synthesized Nanostructures," International Society of Electrochemistry, Pavia, Italy, September 6, 1999
72. "Self-Assembly of Template-Synthesized Nanostructures," American Chemical Society National Meeting, Anaheim, CA, March 23, 1999.
73. "Nanotubule Membranes," Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, Orlando, Florida, March 11, 1999.

74. "Nanomaterials and Nanoelectrochemistry," Pennsylvania State University, College Park, PA, March 5, 1999.
75. "Carbon Nanotubule Membranes," Gordon Conference on Electrochemistry," Ventura, California, January 17-21, 1999.
76. "New Concepts in Molecular-Recognition Membranes," Vanderbilt University, Nashville, TN, October 15, 1998.
77. "New Concepts in Molecular-Recognition Membranes," University of Florida, Gainesville, FL, October 9, 1998.
78. "Toward a Molecular Coulter-Counter Type Device," International Meeting on Molecular and Polymeric Electrodes, Mt. Fuji, Japan, September 20-21, 1998
79. "New Concepts in Molecular-Recognition Membranes," Texas A&M University, College Station, TX, August 31, 1998.
80. "Template Synthesis of Semiconductor Nanostructures," Twelfth International Conference on Photochemical Conversion and Storage of Solar Energy, Berlin Germany, August 9-14, 1998.
81. "Molecular-Recognition Membranes," Monsanto, St. Louis, MO, May 13, 1998
82. "New Concepts in Molecular-Recognition Membranes," University of Utah, Salt Lake City, UT, May 14, 1998.
83. "New Concepts in Molecular-Recognition Membranes," University of Arizona, Tucson, AZ, April 16, 1998.
84. "Molecular Filtration Membranes," IBC's 2nd Annual Molecular Nanotechnology Conference, La Jolla, California, December 8-9, 1997.
85. "Nanomaterials in Secondary Battery: Research and Development," Advanced Non-Aqueous Battery Technology Research and Development Workshop, Hunt Valley, Maryland, October 15-17, 1997.
86. "Nanomaterials--A Template Synthesis Method," Bosch, Stuttgart, Germany, September 31, 1997.
87. "Molecular Recognition Membranes and Electrodes," International Society of Electrochemistry/Electrochemical Society Joint Meeting, Paris, France, August 31-September 5, 1997.
88. "Toward a Molecular Coulter Counter Type Device," International Society of Electrochemistry/Electrochemical Society Joint Meeting, Paris, France, August 31-September 5, 1997.
89. "Molecular Recognition Membranes," Gordon Conference on Reactive Polymers and Ion Exchangers, New England College, Henniker, New Hampshire, July 20-25, 1997.
90. "Nanomaterials--Synthesis and Applications in Membrane Based Chemical Separations and Li-Ion Batteries," Monsanto, St. Louis, Missouri, May 23, 1997.
91. "Nanomaterials--Synthesis and Applications in Membrane Based Chemical Separations and Li-Ion Batteries," 3M, Minneapolis, Minnesota, May 16, 1997.

92. "Nanomaterials--Synthesis, Properties and Applications," University of Minnesota, Minneapolis, MN, May 15, 1997.
93. "Nanoelectrochemistry," Michigan State University, East Lansing, MI, April 24, 1997.
94. "Analytical Applications of Metal Nanotubule Membranes and Electrodes," "Electrochemistry at Ensembles of Nanodisk Electrodes," Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, Atlanta, Georgia, March 16-21, 1997.
95. "Nanoporous Membranes/Electrodes for Chemical and Electrochemical Separations", Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, Atlanta, Georgia, March 16-21, 1997.
96. "Electrochemistry at Ensembles of Nanodisk Electrodes," Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, Atlanta, Georgia, March 16-21, 1997.
97. "Molecular Recognition Polymeric Membranes," Twentieth Asilomar Polymer Conference, Pacific Grove, California, February 10, 1997.
98. "Nanomaterials and Nanoelectrochemistry," University of Pittsburgh, Pittsburgh, Pennsylvania, November 14, 1996.
99. "Nanomaterials and Nanoelectrochemistry," Washington University, St. Louis, Missouri, October 8, 1996.
100. "Electrochemistry at Nanoelectrode Ensembles," Electrochemistry in Ultra-Small Volumes and Domains meeting, Blue Mountain Lake, New York, September 4-8, 1996.
101. "Template Synthesis of Electronically Conductive Polymer Nanostructures," Gordon Conference on Polymers, New England College, Henniker, New Hampshire, June 23-27, 1996.
102. "Nanomaterials: A Membrane-Based Synthetic Approach," Texas Instruments, Dallas, Texas, May 9, 1996.
103. "Template Synthesis of Polymeric Nanostructures," Materials Research Society, San Francisco, California, April 10, 1996.
104. "Metal Nanotubule Membranes--Selective Ion Transport and Molecule Filtration," ACS meeting, New Orleans, Louisiana, March 25, 1996.
105. "Electrochemistry at Nanoelectrode Ensembles," University of Venice, Venice, Italy, March 7, 1996.
106. "Metal Nanotubule Membranes and Electrodes," Pittsburgh Conference on Analytical Chemistry, Chicago, Illinois, March 4, 1996.
107. "Electrochemistry at Ensembles of Nanoscopic Electrodes," Tokyo University of Agriculture and Technology, Tokyo, Japan, February 7, 1996.
108. "Nanomaterials and Nanoelectrochemistry," Tsukuba Science Center, Tsukuba, Japan, February 3, 1996.
109. "Nanomaterials and Nanoelectrochemistry," Hokkaido University, Sapporo, Japan, February 1, 1996.
110. "Nanomaterials and Nanoelectrochemistry," Osaka University, Osaka, Japan, January 30, 1996.

111. "Nanomaterials--A Membrane Based Synthetic Approach," Lawrence Berkeley Laboratory, Berkeley, California, January 11, 1996.
112. "Nanomaterials--A Membrane Based Synthetic Approach," American Institute of Physics, Dearborn, Michigan, October 24, 1995.
113. "Nanomaterials and Nanoelectrochemistry," Indiana University, Bloomington, Indiana, October 13, 1995.
114. "Metal Nanotubule Membranes with Electrochemically Switchable Ion-Transport Selectivity," ACS Regional Meeting, Chicago, Illinois, August 22, 1995.
115. "Membrane Synthesis of Nanomaterials," Gordon Conference on Membranes, Plymouth State College, New Hampshire, July 26, 1995.
116. "Membrane-Based Chemical Separations--New Materials and New Concepts," University of Cincinnati, Cincinnati, Ohio, June 30, 1995.
117. "Electrochemistry at Nanometal-Containing Membranes--Nanodisk and Nanotubule Electrodes," ACS Regional Meeting, Park City, Utah, June 15, 1995.
118. "Membrane-Based Separations Using Electronically Conductive Polymers," North American Membrane Society meeting, Portland, Oregon, May 21-24, 1995.
119. "Electrochemistry at Ensembles of Nanoscopic Electrodes," Tohoku University, Sendai, Japan, April 13, 1995.
120. "Electrochemistry at Ensembles of Nanoscopic Electrodes," Kyoto University, Kyoto, Japan, April 12, 1995.
121. "Nanomaterials - A Membrane-Based Synthetic Approach," Ciba-Geigy, Kobe, Japan, April 11, 1995.
122. "Electrochemistry at Ensembles of Nanoscopic Electrodes," Osaka University, Osaka, Japan, April 10, 1995.
123. "Electrochemistry at Ensembles of Nanoscopic Electrodes," Tokyo University of Agriculture and Technology, Tokyo, Japan, April 7, 1995.
124. "Nanomaterials - A Membrane-Based Synthetic Approach," Showa Denko, Inc. Chiba, Japan, April 6, 1995.
125. "Electrochemistry at Ensembles of Nanoscopic Electrodes," Japanese Electrochemical Society annual meeting, Tokyo, Japan, April 4, 1995.
126. "Electrochemistry at Nanometal-Containing Membranes--Nanodisk and Nanotubule Electrodes," University of Rome, Rome, Italy, March 20, 1995.
127. "Electrochemistry at Nanometal-Containing Membranes--Nanodisk and Nanotubule Electrodes," University of Venice, Venice, Italy, March 17, 1995.
128. "Electrochemistry of Cephalosporin C Derivatives," Antibioticos, Turin, Italy, March 14, 1995.
129. "Electrochemistry at Ensembles of Nanoelectrodes," Pittsburgh Conference, New Orleans, Louisiana, March 6-7, 1995.

130. "Electrochemical and Optical Investigations of Nanometal Arrays," ONR Contractors' Meeting, Los Angeles, California, January 13-15, 1995.
131. "Electrochemistry at Ensembles of Nanoelectrodes," Eastern Analytical Symposium, Somerset, New Jersey, November 14, 1994.
132. "Nanomaterials--A Membrane-Based Synthetic Approach," Second NSF Materials Chemistry Workshop, St. Louis, Missouri, October 13-16, 1994.
133. "Materials Science Aspects of Bioelectrochemistry," International Society of Electrochemists, Porto, Portugal, September 2, 1994.
134. "Bioencapsulation in Polymeric Microcapsules," University of Venice, Italy, August 22, 1994.
135. "Bioencapsulation in Conductive Polymer Nanocapsules," Abbott Laboratories, Chicago, Illinois, July 20, 1994.
136. "Electrochemistry and Electro-Organic-Chemistry," Schering-Plough Research Institute, Union, New Jersey, May 13, 1994.
137. "Conductive Polymer Microstructures--Synthesis and Applications," National ACS meeting, San Diego, California, March 14, 1994.
138. "Nanomaterials--A Membrane Based Approach," University of Utah, Salt Lake City, Utah, March 3, 1994.
139. "Nanomaterials--A Membrane Based Approach," Utah State University, Logan, Utah, March 2, 1994.
140. "Nanomaterials--A Membrane Based Approach," University of Puerto Rico, Rio Piedras, Puerto Rico, February 14, 1994.
141. "Nanochemistry and Nanomaterials," Southwest Analytical Professors' meeting, Fresno, California, January 22, 1994.
142. "Gas Transport Properties of Electronically Conductive Polymers and Related Materials," Dow Chemical, Midland, Michigan, November 12, 1993.
143. "Template Synthesis of Electronically Conductive Polymers," International Society of Electrochemistry, Berlin, Germany, September 5-10, 1993.
144. "Nanomaterials," National Renewable Energy Laboratory, Golden, Colorado, August 18, 1993.
145. "Membrane-Based Separations with Electronically Conductive Polymers," Gordon Conference on Membranes, Plymouth State College, New Hampshire, August 1-6, 1993.
146. "Nanochemistry--A Membrane-Based Approach," University of Cincinnati, Cincinnati, Ohio, July 29, 1993.
147. "Template Synthesis of Electronically Conductive Polymers - A New Route for Achieving Higher Electronic Conductivities," Electrochemical Society meeting, Honolulu, Hawaii, May 16-21, 1993.
148. "Chemical Sensors Based on Ultrathin Film Composite Membranes - A New Concept in Sensor Design," Electrochemical Society meeting, Honolulu, Hawaii, May 16-21, 1993.

149. "Solid-State Electrochemistry--Electrochemical Measurement of Oxygen Transport in Nafion Membranes in the Absence of a Contacting Electrolyte Phase," Electrochemical Society meeting, Honolulu, Hawaii, May 16-21, 1993.
150. "Template Synthesis of Electronically Conductive Polymers - A New Route for Achieving Higher Electronic Conductivities," International Union of Pure and Applied Chemistry Commission meeting, Honolulu, Hawaii, May 15, 1993.
151. "Nanochemistry--A Membrane-Based Approach," University of Arizona, Tucson, Arizona, May 5, 1993.
152. "Bioencapsulation in Electronically Conductive Polymer Nanotubules," American Chemical Society meeting, Denver, Colorado, April 1, 1993.
153. "Electrochemical Investigations of the Nafion®/Platinum Interface Using a Solid-State Electrochemical Cell," ACS meeting, Denver, Colorado, March 30, 1993.
154. "Biosensors Based on Ultrathin Film Composite Membranes," American Chemical Society meeting, Denver, Colorado, March 29, 1993.
155. "New Ideas in Biosensors and Biocatalysis," Gordon Conference on Bioanalytical Sensors, Ventura, California, March 22-26, 1993.
156. "Template Synthesis - A Method for Enhancing Supermolecular Order in Electronically Conductive Polymers," MRS meeting, Pittsburgh, Pennsylvania, December 2, 1992.
157. "Concerted Ion and Electron Transfer Across Electronically Conductive Polymer Membranes," Materials Research Society, Boston, Massachusetts, December 1, 1992.
158. "Electronically Conductive Polymers--New Plastics that Conduct Electricity Like Metals," Regis College, Denver, Colorado, November 9, 1992.
159. "Synthesis, Characterization and Electronic Properties of Electronically Conductive Polymer Microstructures," Oregon Graduate Institute of Science and Technology, Beaverton, Oregon, October 2, 1992.
160. "Electronically Conductive Polymers as Chemically Selective Layers for Membrane-Based Separations," International Conference on Science and Technology of Synthetic Metals, Gothenburg, Sweden, August 16, 1992.
161. "New Ideas in Biosensors and Biocatalysis," Anna University, Madras, India, August 12, 1992.
162. "Electronically Conductive Polymer Microstructures--Tubules, Fibrils and Ultrathin Films," SPIC Science Foundation, Madras, India, August 10, 1992.
163. "Template Synthesis of Electronically Conductive Polymers--A New Route for Achieving Higher Electronic Conductivities," University of Rome, Rome, Italy, July 30, 1992.
164. "New Ideas in Biosensors and Biocatalysis" University of Venice, Venice, Italy, July 27, 1992.
165. "Template Synthesis of Electronically Conductive Polymers--A New Route for Achieving Higher Electronic Conductivities," University of Ulm, Ulm, Germany, July 23, 1992.
166. "Biosensors Based on Ultrathin Film Composite Membranes," North American Membrane Society National Meeting, Lexington, Kentucky, May 17-20, 1992.

167. "Rate and Selectivity of Gas-Transport in Electronically Conductive Polymers," North American Membrane Society National Meeting, Lexington, Kentucky, May 17-20, 1992.
168. "Ultrathin Film Composite Membranes for Gas Separations," Dow Chemical meeting, Midland, Michigan, May 11-12, 1992.
169. "Ultrathin Film Composite Membranes for Gas Separations," Materials Research Society Spring '92 meeting, San Francisco, California, April 27-May 2, 1992.
170. "Template Synthesis of Polymeric Micro and Nano Structures: Tubules, Fibrils and Ultrathin Films," California Institute of Technology, Pasadena, California, April 23-24, 1992.
171. "Biosensors Based on Ultrathin Film Composite Membranes," American Chemical Society meeting, San Francisco, California, April 5-10, 1992.
172. "Electronically Conductive Polymer Microstructures--Tubules, Fibrils and Ultrathin Films," University of New Mexico, Albuquerque, New Mexico, April 3, 1992.
173. "Electronically Conductive Polymer Microstructures--Tubules, Fibrils and Ultrathin Films," University of Southern Mississippi, Hattiesburg, Mississippi, March 31, 1992.
174. "Plasma Polymerization of Perfluorinated Ionomer Membranes for Solid Polymer Electrolyte Fuel Cells," University of Colorado Center for Separations Using Thin Films, Boulder, Colorado, January 27-28, 1992.
175. "Ultrathin Film Composite Hollow Fibers for Pervaporation Separations," University of Colorado Center for Separations Using Thin Films, Boulder, Colorado, January 27-28, 1992.
176. "Ultrathin Film Composite Membrane-Based Sensors--A New Concept in Sensor Design," Jet Propulsion Laboratory, Pasadena, California, November 7, 1991.
177. "Template-Synthesis of Conductive Polymers--Enhanced Electronic Conductivity, Enhanced Supermolecular Order and Interesting Microstructures," Naval Weapons Center, China Lake, California, November 5, 1991.
178. "Conductive Polymer Microstructures--Tubules, Fibrils and Ultrathin Films," University of California at San Diego, October 10, 1991.
179. "Conductive Polymer Microstructures--Tubules, Fibrils and Ultrathin Films," University of California at Los Angeles, October 8, 1991.
180. "Conductive Polymer Microstructures--Tubules, Fibrils and Ultrathin Films," Occidental College, Los Angeles, California, October 8, 1991.
181. "Conductive Polymer Microstructures--Tubules, Fibrils and Ultrathin Films," Harvey Mudd College, Claremont, California, October 7, 1991.
182. "New Ultrathin Film Composite Membranes for Gas Separations," Air Products and Chemicals, Allentown, Pennsylvania, July 9, 1991.
183. "Template Synthesis of Electronically Conductive Polymers," Allied-Signal Inc., Morristown, New Jersey, July 8, 1991.
184. "Template Synthesis of Electronically Conductive Polymers," Third International Symposium on Solid Polymer Electrolytes, Annecy, France, June 19, 1991.

185. "Ultrathin Film Composite Membranes for Sensor Applications," ACS Meeting, Atlanta, Georgia, April 17, 1991.
186. "Template-Synthesis of Conductive Polymers - Enhanced Electronic Conductivity, Enhanced Supermolecular Order and Interesting Microstructures," ACS Meeting, Atlanta, Georgia, April 17, 1991.
187. "Ultrathin Film Composite Membranes," Dow Chemical meeting, Midland, Michigan, April 8, 1991.
188. "Ultrathin Film Composite Membranes for Gas Separations," Los Alamos National Labs, Los Alamos, New Mexico, March 11, 1991.
189. "Electronically Conductive Polymers - New Plastics that Conduct Electricity Like Metals," Sigma Xi, Colorado State University, Fort Collins, Colorado, February 22, 1991.
190. "Enhancing Conductivities in Electronically Conductive Polymers," University of Kansas, Lawrence, Kansas, February 4, 1991.
191. "Template Synthesis of Electronically Conductive Polymers," University of Wyoming, Laramie, Wyoming, December 4, 1990.
192. "Enhancing Conductivities in Electronically Conductive Polymers," Solar Energy Research Institute, Golden, Colorado, October 19, 1990.
193. "Enhancing the Conductivities of Electronically Conductive Polymers," University of Colorado, Boulder, Colorado, September 18, 1990.
194. "Enhancing the Conductivities of Electronically Conductive Polymers," Iowa State University, Ames, Iowa, September 7, 1990.
195. "Ultramicroelectrodes and Transparent Metal Films," Iowa State University, Ames, Iowa, September 6, 1990.
196. "Micro and Nanostructures in Chemistry, Electrochemistry, and Materials Science." Graves Science Lecture, Shenandoah College, Winchester, Virginia, February 23, 1990.
197. "Supermolecular Engineering: An Approach for Preparing Better Electronically Conductive Polymers," California Institute of Technology, Pasadena, California, January 22, 1990.
198. "Enhancing the Conductivities of Electronically Conductive Polymers," Rocky Mountain Conference, Denver, Colorado, July 30, 1990.
199. "Electrochemical Synthesis of Ultrathin Film Composite Membranes," Electrochemical Society Meeting, Montreal, May 10, 1990.
200. "Micro and Nanostructures in Chemistry, Electrochemistry, and Materials Science." NSF EPSCoR Meeting, University of Puerto Rico, February 10, 1990.
201. "Electrochemical Synthesis of Ultrathin Film Composite Membranes," Gordon Conference on Electrochemistry, Ventura, California, January 15, 1990.
202. "Supermolecular Engineering: An Approach for Preparing Better Electronically Conductive Polymers," University of Illinois, Urbana, Illinois, Nov. 3, 1989.

203. "Electronically Conductive Polymers." Hansen-Walkup Lecture, Centre College, Danville, Kentucky, October 30, 1989.
204. "Micro and Nanoscale Structure in Chemistry Electrochemistry and Materials Science." Tokyo University of Agriculture and Technology, Tokyo, Japan, September 29, 1989.
205. "Controlling the Supermolecular Structure of Electronically Conductive Polymers." Hokkaido University, Sapporo, Japan, September 27, 1989.
206. "Micro and Nanoscale Structures in Chemistry, Electrochemistry, and Materials Science." International Symposium on Biochemical, Photonic, Electronic Processes of Molecular Functional Interfaces. Tokyo, Japan, September 25, 1989.
207. "Controlling the Supermolecular Structure of Electronically Conductive Polymers - An Electrochemical Method for Producing Better Materials." Keynote lecture at the 40th Meeting of the International Society for Electrochemistry. Kyoto, Japan, September 21, 1989.
208. "New Electroreleasing Membranes" 2nd International Bioanalytical Workshop, Lawrence, Kansas, May 24, 1989.
209. "Perfluorosulfonic Acid Polymer Films in Phosphoric Acid Fuel Cells" 1st Annual Fuel Cells Contractors Meeting, Morgantown, West Virginia, May 4, 1989.
210. "Ion and Charge-Transport in Electronically Conductive Polymers" ACS National Meeting, Dallas, Texas, April 13, 1989.
211. "Nano- and Microstructures in Chemistry, Electrochemistry and Materials Science," Nanostructures Physics Fabrication Symposium, Texas A&M University, College Station, Texas, March 13, 1989.
212. "Organized Assemblies on Electrode Surfaces" Pittsburgh Conference, Atlanta, Georgia, March 8, 1989.
213. "Conductive Polymers - Films and Fibers," Georgia Institute of Technology, Atlanta, Georgia, January 10, 1989.
214. "Micro and Nanoscale Structures in Chemistry, Electrochemistry, and Materials Science," Georgia Institute of Technology, Atlanta, Georgia, January 9, 1989.
215. "Micro and Nanoscale Structures in Chemistry, Electrochemistry, and Materials Science," Colorado State University, Fort Collins, Colorado, December 6, 1988.
216. "Ensembles of Micro and Nanoscale Structures on Electrode Surfaces," ACS National Meeting, Los Angeles, California, September 27, 1988.
217. "New Electrochemical Applications of Perfluorosulfonate Ionomers," ACS National Meeting, Los Angeles, California, September 29, 1988.
218. "Electrochemical Evaluation of Charge-Transport Rates in Electronically Conductive Polymers," Plenary Lecture, 11th International Symposium on the Reactivity of Solids, Princeton, New Jersey, June 19, 1988.
219. "New Ultramicroelectrode Ensembles," 173rd Meeting, the Electrochemical Society, Atlanta, Georgia, May 18, 1988.

220. "Ion-Transport in Electronically Conductive Polymers," Texas Tech University, Lubbock, Texas, April 6, 1988.
221. "Electrochemical Investigations of Electronically Conductive Polymers," Northwestern University, Evanston, Illinois, February 23, 1988.
222. "Electrochemical Investigations of Electronically Conductive Polymers," University of Wisconsin, Madison, Wisconsin, February 5, 1988.
223. "Electrochemical Investigations of Electronically Conductive Polymers," University of Pittsburgh, Pittsburgh, Pennsylvania, January 28, 1988.
224. "Electrochemical Investigations of Electronically Conductive Polymers," Pennsylvania State University, State College, Pennsylvania, January 27, 1988.
225. "Charge-Transport in Electronically Conductive Polymers," University of Arizona, Tucson, Arizona, January 25, 1988.
226. "Charge-Transport in Electronically Conductive Polymers," University of Wyoming, Laramie, Wyoming, December 4, 1987.
227. "Ion-Transport in Electronically Conductive Polymers," Electrochemical Society Meeting, Honolulu, Hawaii, October 22, 1987.
228. "Chemical Microstructures on Electrode Surfaces," Electrochemical Society Meeting, Honolulu, Hawaii, October 21, 1987.
229. "Analytical Applications of Redox Polymer Modified Electrodes," Symposium on Electroresponsive Polymers, Brookhaven National Laboratory, New York, October 7, 1987.
230. "Ion-Transport in Electronically Conductive Polymers," Annual Meeting, Case Center for Electrochemical Sciences, Cleveland, Ohio, September 17, 1987.
231. "Ion-Transport in Electronically Conductive Polymers," ACS National Meeting, New Orleans, Louisiana, September 1, 1987.
232. "Ion-Transport in Electronically Conductive Polymers," Gordon Research Conference on Ion Exchangers and Reactive Polymers, New Port, Rhode Island, August 4, 1987.
233. "Ion-Transport in Electronically Conductive Polymers," International Conference on Solid State Ionics, Reykjavik, Iceland, May 20, 1987.
234. "Ionically Conductive Composite Polymer Membranes," ACS National Meeting, Denver, Colorado, May 7, 1987
235. "Chemical Characterizations of Solution-Cast Perfluorosulfonate Ionomer Films and Membranes," ACS National Meeting, Denver, Colorado, May 6, 1987.
236. "Ion-Transport in Electronically Conductive Polymers," University of Paris, Paris, France, May 5, 1987.
237. "Chemical Characteristics of Solution-Cast Perfluorosulfonate Ionomer Films and Membranes," SRI International, Menlo Park, California, February 6, 1987.
238. "Ion-Transport in Electronically Conductive Polymers," NASA-Johnson Space Center, Houston, Texas, November 19, 1986.

239. "Ionically and Electronically Conductive Composite Polymer Membranes," Electrochemical Society Meeting, San Diego, California, October 23, 1986.
240. "The Chemical and Transport Properties of Perfluorosulfonate Ionomers," Dow Chemical Company, Freeport, Texas, October 5, 1986.
241. "Controlling the Morphology of Electronically Conductive Polymers," FAACS Meeting, St. Louis, Missouri, October 3, 1986.
242. "Controlling the Morphology of Electronically Conductive Polymers," ACS National Meeting, Anaheim, California, September 9, 1986.
243. "Membranes, Modified Electrodes and Electrochemical Sensors," Gordon Research Conference on Analytical Chemistry, August, 1986.
244. "Ionically and Electronically Conductive Composite Polymer Membranes," Gordon Research Conference on Solid State Ionics, July 4, 1986.
245. "The Electrochemical Properties of Electroactive Ionomers," 169th Electrochemical Society National Meeting, Philadelphia, Pennsylvania, May 6, 1986.
246. "Ionically and Electronically Conductive Composite Polymer Membranes," General Motors Research Laboratories, March 21, 1986.
247. "New Ionically and Electronically Conductive Polymer Membranes," Stanford University, Stanford, California, January 24, 1986.
248. "Luminescence Probe Studies of Ionomers: Ionomers as Chemical and Electrochemical Systems," Departemend de Recherche Fondamentale, Centre d'Etudes Nucleaires de Grenoble, Grenoble, France, September 13, 1985.
249. "Sensors From Chemically Modified Electrodes," 30th IUPAC Congress, Manchester, England, September 9, 1985.
250. "Luminescence Probe Studies of Ionomers: Ionomers as Chemical and Electrochemical Systems," Gordon Conference on Ion-Containing Polymers, Colby-Sawyer College, New London, New Hampshire, August 5, 1985.
251. "Analytical Applications of Chemically Modified Electrodes," 1985 International Symposium on LCEC and Voltammetry, Chicago, Illinois, May 29, 1985.
252. "Chemical and Transport Properties of Perfluorosulfonate Ionomers," Dow Chemical Company, Midland, Michigan, March 26, 1985.
253. "Electrochemical Studies of Polymer Films and Membranes," University of Colorado, Boulder, Colorado, March 12, 1985.
254. "Luminescence and Electrochemical Studies of Polymer Films and Membranes," University of Texas at Arlington, Arlington, Texas, March 8, 1985.
255. "Luminescence and Electrochemical Investigations of Polymer Films and Membranes," Louisiana State University, Baton Rouge, Louisiana, February 15, 1985.
256. "Electrochemical Studies of Polymer Films and Membranes," Purdue University, West Lafayette, Indiana, February 11, 1985.

257. "Electrochemical Studies of Ionomers," Ohio State University, Columbus, Ohio, February 8, 1985.
258. "Luminescence and Electrochemical Studies of Polymer Films and Membranes," University of Utah, Salt Lake City, Utah, January 29, 1985.
259. "Electroactive Ion Exchange Polymers," Electrochemical Society National Meeting, New Orleans, Louisiana, October 11, 1984.
260. "Luminescence Probe Studies of Ion-Containing Polymers," Fall 1984 ACS National Meeting, Philadelphia, Pennsylvania, August 28, 1984.
261. "Chemical and Electrochemical Properties of Ionomers," Los Alamos National Laboratories, Los Alamos, New Mexico, August 13, 1984.
262. "Luminescence Probe Studies of Ionomers" and "Electroactive Ion Exchange Polymers," UNESCO-NSF Workshop on Photoelectrochemical Processes and Modified Electrodes, Santa Cruz, California, July 23 and 24, 1984.
263. "Luminescence and Electrochemical Probe Studies of Ionomers," Meadow Brook Meeting on Conducting Polymers, Rochester, Michigan, June 6, 1984.
264. "Transport Properties and Ion Exchange Selectivities of Perfluorosulfonate Ionomers (DuPont's and Dow's)", Dow Chemical Company, Midland, Michigan, June 4, 1984.
265. "Electroactive Ion Exchange Polymers," Spring 1984 ACS National Meeting, St. Louis, Missouri, April 10, 1984.
266. "Ionomers: Transport Properties, Ion Exchange Selectivities, Electroinitiated Polymerization," Dow Chemical Company, Freeport, Texas, February 16, 1984.
267. "Electrochemical Studies of Ion Exchange in Ionomers," San Jose State University, San Jose, California, January 31, 1984.
268. "Ion Exchange Selectivity of Ionomers," Occidental College, Los Angeles, California, January 30, 1984.
269. "Electrochemical Investigations of the Ion Exchange Selectivities of Ionomers," University of Houston, Houston, Texas, October 28, 1983.
270. "Electrochemical (and other) Investigations of the Transport Properties and Ion Exchange Selectivities of Various Ion-Containing Polymers," 25th Rocky Mountain Conference, Denver, Colorado, August 14, 1983.
271. "Diffusional Charge Transport in Perfluorinated Ionomer Films at Electrode Surfaces: Models for the Diffusion Processes," Centre College and University of Cincinnati, November, 1982.
272. "Chemically Modified Electrodes based on Ion-Containing Polymers," Southwest Texas State University, November, 1982.
273. "Possible Electroanalytical Applications of Ion-Containing Polymer-based Chemically Modified Electrodes," Gordon Conference on Analytical Chemistry, August, 1982.
274. "Polymer Films on Electrode Surfaces," University of Texas at San Antonio, November, 1980.

275. "Recent Advances in Polymer Membrane Ion-Selective Electrodes," Purdue University and University of South Carolina, January, 1980.

SYMPOSIA ORGANIZED AND SESSIONS CHAIRED

1. Chaired session on "Electroactive Polymers," International Society of Electrochemistry Meeting, Pavia, Italy, September, 7, 1999.
2. Discussion leader, Gordon Conference on Electrochemistry, January 19, 1998.
3. Organized and chaired a "Symposium on Electrochemistry at Truly Nanoscopic Electrodes," at Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, Atlanta, Georgia, March 16-21, 1997.
4. Organized and chaired a "Symposium on Electrochemistry," at Rocky Mountain Conference on Analytical Chemistry, Denver, Colorado, July 21-26, 1996.
5. Organized and chaired a symposium, "Electrochemical Surface Science: Surface Electrochemistry in Materials Research," for the ACS national meeting, Chicago, Illinois, August 21-24, 1995.
6. Co-chaired session on "New Materials and Materials and Materials Modifications" at 1994 North American Membrane Society annual meeting, Breckenridge, Colorado, May 21-25, 1994.
7. Chaired session at the Gordon Conference on Electrochemistry, Ventura, California, January 18-22, 1993.
8. Organized and chaired a symposium on electrochemistry at the Rocky Mountain Conference on Analytical Chemistry, Denver, Colorado, July 29-30, 1991.
9. Chaired a Symposium on Electrochemistry at the Rocky Mountain Conference, Denver, Colorado, July 1990.
10. Chaired session on "Molecular Design on Electrode Surfaces," Electrochemical Society meeting, Montreal, Canada, May 10, 1990.
11. Organized and chaired a symposium on "Organized Assemblies on Electrode Surfaces" at the Pittsburgh Conference & Exposition, Atlanta, Georgia, March 7, 1989.
12. Organized and chaired a symposium on "Membrane Processes in Electrosynthesis" at the Electrochemical Society meeting, Honolulu, Hawaii, October, 1987.
13. Organized and chaired a symposium honoring Professor Henry Freiser on his being awarded the ACS Analytical Division's Award for Excellence in Teaching, ACS National meeting, New Orleans, Louisiana, September 1, 1987.
14. Discussion Leader, Gordon Conference on Ion-Containing Polymers, New London, New Hampshire, August 7, 1987.
15. Organized and chaired a symposium on "Chemical Characterization of Ion-Containing Polymers," ACS National meeting, Denver, Colorado, May 6-8, 1987.
16. Organized and chaired a session on "New Proton Conducting Systems," Electrochemical Society Meeting, San Diego, California, October 23, 1986.
17. Chaired a session on "Polymer Modified Electrodes," ACS National meeting, Anaheim, California, September 8, 1986.

18. Chaired session on Modified Electrodes and on Chemometrics at the 1986 Pittsburgh Conference, Atlantic City, New Jersey, March 11, 1986.
19. Discussion leader at the Gordon Conference on Electrochemistry, Santa Barbara, California, January, 1985.
20. Chaired a session on modified electrodes at the Fall Electrochemical Society Meeting, New Orleans, Louisiana, October, 1984.
21. Chaired a session on analytical chemistry at the Spring 1983 ACS National meeting, Seattle, Washington.

DIRECTED UNDERGRADUATE, GRADUATE AND POST-DOCTORAL RESEARCH ASSOCIATES

Postdoctoral

1. Dr. Hitomi Mukaibo, "Nanotube Sensors," April 2007 to present.
2. Dr. Youngseon Choi, "Nanotube Sensors," August 2005 to January 2007.
3. Dr. Lane Baker, "Nanotube Sensors," February 2004 to July 2006.
4. Dr. Zuzanna Siwy, "Nanotube Sensors," September 2003 to June 2005.
5. Dr. Myungchan Kang, "Fabrication of Nanowell Surfaces," June 2002 to May 2005.
6. Dr. Shifeng Hou, "Nanotubes and Nanotube Membranes," January 2003 to January 2005.
7. Dr. Katsumi Yamada, "Electroosmotic Flow in Nanotube Membranes," January 2002 to April 2003."
8. Dr. Punit Kohli, "Nanotubes and Nanotube Membranes," September 2001 to August 2004."
9. Prof. Yongkeun Son, "Fabrication of Au Microtubules," August 2000 to July 2001. Professor, Department of Chemistry, Sung Kyun Kwan University, Korea.
10. Dr. Marc Wirtz, "Bio/Nano Sensors," July 2000 to September 2002. PPG, Pittsburgh.
11. Prof. Ehrich Steinle, "Stochastic Sensing with Nanotubule Membranes," September 1999 to July 2001. Assistant Professor, Department of Chemistry, Southwest Missouri State University.
12. Prof. Song-Bok Lee, "Biochemically-Based Molecular-Recognition Membranes," September 1999 to August 2002. Assistant Professor, Department of Chemistry, University of Maryland.
13. Dr. Mun-Suk Kang, "Electrochemically Modulated Transport in Nanotubule Membranes," March 1999 to May 2001.
14. Dr. Guangli Che, "Nanomaterials in Secondary Battery Research and Development," July 1996 to July 1998. Intel, Albuquerque, NM.
15. Dr. Yoshio Kobayashi, "Molecular Counting Metal Nanotubule Membranes," March 1996 to July 1998.
16. Dr. John Carl Hulteen, "Electronic Applications of Nanomaterials," October 1995 to February 1998. 3M, Minneapolis.

17. Dr. Jae-Min Hong, "Molecular Recognition Membranes," March 1995 to October 1996.
18. Dr. Vinod P. Menon, "Electrochemical Reduction of Glutaroyl-7-ACA," June 1995 to June 1996. 3M, Minneapolis.
19. Dr. Haiyan Zhang, "Electrochemistry of the Cephalosporins," June 1994 to June 1995. 3M, Minneapolis.
20. Prof. Matsuhiko Nishizawa, "Metal Nanotube Membranes," April 1994 to January 1995. Professor, Tohoku University, Japan.
21. Dr. K. L. N. Phani, "New Ultra High-Selectivity Membranes," April 1993 to April 1994.
22. Dr. Pilar Aranda, "Water Transport in Ionic Polymers," November 1992 to February 1994.
23. Prof. Susumu Kuwabata, "Gas Transport in Conductive Polymers." April 1992 to April 1993. Professor, Osaka University, Osaka, Japan.
24. Prof. Barbara Ballarin, "Chemical Sensors Based on Ultrathin-Film Composite Membranes--A New Concept in Sensor Design," March 1992 to August 1992. Assistant Professor, University of Bologna, Italy.
25. Dr. Elizabeth Leubker, "Template Synthesis of Organic Microtubules," October 1990 to August 1992. 3M, Minneapolis.
26. Dr. Colby Foss, "Optical Investigations of Chemical Microstructure Arrays," August 1990 to July 1993.
27. Dr. Wenbin Liang, "Enhancing Conductivity in Electronically Conductive Polymers," September 1989, to July 1992. Dow Chemical.
28. Prof. Jorge L. Colón, "Luminescence Probe Studies of Ionic Conductors," September 1989 to June 1990. Professor, Department of Chemistry, University of Puerto Rico, Río Piedras, Puerto Rico.
29. Dr. Michael Tierney, "Optical Properties of Chemical Microstructure Arrays," September 1988 to June 1990.
30. Prof. Frank Cheng, "Ion-Transport in Electronically Conductive Polymers," July 1, 1987, to July 1, 1989. Assistant Professor, Department of Chemistry, University of Idaho.
31. Dr. John Olson, "Ion-Transport in Electronically Conductive Polymers," July 1987 to February 1988.
32. Dr. Raymond Kellman, "Synthesis of Functionalized Polymers," June to August, 1985. Research Corporation, Tucson, Arizona.
33. Dr. Marilyn N. Szentirmay, "Luminescence and Electrochemical Studies of Ionomers," February 1983 to December 1986.

Doctoral

1. Dr. Nelson E. Prieto, "Luminescence Probe Studies of Ionomers," Ph.D. received December 1984.
2. Prof. Reginald M. Penner, "Ion-Transport in Thin Polypyrrole Films," Ph.D. received December 1987.

3. Prof. Robert B. Moore, III, "Chemical and Morphological Properties of Solution-Cast Perfluorosulfonated Ionomers," Ph.D. received December 1988.
4. Dr. Lisa D. Whiteley, "Investigations of the Transport and Thermodynamic Properties of Ionomers Using Microelectrodes," Ph.D. received December 1988.
5. Prof. Jorge L. Colón, "Luminescence Probe Studies of Ionically Conductive Membranes: Zirconium Phosphate Sulfophenylphosphonate and Nafion®," Ph.D. received August 1989.
6. Dr. Chao Liu, "Development of High-Performance Composite Membranes for Electrochemical Processes and Gas Separations," Ph.D. received September 1991.
7. Dr. Zhihua Cai, "Synthesis and Characterization of Electronically Conductive Heterocyclic Polymers," Ph.D. received September 1991.
8. Dr. Del R. Lawson, "Oxygen Reduction in Phosphoric Acid Fuel Cells," Ph.D. received 1995.
9. Dr. Leon S. Van Dyke, "Electronically Conductive Polymers," Ph.D. received January 1993.
10. Dr. Charles J. Brumlik, "Ultramicroelectrode Ensembles," Ph.D. received June 1994.
11. Dr. Junting Lei, "Synthesis and Characterization of Conductive Polypyrrole--Fibrils, Composites, Films and Powders," Ph.D. received June 1992.
12. Dr. Arvind Parthasarathy, "Oxygen Reduction at the Platinum/Nafion® Interface," Ph.D. received June 1993.
13. Dr. Wen-Janq Chen, "Ultrathin Film Composite Membranes," Ph.D. received 1995.
14. Dr. Louis Hornyak, "Optical Properties of Nanometal-Porous Alumina Composites," Ph.D. received 1996. .
15. Dr. Vinod P. Menon, "Template Synthesis of Polymeric and Metallic Nanostructures," Ph.D. received 1996. .
16. Dr. Ranjani V. Parthasarathy, "Template-Synthesis of Electronically Conductive Polymer Microstructures – Fundamentals and Applications," Ph.D. received 1996.
17. Dr. Veronica Cepak, "The Preparation of Concentric-Tubular Composite Microstructures and Nanorod Sols Using Template Synthesis," Ph.D. received 1996.
18. Dr. Kshama B. Jirage, "The Fabrication of Gold Nanotubule Membranes and their Applications in Chemical Separations," Ph.D. received 1999.
19. Dr. Brinda B. Lakshmi, "Separations Using Biological Carriers Immobilized in Porous Polymeric and Sol-Gel Template Synthesized Nanotubular Membranes," Ph.D. received 1998.
20. Dr. Charles J. Patrissi, "Template Synthesis and Characterization of Nanostructured Lithium Insertion Electrodes and Nanogold Aluminum Oxide Composite Membranes," Ph.D. received 1999.
21. Dr. David T. Mitchell, "Facilitated Transport and Membrane Separations," Ph.D. received 2003.
22. Prof. Charles Kevin Chambliss, "Electrochemically Modified Separation of Ions from Aqueous Media," Ph.D. received 1999.
23. Dr. Scott Miller, "Carbon Nanotubule Membranes," Ph.D. received 2004.

24. Dr. Naichao Li, "Applying Nanoscale Science to Li-Ion Battery and Membrane Transport," Ph.D. received 2003.
25. Dr. Shufang Yu, "Nanostructure Fabrication and Patterning for use in Chemical separations and Sensors," Ph.D. received 2003. Postdoc Argonne National Labs.
26. Dr. Damian Odom, "Nanopore and Nanotube Membranes," 1999 to 2004.
27. Dr. Lacramioara Troffin, "Sensors from Nanopore Membranes," 2000 to 2006.
28. Dr. C. Chad Harrell, "Single Nanopore and a Nanotube Membranes," 2001 to 2006.
29. Dr. Charles R. Sides, "Nanomaterials in Li-Ion Battery Research," 2001 to 2006.
30. Dr. Elizabeth Henis, "Nanotube Biosensors," 2001 to 2006.
31. Dr. John Wharton, "Nanotube Membranes for Bioseparations," 2003 to 2007.
32. Dr. Fatih Buyukserin, "Electromodulated Nanotube Membranes," 2002 to present.
33. Mario Caicedo, "Nanotube Membranes for Bioseparations and Sensors," 2003 to present.
34. Dr. Fan Xu, "Nanostructured Li-Ion Battery Electrodes," 2003 to 2007.
35. Dr. Wang, Jiahai, "Transport in Nanotube Membranes," 2003 to 2008.
36. Lloyd P. Horne, "Nanotube Biosensing," 2005 to present.
37. DooHo Park, "Palamon Resonance in Metal Nanotubes," 2007 to present
38. Pu Jin, "Nanotube Biosensing," 2004 to present.
39. Kaan Keccei, "Nanotube DNA Sensing," 2004 to present.
40. Lindsay Taylor Sexton, "Nanotube Protein Sensing," 2004 to 2009.
41. Funda Tongay, "DNA Nanotubes," 2006 to present.
42. Gregory Bishop, "Nanotube Sensing," 2006 to present.
43. Peng Guo, "Resisitve-Pulse Cell Sensing," 2006 to present.
44. Otonye Braide "Nanotube Sensing," 2007 to present.

Masters

1. James E. Wilkerson, "Investigations of the Ion Exchange Selectivity of Nafion®," M. S. received 1983. Dow Chemical, Freeport, Texas.
2. Kathleen A. Dollard, "Investigations of the Transport Properties of Nafion®," M. S. received 1984.
3. Edwin R. Alvarez-Roa, "Luminescence Titrations of Polyelectrolytes," M. S. received 1986.
4. Bruce Burton, "Transport in Polypyrrole," M. S. received 1987. Dow Chemical, Freeport, Texas.

5. Marjorie Nicholson, "Effect of Polymer Electrode Morphology on Performance of a Lithium/Polypyrrole Battery," M. S. received 1991.
6. C. Anthony Pitrat, "Ultramicroelectrode Arrays," M.S. received 1994.
7. Scott Stowe, "Synthesis and Gas-Transport Properties of Thin Film Poly(N-Methylpyrrole) Composite Membranes," M.S. received 1995.
8. Greg Withbroe, "Synthesis of Novel Conductive Polymers," M.S. received 1995.
9. John Wharton, "Nanopore Membrane Sensors," M.S. Received 2003.
10. Dooho Park, "Nanopore sensing," M.S. Received 2007.

Undergraduates

1. Kim Cavender, "Novel Anion Selective Electrodes," spring semester, 1982.
2. Gary Guenther, "Investigations of Ion-Containing Polymers," January to December, 1983.
3. Tom McNeal, "Electrochemical Properties of Ion-Containing Polymers," spring semester, 1983.
4. Don Flair, "Electrochemical Properties of Ion-Containing Polymers," spring semester, 1983.
5. Juanita Dortch, "Preparation of Submicron-Sized Chemical Microstructures on Electrode Surfaces," summer semester, 1988.
6. Jon Stockert, "Optical Investigations of Microstructure Arrays," January 1991 to March 1994.
7. Celeste Gale, "Preparation of New Buckminster Fullerene-Based Salts," January to June 1992.
8. Phil Martellaro, "Optical Properties of Nanometals," January to August 1993.
9. Joe Caballero, "C₆₀ Thin Films," September 1993 to June 1994.
10. Jason Henrie, "Molecular Recognition Membranes," June to August 1995.
11. Jason Stafford, "Fabrication of a Glucose Sensors," June to August 1996.
12. Elizabeth Oberhauser, "Fabrication of Porous Anodic Films and Composites," January 1996 to March 1998.
13. Pat Anderson, "Molecular Recognition Membranes," January 1996 to May 1998.
14. Nicole Thorp, "New Nanoporous Membranes," May 1998 to June 1999.
15. Christopher Beach, "Etching Nuclear-Tracked Membranes," May to December 2001.
16. Matthew Parker, "Gold Nanotubule Temperature Synthesis," June 2001 to July 2002.
17. Angelique Blackburn, "Porous Aluminum Growth," June to July 2001.
18. Otonye Braide, "Nanotube Biosensors, summer 2003.
19. Miguel Mota, "Porous Aluminum Growth," 2003 to 2007.

20. Stephanie Sherrill, "Nanotube Biosensing," 2005 to 2007.
21. Ramiro Palma, "Nanotube Biosensing," 2006 -to 2008.
22. Amanda B. Cotton, "Investigations of Conical Nanopores," 2007 to 2008
23. Xabier Osteikoetxea, "Nanoneedles," 2008 to present.
24. Kevin Neal, "DNA Nanotubes," 2008 to 2009.