

CURRICULUM VITAE

**RICHARD M. CROOKS**

Robert A. Welch Chair in Materials Chemistry  
The University of Texas at Austin

**December, 2012**

Department of Chemistry and Biochemistry  
The University of Texas at Austin  
1 University Station, A5300  
Austin, TX 78712-0165

Voice: 512-475-8674  
Fax: 512-475-8651  
Internet: crooks@cm.utexas.edu  
www: <http://rcrooks.cm.utexas.edu/research/>

**FORMAL HIGHER EDUCATION**

*Graduate:* The University of Texas at Austin, Ph.D., 1987

Research Advisor: Dr. Allen J. Bard

Specialization: Electrochemistry

*Undergraduate:* The University of Illinois at Urbana-Champaign, B.S., 1981

Research Advisor: Dr. Larry R. Faulkner

Specialization: Electrochemistry

**PROFESSIONAL APPOINTMENTS**

The University of Texas at Austin

Robert A. Welch Chair in Materials Chemistry: 2009 - present

Chairman, Department of Chemistry and Biochemistry: 2008 - 2010

William H. Wade Professor of Chemistry: 2008-2009

Professor of Chemistry: 2005 – 2008

Texas A&M University

Professor of Chemistry: 1997 – 2005

Professor of Chemical Engineering: 2003 – 2005

Founding Director, Center for Integrated Microchemical Systems: 2000 - 2005

Associate Professor of Chemistry: 1993 – 1997

University of New Mexico

Assistant Professor of Chemistry: 1989 – 1993

Massachusetts Institute of Technology

Postdoctoral Associate: 1987 – 1989

**OTHER NOTEWORTHY PROFESSIONAL ACTIVITIES**

Co-founder and member of the board of directors: Eclipse Sciences, Inc. (July, 2003)

Sabbatical appointment: ACLARA Biosciences, Mountain View, CA (January – June, 2000)

**RESEARCH INTERESTS**

Chemical and biological sensors

Integrated microfluidic systems

Nanomaterials

Physical electrochemistry

Catalysis and electrocatalysis

## HONORS

### **Significant Awards**

- C. N. Reilly Award of the Society of Electroanalytical Chemistry (2010)
- ACS Division of Analytical Chemistry Award in Electrochemistry (2008)
- Carl Wagner Memorial Award of the Electrochemical Society (2003)
- National Science Foundation Young Investigator Award (1993)
- Office of Naval Research Young Investigator Award (1991)
- Society for Analytical Chemists of Pittsburgh Starter Grant Award (1990)
- Gilbert H. Ayres Award, The University of Texas at Austin (1984)

### **Offices Held in Professional Societies**

- Vice Chairman, Sensor Division, Electrochemical Society (2000-2002)
- Secretary/Treasurer, Sensor Division, Electrochemical Society (1998-2000)
- Executive Committee, Sensor Division, Electrochemical Society (1996-1998)
- Board Member, Society for Electroanalytical Chemistry (1996-2001)
- Awards Committee Chair, Society for Electroanalytical Chemistry (1998 - 2002)

### **Editorial Activities**

- Senior Editor, *Langmuir*, ACS (January 2004 - present)
- Editorial Advisory Board Member, *Analytical Chemistry*, ACS (2011-2013)
- Editorial Advisory Board Member, *Catalysis Science and Technology*, RSC (2010 - present)
- Editorial Committee Member, *Annual Review of Analytical Chemistry* (2006-2012)
- Co-Guest Editor, *Langmuir*, special issue on Electrochemistry, December, 2006 (with Allen J. Bard)
- News and Features Advisory Panel, *Analytical Chemistry*, January, 2004 – December, 2006)
- Editorial Board, *Langmuir*, January, 2000- December, 2003
- Editorial Board, *Advanced Functional Materials*, January, 2001- December, 2003.
- Editorial Board, *Sensor Update*, 1998-2008.
- Co-Guest Editor, *Acc. Chem. Res.*, special issue on Chemical Sensors, May, 1998 (with Antonio J. Ricco)
- Co-Guest Editor, *J. Phys. Chem.*, special Festschrift issue honoring Prof. Allen J. Bard, December, 1998 (with Henry S. White)
- Co-Section Editor, *Encyclopedia of Analytical Chemistry* (with Henry S. White)

### **Significant Administrative Positions**

- Department Chairman, UT-Austin Department of Chemistry and Biochemistry (2008 – 2010)
- Founding Director, TAMU Center for Integrated Microchemical Systems (2001-2005)
- Director of Graduate Studies, TAMU Chemistry Department (1996-1999)

### **Significant Advisory Positions**

- NSF Division of Chemical, Bioengineering, Environmental, & Transport Systems (CBET) committee of visitors (2012)
- DOE Council for Chemical and Biochemical Sciences (2011-2014)

- NIH NIBIB Nanotechnology Review Panel (January, 2010)
- Molecular Stamping, SAB (2008 – present)
- University of Illinois Science & Technology Center, External Advisory Board (2006-2011)
- ACS Board-Presidential Task Force on the Multidisciplinary of Chemistry (2004-2005)

## **PUBLICATIONS** (*h*-index = 71)

### **Publications Presently Iterating Between Authors**

- S. Pande; R. M. Crooks "Homogeneous Hydrogenation of Allyl Alcohol using Pd, Pt, and Au Dendrimer-Encapsulated Nanoparticles"
- M. L. Cabezas; V. S. Myers; J. Guerra; R. M. Crooks "Solid Extraction of Au Nanoparticles from within Dendrimers"

### **Peer-Reviewed Research Publications: Submitted and In-Press**

- S. E. Fosdick; S. P. Berglund; C. B. Mullins; R. M. Crooks "Parallel Screening of Electrocatalyst Candidates using Bipolar Electrochemistry" *Anal. Chem.*, December, **2012** (submitted).
- H. Liu; R. M. Crooks "Highly Reproducible Chronoamperometric Analysis in Microdroplets" *Lab Chip*, November, **2012** (submitted).
- K. Scida; E. Sheridan; R. M. Crooks "Electrochemically-gated Delivery of Analyte Bands in Microfluidic Devices using Bipolar Electrodes", *Lab Chip*, October, **2012** (submitted).

### **Peer-Reviewed Research Publications: Published**

238. H. Liu; R. M. Crooks "Determination of Percent Hemoglobin A1c Using a Potentiometric Method", *Anal. Chem.* **2013**, (DOI: 10.1021/ac3032228).
237. T. M. Alligrant; E. G. Nettleton; R. M. Crooks "Electrochemical Detection of Individual DNA Hybridization Events" *Lab Chip* **2013**, (DOI:10.1039/C2LC40993C).
236. K. N. Knust; E. Sheridan; R. K. Anand; R. M. Crooks "Dual-Channel Bipolar Electrode Focusing: The Simultaneous Separation and Enrichment of Anions and Cations" *Lab Chip* **2012**, *12*, 4107-4114 (DOI:10.1039/C2LC40660H).
235. E. Sheridan; D. Hlushkou; K. N. Knust; U. Tallarek; R. M. Crooks "Enrichment of Cations via Bipolar Electrode Focusing" *Anal. Chem.* **2012**, *84*, 7393-7399 (DOI: 10.1021/ac301101b).
234. I. Dumitrescu; R. M. Crooks "Effect of Mass Transfer on the Oxygen Reduction Reaction Catalyzed by Platinum Dendrimer Encapsulated Nanoparticles" *Proc. Natl. Acad. Sci., USA* **2012**, *109*, 11493-11497 (DOI: 10.1073/pnas.1201370109).
233. H. Liu; Y. Xiang; Y. Lu; R. M. Crooks "Aptamer-based Origami Paper Analytical Device for Electrochemical Detection of Adenosine" *Angew. Chem. Int. Ed.* **2012**, *124*, 7031-7034 (DOI: 10-1002/anie.201202929).

232. B.-Y. Chang; K.-F. Chow; J. A. Crooks; F. Mavr ; R. M. Crooks "Two-Channel Microelectrochemical Bipolar Electrode Sensor Array" *Analyst* **2012**, *137*, 2827-2833 (DOI:10.1039/c2an35382b).
231. E. V. Carino; H. Y. Kim; G. Henkelman; R. M. Crooks "Site-Selective Cu Deposition on Pt Dendrimer-Encapsulated Nanoparticles: Correlation of Theory and Experiment" *J. Am. Chem. Soc.* **2012**, *134*, 4153-4162 (DOI: 10.1021/ja209115e).
230. H. Liu; R. M. Crooks "A Paper-Based Electrochemical Sensing Platform with Integral Battery and Electrochromic Read-out" *Anal. Chem.* **2012**, *84*, 2528-2532 (DOI: 10.1021/ac203457h).
229. D. F. Yancey; L. Zhang; R. M. Crooks; G. Henkelman "Au@Pt Dendrimer Encapsulated Nanoparticles as Model Electrocatalysts for Comparison of Experiment and Theory" *Chem. Sci.* **2012**, *3*, 1033-1040 (DOI: 10.1039/C2SC00971D).
228. I. Dumitrescu; D. F. Yancey; R. M. Crooks "Dual-Electrode Microfluidic Cell for Characterizing Electrocatalysts" *Lab Chip* **2012**, *12*, 986-993 (DOI: 10.1039/C2LC21181E).
227. V. S. Myers; A. I. Frenkel; R. M. Crooks "In-situ Structural Characterization of Platinum Dendrimer-Encapsulated Oxygen Reduction Electrocatalysts" *Langmuir* **2012**, *28*, 1596-1603 (DOI: 10.1021/la203756z).
226. S. E. Fosdick; R. M. Crooks "Bipolar Electrodes for Rapid Screening of Electrocatalysts" *J. Am. Chem. Soc.* **2012**, *134*, 863-866 (DOI: 10.1021/ja210354m).
225. H. Liu; R. M. Crooks "Three-Dimensional Paper Microfluidic Devices Based on the Principles of Origami" *J. Am. Chem. Soc.* **2011**, *133*, 17564-17566 (DOI: 10.1021/ja2071779).
224. B. A. Zaccheo; R. M. Crooks "Stabilization of Alkaline Phosphatase with Au@Ag<sub>2</sub>O Nanoparticles" *Langmuir* **2011**, *27*, 11591-11596 (DOI: 10.1021/la202405t).
223. E. Sheridan; K. N. Knust; R. M. Crooks "Bipolar Electrode Depletion: Membraneless Filtration of Charged Species Using an Electrogenerated Electric Field Gradient" *Analyst* **2011**, *136*, 4134-4137 (DOI: 10.1039/c1an15510e).
222. E. Sheridan; D. Hlushkou; R. K. Anand; D. R. Laws; U. Tallarek; R. M. Crooks "Label-free Electrochemical Monitoring of Concentration Enrichment During Bipolar Electrode Focusing" *Anal. Chem.* **2011**, *83*, 6746-6753 (DOI: 10.1021/ac201402n).
221. V. S. Myers; M. G. Weir; E. V. Carino; D. F. Yancey; S. Pande; R. M. Crooks "Dendrimer-encapsulated Nanoparticles: New Synthetic and Characterization Methods and Catalytic Applications" *Chem. Sci.* **2011**, *2*, 1632-1646 (DOI:10.1039/c1sc00256b).
220. S. Pande; R. M. Crooks "Analysis of Poly(amidoamine) Dendrimer Structure by UV-vis Spectroscopy" *Langmuir* **2011**, *27*, 9609-9613 (DOI: 10.1021/la201882t).
219. S. Pande; M. G. Weir; B. A. Zaccheo; R. M. Crooks "Synthesis, Characterization, and Electrocatalysis using Pt and Pd Dendrimer-Encapsulated Nanoparticles Prepared by Galvanic Exchange" *New J. Chem.* **2011**, *35*, 2054-2060 (invited special issue in honor of Prof. Didier Astruc, DOI: 10.1039/c1nj20083f).
218. I. Dumitrescu; R. K. Anand; S. E. Fosdick; R. M. Crooks "Pressure-Driven Bipolar Electrochemistry" *J. Am. Chem. Soc.* **2011**, *133*, 4687-4689.

217. E. V. Carino; R. M. Crooks "Characterization of Pt@Cu Core@Shell Dendrimer-Encapsulated Nanoparticles Synthesized by Cu Underpotential Deposition" *Langmuir* **2011**, *27*, 4227-4235.
216. C. H. Wales; J. Berger; S. Blass; R. M. Crooks; N. Asherie "Quasielastic Light Scattering of Platinum Dendrimer-Encapsulated Nanoparticles" *Langmuir* **2011**, *27*, 4104-4109.
215. R. K. Anand; E. Sheridan; K. N. Knust; R. M. Crooks "Bipolar Electrode Focusing: Faradaic Ion Concentration Polarization" *Anal. Chem.* **2011**, *83*, 2351-2358.
214. B. A. Zaccheo; R. M. Crooks "Self-Powered Sensor for Naked-Eye Detection of Serum Trypsin" *Anal. Chem.* **2011**, *83*, 1185-1188.
213. R. K. Anand; E. Sheridan; D. Hlushkou; U. Tallarek; R. M. Crooks "Bipolar Electrode Focusing: Tuning the Electric Field Gradient" *Lab Chip* **2011**, *11*, 518-527.
212. B.-Y. Chang; J. A. Crooks; K.-F. Chow; F. Mavr ; R. M. Crooks "Design and Operation of Microelectrochemical Gates and Integrated Circuits" *J. Am. Chem. Soc.* **2010**, *132*, 15404-15409.
211. F. Mavr ; R. K. Anand; D. R. Laws; K.-F. Chow; B.-Y. Chang; J. A. Crooks; R. M. Crooks "Bipolar Electrodes: a Useful Tool for Concentration, Separation, and Detection of Analytes in Microelectrochemical Systems" *Anal. Chem.* **2010**, *82*, 8766-8774 (invited feature article).
210. M. G. Weir; V. S. Myers; A. I. Frenkel; R. M. Crooks "In-situ X-ray Absorption Analysis of ~1.8 nm Dendrimer-Encapsulated Pt Nanoparticles During Electrochemical CO Oxidation" *ChemPhysChem* **2010**, *11*, 2942-2950 (invited, special issue on electrochemistry).
209. D. F. Yancey; E. V. Carino; R. M. Crooks "Electrochemical Synthesis and Electrocatalytic Properties of Au@Pt Dendrimer-Encapsulated Nanoparticles" *J. Am. Chem. Soc.* **2010**, *132*, 10988-10989.
208. A. T. Gates; E. G. Nettleton; V. S. Myers; R. M. Crooks "Synthesis and Characterization of NiSn Dendrimer-Encapsulated Nanoparticles" *Langmuir* **2010**, *26*, 12994-12999.
207. K.-F. Chow; B.-Y. Chang; B. A. Zaccheo; F. Mavr ; R. M. Crooks "A Sensing Platform Based on Electrodissolution of a Ag Bipolar Electrode" *J. Am. Chem. Soc.* **2010**, *132*, 9228-9229.
206. S. E. Fosdick; J. A. Crooks; B.-Y. Chang; R. M. Crooks "Two-Dimensional Bipolar Electrochemistry" *J. Am. Chem. Soc.* **2010**, *132*, 9226-9227.
205. B.-Y. Chang; F. Mavr ; K.-F. Chow; J. A. Crooks; R. M. Crooks "Snapshot Voltammetry Using a Triangular Bipolar Microelectrode" *Anal. Chem.* **2010**, *82*, 5317-5322.
204. M. A. Herrero; J. Guerra; V. S. Myers; M. V. G mez; R. M. Crooks; M. Prato "Gold Dendrimer-Encapsulated Nanoparticles as Labeling Agents for Multi-Walled Carbon Nanotubes" *ACS Nano* **2010**, *4*, 905-912.
203. M. A. Albiter; R. M. Crooks; F. Zaera "Adsorption of Carbon Monoxide on Dendrimer-Encapsulated Platinum Nanoparticles: Liquid versus Gas Phase" *J. Phys. Chem. Lett.* **2010**, *1*, 38-40.
202. M. G. Weir; M. R. Knecht; A. I. Frenkel; R. M. Crooks "Structural Analysis of PdAu Dendrimer-Encapsulated Bimetallic Nanoparticles" *Langmuir* **2010**, *26*, 1137-1146.

201. R. K. Perdue; D. R. Laws; D. Hlushkou; U. Tallarek; R. M. Crooks "Bipolar Electrode Focusing: the Effect of Current and Electric Field on Concentration Enrichment" *Anal. Chem.* **2009**, *81*, 10149-10155.
200. D. R. Laws; D. Hlushkou; R. K. Perdue; U. Tallarek; R. M. Crooks "Bipolar Electrode Focusing: Simultaneous Concentration Enrichment and Separation in a Microfluidic Channel Containing a Bipolar Electrode" *Anal. Chem.*, **2009**, *81*, 8923-8929.
199. S. V. Myers; A. I. Frenkel; R. M. Crooks "An X-ray Absorption Study of PdCu Bimetallic Alloy Nanoparticles Containing an Average of 64 Atoms" *Chem. Mater.* **2009**, *21*, 4824-4829.
198. M. V. Gomez; J. Guerra; V. S. Myers; R. M. Crooks; A. H. Velders "Nanoparticle size determination by <sup>1</sup>H NMR spectroscopy" *J. Am. Chem. Soc.* **2009**, *131*, 14634-14635.
197. F. Mavr ; K.-F. Chow; E. Sheridan; B.-Y. Chang; J. A. Crooks; R. M. Crooks "A Theoretical and Experimental Framework for Understanding ECL Emission at Bipolar Electrodes" *Anal. Chem.* **2009**, *81*, 6218-6225.
196. B. A. Zacheo; R. M. Crooks "Detection of an Epstein-Barr Genome Analog at Physiological Concentrations via the Biometallization of Interdigitated Array Electrodes" *Anal. Chem.* **2009**, *81*, 5757-5761.
195. E. V. Carino; M. R. Knecht; R. M. Crooks "Quantitative Analysis of the Stability of Pd Dendrimer-Encapsulated Nanoparticles" *Langmuir* **2009**, *25*, 10279-10284.
194. K.-F. Chow; F. Mavr ; J. A. Crooks; B.-Y. Chang; R. M. Crooks "A large-scale, wireless electrochemical bipolar electrode microarray" *J. Am. Chem. Soc.* **2009**, *131*, 8364-8365.
193. D. Hlushkou; R. K. Perdue; R. Dhopeswarkar; R. M. Crooks; U. Tallarek "Electric field gradient focusing in microchannels with embedded bipolar electrode" *Lab Chip*, **2009**, *9*, 1903-1913.
192. Z. V. Feng; J. L. Lyon; J. S. Croley; R. M. Crooks; D. A. Vanden Bout; K. J. Stevenson "Synthesis and Catalytic Evaluation of Dendrimer-Encapsulated Cu Nanoparticles: An Undergraduate Experiment Exploring Catalytic Nanomaterials" *J. Chem. Ed.* **2009**, *86*, 368-372.
191. M. V. Gomez; J. Guerra; A. H. Velders; R. M. Crooks "NMR Characterization of Fourth-generation PAMAM Dendrimers in the Presence and Absence of Palladium Dendrimer-Encapsulated Nanoparticles" *J. Am. Chem. Soc.* **2009**, *131*, 341-350. Correction published October, 2009: *J Am. Chem. Soc.* **2009**, *131*, 15564.
190. M. R. Knecht; M. G. Weir; V. S. Myers; W. D. Pyrz; H. Ye; V. Petkov; D. J. Buttrey; A. I. Frenkel; R. M. Crooks "Synthesis and Characterization of Pt Dendrimer-Encapsulated Nanoparticles: Effect of the Template on Nanoparticle Formation" *Chem. Mater.* **2008**, *20*, 5218-5228.
189. R. Dhopeswarkar; D. Hlushkou; M. Nguyen; U. Tallarek; R. M. Crooks "Electrokinetics in Microfluidic Channels Containing a Floating Electrode" *J. Am. Chem. Soc.* **2008**, *130*, 10480-10481.
188. D. Hlushkou; R. Dhopeswarkar; R. M. Crooks; U. Tallarek "The Influence of Membrane Ion-permselectivity on Electrokinetic Concentration Enrichment in Membrane-based Preconcentration Units" *Lab Chip* **2008**, *8*, 1153-1162.

187. K.-F. Chow; F. Mavr ; R. M. Crooks "Wireless Electrochemical DNA Microarray Sensor" *J. Am. Chem. Soc.* **2008**, *130*, 7544-7545.
186. V. Petkov; N. Bedford; M. R. Knecht; M. G. Weir; R. M. Crooks; W. Tang; G. Henkelman; A. Frenkel "Periodicity and Atomic Ordering in Nanosized Particles of Crystals" *J. Phys. Chem. C* **2008**, *112*, 8907-8911.
185. R. Dhopeswarkar; R. M. Crooks; D. Hlushkou; U. Tallarek "Transient Effects on Microchannel Electrokinetic Filtering with an Ion-Permeable Membrane" *Anal. Chem.* **2008**, *80*, 1039-1048.
184. M. R. Knecht; M. G. Weir; A. I. Frenkel; R. M. Crooks "Structural Rearrangement of Bimetallic Alloy PdAu Nanoparticles within Dendrimer Templates to Yield Core/Shell Configurations" *Chem. Mater.* **2008**, *20*, 1019-1028.
183. J. Kim; R. M. Crooks "Parallel Fabrication of RNA Microarrays by Mechanical Transfer from a DNA Master" *Anal. Chem.* **2007**, *79*, 8994-8999.
182. H. Ye; J. A. Crooks; R. M. Crooks "The Effect of Particle Size on the Kinetics of the Electrocatalytic Oxygen Reduction Reaction Catalyzed by Pt Dendrimer-Encapsulated Nanoparticles" *Langmuir* **2007**, *23*, 11901-11906.
181. J. Kim; R. M. Crooks "Replication of DNA Microarrays Prepared by In-Situ Oligonucleotide Polymerization and Mechanical Transfer" *Anal. Chem.* **2007**, *79*, 7267-7274.
180. W. M. Lackowski; Y. Vasilyeva; R. M. Crooks; S. C. Kerwin; D. A. Hulse "Microchemical and Surface Evaluation of Canine Tibial Plateau Leveling Osteotomy Plates" *Am. J. Vet. Res.* **2007**, *68*, 908-916.
179. M. R. Knecht; R. M. Crooks "Magnetic Properties of Dendrimer-Encapsulated Iron Nanoparticles Containing 55 and 147 Atoms" *New J. Chem.* **2007**, *31*, 1349-1353. Special issue on dendrimers.
178. H. Ye; R. M. Crooks "Effect of Elemental Composition of PtPd Bimetallic Nanoparticles Containing an Average of 180 Atoms on the Kinetics of the Electrochemical Oxygen Reduction Reaction" *J. Am. Chem. Soc.* **2007**, *129*, 3627-3633.
177. J. Kim; J. Heo; R. M. Crooks "Hybridization of DNA to Bead-Immobilized Probes Confined within a Microfluidic Channel" *Langmuir* **2006**, *22*, 10130-10134.
176. M. R. Knecht; J. C. Garcia-Martinez; R. M. Crooks "Synthesis, Characterization, and Magnetic Properties of Dendrimer-Encapsulated Nickel Nanoparticles Containing <150 Atoms" *Chem. Mater.* **2006**, *18*, 5039-5044.
175. J. Kim; R. M. Crooks "Transfer of Surface Polymerase Reaction Products to a Secondary Platform with Conservation of Spatial Registration" *J. Am. Chem. Soc.* **2006**, *128*, 12076-12077.
174. O. M. Wilson; M. R. Knecht; J. C. Garcia-Martinez; R. M. Crooks "The Effect of Pd Nanoparticle Size on the Catalytic Hydrogenation of Allyl Alcohol" *J. Am. Chem. Soc.* **2006**, *128*, 4510-4511.
173. H. Lin; J. Kim; L. Sun; R. M. Crooks "Replication of DNA Microarrays from Zip Code Masters" *J. Am. Chem. Soc.* **2006**, *128*, 3268-3272.

172. L. Sun; R. M. Crooks "Photonic Reporting of Electrochemical Reactions Using Light Emitting Diodes" *J. Electrochem. Soc.* **2005**, *152*, E371-E377.
171. M. R. Knecht; J. C. Garcia-Martinez; R. M. Crooks "Hydrophobic Dendrimers as Templates for Au Nanoparticles" *Langmuir* **2005**, *21*, 11981-11986.
170. Y.-G. Kim; R. M. Crooks "Synthesis and Characterization of Covalently Linked Multilayer Films Prepared in the Absence of Solvent" *Langmuir* **2005**, *21*, 11262-11267.
169. J. Heo; R. M. Crooks "Microfluidic Biosensor Based on an Array of Hydrogel-Entrapped Enzymes" *Anal. Chem.* **2005**, *77*, 6843-6851.
168. R. Dhopeswarkar; L. Sun; R. M. Crooks "Electrokinetic Concentration Using Hydrogel Microplugs within a Microfluidic Device" *Lab Chip* **2005**, *5*, 1148 - 1154.
167. S.-K. Oh; Y. Niu; R. M. Crooks "Size-Selective Catalytic Activity of Pd Nanoparticles Encapsulated within End-Group Functionalized Dendrimers" *Langmuir* **2005**, *21*, 10209-10213.
166. H. Lin; L. Sun; R. M. Crooks "Replication of a DNA Microarray" *J. Am. Chem. Soc.* **2005**, *27*, 11210-11211.
165. Y.-G. Kim; J. C. Garcia-Martinez; R. M. Crooks "Electrochemical Properties of Monolayer-Protected Au and Pd Nanoparticles Extracted from within Dendrimer Templates" *Langmuir* **2005**, *21*, 5485-5491.
164. J. C. Garcia-Martinez; R. Lezutekong; R. M. Crooks "Dendrimer-Encapsulated Pd Nanoparticles as Aqueous, Room-Temperature Catalysts for the Stille Reaction" *J. Am. Chem. Soc.* **2005**, *127*, 5097-5103.
163. H. Ye; R. M. Crooks "Electrocatalytic O<sub>2</sub> Reduction at Glassy Carbon Electrodes Modified with Dendrimer-Encapsulated Pt Nanoparticles" *J. Am. Chem. Soc.* **2005**, *127*, 4930-4934.
162. R. W. J. Scott; C. Sivadarayana; O. M. Wilson; Z. Yan; D. W. Goodman; R. M. Crooks "Titania-Supported PdAu Bimetallic Catalysts Prepared from Dendrimer-Encapsulated Nanoparticle Precursors" *J. Am. Chem. Soc.* **2005**, *127*, 1380-1381.
161. O. M. Wilson; R. W. J. Scott; J. C. Garcia-Martinez; R. M. Crooks "Synthesis, Characterization, and Structure-Selective Extraction of 1-3 nm-Diameter AuAg Dendrimer-Encapsulated Bimetallic Nanoparticles" *J. Am. Chem. Soc.* **2005**, *127*, 1015-1024.
160. R. W. J. Scott; O. M. Wilson; R. M. Crooks "Synthesis, Characterization, and Applications of Dendrimer-Encapsulated Nanoparticles" *J. Phys. Chem. B* **2005**, *109*, 692-704 (Feature Article).
159. R. W. J. Scott; O. M. Wilson; R. M. Crooks "Titania-Supported Au and Pd Composites Synthesized from Dendrimer-Encapsulated Metal Nanoparticle Precursors" *Chem. Mater.* **2004**, *16*, 5682-5688.
158. T. Ito; L. Sun; R. R. Henriquez; R. M. Crooks "A Carbon Nanotube-Based Coulter Nanoparticle Counter" *Acc. Chem. Res.* **2004**, *37*, 937-945.
157. J. C. Garcia-Martinez; R. M. Crooks "Extraction of Au Nanoparticles having Narrow Size Distributions from within Dendrimer Templates" *J. Am. Chem. Soc.* **2004**, *126*, 16170-16178.
156. R. W. J. Scott; O. M. Wilson; S.-K. Oh; E. A. Kenik; R. M. Crooks "Bimetallic Palladium-Gold Dendrimer-Encapsulated Catalysts" *J. Am. Chem. Soc.* **2004**, *126*, 15583-15591.



155. O. M. Wilson; R. W. J. Scott; J. C. Garcia-Martinez; R. M. Crooks "Separation of Dendrimer-Encapsulated Au and Ag Nanoparticles by Selective Extraction" *Chem. Mater.* **2004**, *16*, 4202-4204.
154. T. Ito; L. Sun; M. A. Bevan; R. M. Crooks "Comparison of Nanoparticle Size and Electrophoretic Mobility Measurements using a Carbon Nanotube-Based Coulter Counter, Dynamic Light Scattering, Transmission Electron Microscopy, and Phase Analysis Light Scattering" *Langmuir* **2004**, *20*, 6940-6945.
153. G. P. Perez; R. M. Crooks "Pore-Bridging Poly(dimethylsiloxane) Membranes as Selective Interfaces for Vapor-Phase Chemical Sensing" *Anal. Chem.* **2004**, *76*, 4137-4142.
152. D. Liu; R. K. Perdue; L. Sun; R. M. Crooks "Immobilization of DNA onto Poly(dimethylsiloxane) Surfaces and Application to a Microelectrochemical Enzyme-Amplified DNA Hybridization Assay" *Langmuir* **2004**, *20*, 5905-5910.
151. R. R. Henriquez; T. Ito; L. Sun; R. M. Crooks "The Resurgence of Coulter Counting for Analyzing Nanoscale Objects" *The Analyst* **2004**, *129*, 478-482.
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### **Patents and Patent Applications**

10. R. M. Crooks; H. Liu "3-D Sensing Systems Fabricated by Paper Folding" Provisional filed 2 May, 2012. Application number: 61641880.
9. R. M. Crooks; H. Liu "3-D Sensing Systems Fabricated by Paper Folding" Provisional filed 18 April, 2012. Application number: 61635081.
8. L. Sun; R. M. Crooks "Method and Apparatus for Nanoparticle Transport and Detection" U.S. Patent No. US 7,077,939 issued 18 July, 2006.
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3. M. Zhao; H. S. Lackritz; R. M. Crooks "Integrated Microdevices for Conducting Chemical Operations" U.S. Patent Application Publication US 2002/0122747 A1 published 5 September, 2002.
2. R. M. Crooks; A. J. Ricco; M. Wells "Dendrimer Monolayer Films" U.S. Patent No. 6,312,809 issued 6 November, 2001.
1. R. M. Crooks; T. Kim; K. C. Chan; J. K. Schoer "Polymeric Self-Assembled Mono- and Multilayers and Their Use in Photolithography" U.S. Patent No. 5,885,753 issued 23 March, 1999.

## **INVITED PRESENTATIONS**

### **General Lectures**

3. Faulkner Nano Science and Technology Building dedication (The University of Texas at Austin, Austin, TX, October, 2011). "Inspiring Nanoscience"
2. Fall Banquet, Texas A&M University section of the ACS (Texas A&M University, College Station, TX, November, 2010). "What Exactly Happened with that Dang Kite Experiment on June 15, 1752?"
1. Fall Commencement Address, College of Natural Sciences (The University of Texas at Austin, Austin, TX, December, 2008) "Two Parables"

### **Lectureships**

6. Texas A&M University, Frontiers in Chemical Research (College Station, TX, October, 2011). Three lectures collectively titled "Electrocatalysis and Microanalysis"
5. Society for Analytical Chemists of Pittsburgh (Pittsburgh, PA, September, 2005). "Synthesis, Characterization, and Electrocatalysis using Dendrimer-Encapsulated Catalysts"
4. University of Utah (Salt Lake City, UT, November, 2002). Departmental colloquium. "Dendrimer-Encapsulated Nanoparticles: Synthesis, Characterization, and Applications to Catalysis"
3. University of Wyoming (Laramie, WY, July, 2000). Summer Seminar: five lectures collectively titled "Adventures in Nanotechnology".
2. Electrochemical Society, Chicago Section (Lisle, IL, December, 1997). "Interfacial Materials for Array-Based Chemical Sensors"
1. Senior Technical Meeting: ACS Puerto Rico Section (Lajas, Puerto Rico, November, 1995). "Chemical Sensors and Interfacial Design"

### **Plenary Lectures**

5. Smart Surfaces 2012: Solar and BioSensor Applications (Dublin, Ireland, March, 2012) "Self-Powered Biosensor Platforms Fabricated by Origami"
4. 13th Instrumental Analysis Conference (Barcelona, Spain, November, 2011) "Bipolar Electrodes: Fundamentals, Sensing, and Concentration Enrichment in Microelectrochemical Systems"
3. Third Meeting on Dendrimers (EDEN3) (Ciudad Real, Spain, February, 2011) "Synthesis of Core-Shell Dendrimer-Encapsulated Nanoparticles and Their Electrocatalytic Properties"
2. Simpósio Brasileiro de Eletroquímica e Eletroanalítica (SIBEE XVII) (Fortaleza, Brazil, April, 2009) "Synthesis, Characterization, and Electrocatalytic Applications of Dendrimer-Encapsulated Nanoparticles"
1. Fifth International Society of Electrochemistry Spring Meeting (Dublin, Ireland, May,

2007) "Synthesis, Characterization, and Electrocatalytic Applications of Dendrimer-Encapsulated Nanoparticle"

### **Invited International Presentations**

33. University of Bordeaux (Bordeaux, France, September, 2012) "Bipolar electrodes: concentration, separation and detection in microelectrochemical systems"
32. University of Geneva (Geneva, Switzerland, June, 2011) "Sensing and Concentration Enrichment using Bipolar Electrodes"
31. Mátrafüred 2011 International Conference on Electrochemical Sensors (Dobogókö, Hungary, June, 2011) "Electrochemical Sensing Using Bipolar Electrodes"
30. Joint Meeting ElecNano<sup>4</sup> - 7<sup>th</sup> ECHEMS (Paris, France, May, 2011) "Core-Shell Dendrimer-Encapsulated Nanoparticles: Theory, Synthesis, Characterization, and Electrocatalysis"
29. The Hong Kong Polytechnic University (Hong Kong, December, 2007) "Synthesis, Characterization, and Electrocatalytic Applications of Dendrimer-Encapsulated Nanoparticles"
28. Fifth International Dendrimer Symposium (Toulouse, France, August, 2007) "Synthesis, Characterization, and Electrocatalytic Applications of Dendrimer-Encapsulated Nanoparticles"
27. MESA+ Institute for Nanotechnology & University of Twente (Twente, The Netherlands, June, 2007) "Synthesis, Characterization, and Electrocatalytic Applications of Dendrimer-Encapsulated Nanoparticles"
26. University of Warwick (Warwick, UK, June, 2007) "Synthesis, Characterization, and Electrocatalytic Applications of Dendrimer-Encapsulated Nanoparticles"
25. Second reunión de la División de Nanociencia y Nanotecnología (DINANO) de la Sociedad Mexicana de Física (SMF) (Vera Cruz, Mexico, May, 2007) "Synthesis, Characterization, and Electrocatalytic Applications of Dendrimer-Encapsulated Nanoparticle"
24. Workshop on Surface Reactivity and Nanocatalysis (Ebeltoft, Denmark, June, 2006) "Solution routes to nanoparticle synthesis"
23. Simon Fraser University (Victoria, BC, Canada, March, 2006) "Synthesis, Characterization, and Electrocatalytic Applications of Dendrimer-Encapsulated Nanoparticles"
22. University of British Columbia (Vancouver, BC, Canada, March, 2006) "Synthesis, Characterization, and Electrocatalytic Applications of Dendrimer-Encapsulated Nanoparticles"
21. University of Victoria (Victoria, BC, Canada, March, 2006) "Synthesis, Characterization, and Electrocatalytic Applications of Dendrimer-Encapsulated Nanoparticles"
20. Université de Montréal (Montreal, December, 2005) "Synthesis, Characterization, and Catalytic Applications of 1-3 nm-Diameter Dendrimer-Encapsulated Nanoparticles"
19. McGill University (Montreal, December, 2005) "Synthesis, Characterization, and Catalytic Applications of 1-3 nm-Diameter Dendrimer-Encapsulated Nanoparticles"



18. Université du Québec à Montréal (Montreal, December, 2005) "Synthesis, Characterization, and Catalytic Applications of 1-3 nm-Diameter Dendrimer-Encapsulated Nanoparticles"
17. The 8th SPSJ International Polymer Conference (Fukuoka, Japan, July, 2005) "Dendrimer-Encapsulated Nanoparticles: Application to the Oxygen Reduction Reaction"
16. NATO Advanced Research Workshop on Nanocomposites for a Secure Society (Ouranopolis, Greece, May, 2005) "Analytical Applications of Single-Pore Membranes Based on Carbon Nanotubes"
15. Leopoldina Meeting (Heidelberg, Germany, March, 2005) "Dendrimer-Encapsulated Bimetallic Nanoparticles: Synthesis, Characterization, and Applications to Catalysis"
14. Kyoto University (Kyoto, Japan, February, 2004) "Dendrimer-Encapsulated Metal Nanoparticles: Synthesis, Characterization, and Catalysis"
13. The Second International Workshop on Microchemical Plants (Hyogo, Japan, February, 2004) "Electrochemical Detection and Photonic Reporting in a Microchemical System"
12. University of Alberta (Edmonton, Alberta, Canada, June, 2001) "Dendrimer-Encapsulated Nanoparticles: Applications to Catalysis"
11. First International Symposium on Integrated Molecular Systems (Pohang, Korea, February, 2001) "Dendrimer Encapsulated Nanoparticles: Synthesis, Properties, Catalysis, and Luminescence"
10. National Institute for Advanced Interdisciplinary Research (Tsukuba, Japan, February, 2001) "Dendrimer Encapsulated Nanoparticles: Synthesis, Properties, Catalysis, and Luminescence"
9. Second International Conference on Supramolecular Chemistry and Technology (Leuven, Belgium, September, 2000) "Dendrimer-Encapsulated Nanoparticles: Catalysis and Luminescence"
8. German-American Frontiers of Chemistry Symposium (Kloster Seeon, Germany).
7. Joint International Meeting of The Electrochemical Society, The Electrochemical Society of Japan, and the Japan Society of Applied Physics (Honolulu, HI, October, 1999) "Electrochemistry using Single Carbon Nanotubes and Applications to Scanning Electrochemical Microscopy"
6. Joint International Meeting of The Electrochemical Society, The Electrochemical Society of Japan, and the Japan Society of Applied Physics (Honolulu, HI, October, 1999) "Catalysis Using Dendrimer-Encapsulated Metal Nanoparticles"
5. International Society of Electrochemistry (Pavia, Italy, September, 1999) "Electrocatalysts Based on Dendrimer-Encapsulated, Nanoscopic Transition Metal Particles"
4. NATO Advanced Research Workshop on Supramolecular Science (La Spezia, Italy, September, 1998) "Dendrimer-Encapsulated Metal Nanoclusters for Heterogeneous and Homogeneous Catalysis"
3. First NIMC International Symposium on Photoreaction Control and Photofunctional Materials (Tsukuba, Japan, March, 1998) "Synthesis, Characterization, and Applications of Photopolymerizable Self-Assembled Monolayers"

2. University of Sheffield (Sheffield, UK, September, 1997) "Interfacial Design for Chemical Sensor Arrays"
1. Faraday Discussion No. 107 (Leicester, UK, September, 1997) "Interactions between Self-Assembled Monolayers and an Organophosphonate"

### **U. S. Colleges and Universities**

95. Georgia State University (Atlanta, GA, November, 2012) "Bipolar electrodes: concentration, separation and detection in microelectrochemical systems"
94. University of Georgia (Athens, GA, November, 2012) "Dendrimer-Encapsulated Nanoparticles: Synthesis, Characterization, and Electrocatalysis"
93. Notre Dame University (South Bend, IN, February, 2012) "Bipolar electrodes: concentration, separation and detection in microelectrochemical systems"
92. The University of Texas at San Antonio (San Antonio, TX, January, 2012) "Bipolar Electrodes: a Simple Modality for Concentration, Separation and Detection of Analytes in Microfluidic Channels"
91. University of Houston (Houston, TX, December, 2011) "Dendrimer-Encapsulated Nanoparticles: Synthesis, Characterization, and Electrocatalysis"
90. Arizona State University (Tempe, AZ, November, 2011) "Bipolar Electrodes: a Simple Modality for Concentration, Separation and Detection of Analytes in Microfluidic Channels"
89. Indiana University (Bloomington, IN, April, 2011) "Bipolar Electrodes: a Simple Modality for Concentration, Separation and Detection of Analytes in Microfluidic Channels"
88. University of Nebraska (Lincoln, NB, March, 2011) "Bipolar Electrodes: a Simple Modality for Concentration, Separation and Detection of Analytes in Microfluidic Channels"
87. University of North Texas (Denton, TX, March, 2011) "Bipolar Electrodes: a Simple Modality for Concentration, Separation and Detection of Analytes in Microfluidic Channels"
86. Rutgers University (New Brunswick, NJ, October, 2010) "Dendrimer-Encapsulated Nanoparticles: Synthesis, Characterization, and Electrocatalysis"
85. University of Illinois (Urbana, IL, April, 2010) "Bipolar Electrodes: a Simple Modality for Concentration, Separation and Detection of Analytes in Microfluidic Channels"
84. University of Pennsylvania (Philadelphia, PA, April, 2010) "Dendrimer-Encapsulated Nanoparticles: Synthesis, Characterization, and Electrocatalysis"
83. The University of Texas at Austin ACS Student Chapter (Austin, TX, February, 2010) "Catalytic Properties of Nanoparticles"
82. Texas State University (San Marcos, TX, November, 2009) "Bipolar electrodes: a simple means for concentration, separation and detection of analytes in microfluidic channels"
81. Cornell University (Ithaca, NY, October, 2009) "Synthesis, Characterization, and Electrocatalytic Applications of Dendrimer-Encapsulated Nanoparticles"

80. University of Washington (Seattle, WA, April, 2009) "Synthesis, Characterization, and Electrocatalytic Applications of Dendrimer-Encapsulated Nanoparticles"
79. Virginia Commonwealth University (Richmond, VA, April, 2009) "Synthesis, Characterization, and Electrocatalytic Applications of Dendrimer-Encapsulated Nanoparticles"
78. University of Kansas (Lawrence, KS, October, 2008) "Synthesis, Characterization, and Electrocatalytic Applications of Dendrimer-Encapsulated Nanoparticles"
77. Kansas State University (Manhattan, KS, October, 2008) "Synthesis, Characterization, and Electrocatalytic Applications of Dendrimer-Encapsulated Nanoparticles"
76. Brown University (Providence, RI April, 2008) "Synthesis, Characterization, and Electrocatalytic Applications of Dendrimer-Encapsulated Nanoparticles"
75. Penn State University (State College, PA, April, 2008) "Synthesis, Characterization, and Electrocatalytic Applications of Dendrimer-Encapsulated Nanoparticles"
74. Gustavus Adolphus College (St. Peter, MN, October, 2007) "Synthesis, Characterization, and Electrocatalytic Applications of Dendrimer-Encapsulated Nanoparticles"
73. University of Minnesota (Minneapolis, MN, October, 2007) "Synthesis, Characterization, and Electrocatalytic Applications of Dendrimer-Encapsulated Nanoparticles"
72. Princeton University (Princeton, NJ, April, 2007) "Dendrimer-Encapsulated Nanoparticles: Synthesis, Characterization, and Electrocatalysis"
71. Trinity University (San Antonio, TX, November, 2006) "Synthesis, Characterization, and Electrocatalytic Applications of Dendrimer-Encapsulated Nanoparticles"
70. Southern Illinois University (Carbondale, IL, April, 2006) "Synthesis, Characterization, and Electrocatalytic Applications of Dendrimer-Encapsulated Nanoparticles"
69. University of Wyoming (Laramie, WY, April, 2006) "Synthesis, Characterization, and Electrocatalytic Applications of Dendrimer-Encapsulated Nanoparticles"
68. Colorado State University (Ft. Collins, CO, April, 2006) "Synthesis, Characterization, and Electrocatalytic Applications of Dendrimer-Encapsulated Nanoparticles"
67. University of Southern Mississippi (Hattiesburg, MS, March, 2006) "Synthesis, Characterization, and Electrocatalytic Applications of Dendrimer-Encapsulated Nanoparticles"
66. Georgetown University (Washington, DC, March, 2006) "Synthesis, Characterization, and Electrocatalytic Applications of Dendrimer-Encapsulated Nanoparticles"
65. University of California, Davis (Davis, CA, February, 2006) "Synthesis, Characterization, and Catalytic Applications of 1-3 nm-Diameter Dendrimer-Encapsulated Nanoparticles"
64. University of California, Riverside (Riverside, CA, January, 2006) "Synthesis, Characterization, and Catalytic Applications of 1-3 nm-Diameter Dendrimer-Encapsulated Nanoparticles"
63. University of California, Irvine (Irvine, CA, January, 2006) "Synthesis, Characterization, and Catalytic Applications of 1-3 nm-Diameter Dendrimer-Encapsulated Nanoparticles"
62. University of Louisville (Louisville, KY, April, 2005) "Synthesis, Characterization, and Catalytic Applications of 1-3 nm-Diameter Dendrimer-Encapsulated Nanoparticles"

61. University of Florida (Gainesville, FL, December, 2004) "Dendrimer-Encapsulated Metal Nanoparticles: Synthesis, Characterization, and Catalysis"
60. University of Maryland (College Park, MD, March, 2004) "Dendrimer-Encapsulated Metal Nanoparticles: Synthesis, Characterization, and Catalysis"
59. Vanderbilt University (Nashville, TN, March, 2004) "Dendrimer-Encapsulated Metal Nanoparticles: Synthesis, Characterization, and Catalysis"
58. University of Texas-Austin (Austin, TX, January, 2004) "Dendrimer-Encapsulated Metal Nanoparticles: Synthesis, Characterization, and Catalysis"
57. University of Delaware (Newark, DE, December, 2003) "Dendrimer-Encapsulated Metal Nanoparticles: Synthesis, Characterization, and Catalysis"
56. Purdue University (West Lafayette, IN, December, 2003) "Electrochemical Detection and Photonic Reporting in Microfluidic-Based Chemical Sensors"
55. University of North Carolina (Chapel Hill, NC, April, 2003) "Dendrimer-Encapsulated Metal Nanoparticles: Synthesis, Characterization, and Catalysis"
54. Texas A&M University (Dept. of Chemical Engineering, College Station, TX, April, 2003) "Dendrimer-Encapsulated Metal Nanoparticles: Synthesis, Characterization, and Catalysis"
53. Michigan State University (East Lansing, MI, January, 2003) "Dendrimer-Encapsulated Metal Nanoparticles: Synthesis, Characterization, and Catalysis"
52. Northwestern University (Evanston, IL, October, 2002) "Dendrimer-Encapsulated Catalysts"
51. University of Northern Iowa (Cedar Falls, IA, October, 2002) "Dendrimer-Encapsulated Catalysts"
50. University of Miami (Coral Gables, FL, February, 2002) "Dendrimer-Encapsulated Metal Nanoparticles: Synthesis, Characterization, and Catalysis"
49. Oklahoma State University (Stillwater, OK, November, 2001) "Dendrimer-Encapsulated Catalysts"
48. Auburn University (Auburn, AL, October, 2001) "Dendrimer-Encapsulated Catalysts"
47. University of Washington (Seattle, WA, May, 2001) "Dendrimer-Encapsulated Catalysts"
46. Duquesne University (Pittsburgh, PA, October, 2000) "Dendrimer-Encapsulated Nanoparticles: Catalysis and Luminescence"
45. Washington University (St. Louis, MO, September, 2000) "Dendrimer-Encapsulated Nanoparticles: Catalysis and Luminescence"
44. University of California, Irvine (Irvine, CA, April, 2000) "Dendrimer-Encapsulated Metal and Semiconductor Nanoparticles"
43. University of South Carolina (Columbia, SC, November, 1999) "Catalysis Using Dendrimer-Encapsulated Metal Nanoparticles"
42. Furman University (Greenville, SC, November, 1999) "Catalysis Using Dendrimer-Encapsulated Metal Nanoparticles"

41. Indiana University (Bloomington, IN, April, 1999) "Catalysis Using Dendrimer-Encapsulated Metal Nanoparticles"
40. University of Kentucky (Lexington, KY, February, 1999) "Chemical Sensors and Interfacial Design"
39. University of Alabama (Tuscaloosa, AL, January, 1999) "Hyperbranched Polymers: New Materials for Chemical Sensing and Biological Chemistry"
38. Truman State University (Kirksville, MO, October, 1998) "Interfacial Design for Chemical Sensor Arrays"
37. Grinnell College (Grinnell, IA, October, 1998) "Interfacial Design for Chemical Sensor Arrays"
36. Northwestern University (Evanston, IL, October, 1998) "Electrocatalysis using Dendrimer-Encapsulated Metal Nanoclusters"
35. Colorado State University (Ft. Collins, CO, August, 1998). "Electrocatalysis using Dendrimer-Encapsulated Metal Nanoclusters"
34. Washington State University (Pullman, WA, April, 1998). "Interfacial Design for Chemical Sensor Arrays"
33. University of Florida (Gainesville, FL, March, 1998). "Interfacial Design for Chemical Sensor Arrays"
32. University of Iowa (Iowa City, IA, February, 1998). "Interfacial Design for Chemical Sensor Arrays"
31. University of Wisconsin (Madison, WI, February, 1998). "Interfacial Design for Chemical Sensor Arrays"
30. University of Houston (Houston, TX, November, 1997). "Interfacial Design for Chemical Sensor Arrays"
29. University of Delaware (Newark, DE, March, 1997). "Chemical Sensors and Interfacial Design"
28. University of Michigan (Ann Arbor, MI, January, 1997). "Chemical Sensors and Interfacial Design"
27. Louisiana State University, CAMD (Baton Rouge, LA, August, 1996). "Chemical Sensors and Interfacial Design"
26. University of Illinois, Department of Chemistry (Urbana, IL, April, 1996). "Chemical Sensors and Interfacial Design" (Invitation by students).
25. University of Minnesota, Department of Chemical Engineering and Materials Science (Minneapolis, MN, February, 1996). "The Molecular Basis of Adhesion"
24. Auburn University (Auburn, AL, February, 1995). "Fabrication of Electrodes and Electrode Arrays using Self-Assembled Monolayer Resists"
23. Georgia Institute of Technology (Atlanta, GA, February, 1995). "Fabrication of Electrodes and Electrode Arrays using Self-Assembled Monolayer Resists"
22. University of Georgia (Athens, GA, February, 1995). "Fabrication of Electrodes and Electrode Arrays using Self-Assembled Monolayer Resists"

21. University of Texas (Dallas, TX, April, 1994). "Interactions Between Monolayers and Molecules"
20. University of North Texas (Denton, TX, April, 1994). "STM of Thin Organic Films"
19. University of Utah (Salt Lake City, UT, February, 1994). "Interactions Between Monolayers and Molecules"
18. University of Mississippi (University, MS, January, 1994). "Interactions Between Monolayers and Molecules"
17. University of Wisconsin (Madison, WI, December, 1993). "Interactions Between Monolayers and Molecules"
16. University of Illinois (Urbana, IL, December, 1992). "Nanometer-resolved interactions between scanning probes, organic monolayers, and gold substrates"
15. Texas A&M University (College Station, TX, October, 1992). "Nanometer-resolved interactions between scanning probes, organic monolayers, and gold substrates"
14. University of Wyoming (Laramie, WY, September, 1992). "Interactions Between Probe Molecules and Organized Monolayers: A New Paradigm for Molecular Recognition"
13. Colorado State University (Ft. Collins, CO, September, 1992). "Interactions Between Probe Molecules and Organized Monolayers: A New Paradigm for Molecular Recognition"
12. University of Texas at Austin (Austin, TX, April, 1992). "Organized Monolayers on Surfaces: New Functions and Structural Insights"
11. San Diego State University (San Diego, CA, November, 1991). "Organized Monolayers on Surfaces: New Functions and Structural Insights"
10. Northern Arizona University (Flagstaff, AZ, November, 1991) "Organized Monolayers on Surfaces: New Functions and Structural Insights"
9. University of Texas at El Paso (El Paso, TX, November, 1991). "Materials Chemistry Aspects of Electrochemistry"
8. University of New Mexico, Center for High Technology Materials (Albuquerque, NM, April, 1990). "Microelectrochemical Devices: Transistors, Diodes, and Sensors"
7. New Mexico State University (Las Cruces, NM, February, 1990). "Solid State Electrochemical Devices Employing a Solid Polymer Electrolyte"
6. University of Pittsburgh (Pittsburgh, PA, April, 1989). "Highly Oxidized and Reduced Electronically Conducting Polymers: Finite Windows of High Conductivity"
5. Michigan State University (East Lansing, MI, March, 1989). "Highly Oxidized and Reduced Electronically Conducting Polymers: Finite Windows of High Conductivity"
4. Indiana University (Bloomington, IN, February, 1989). "Highly Oxidized and Reduced Electronically Conducting Polymers: Finite Windows of High Conductivity"
3. Colorado State University (Ft. Collins, CO, January, 1989). "Highly Oxidized and Reduced Electronically Conducting Polymers: Finite Windows of High Conductivity"
2. Pennsylvania State University (University Park, PA, January, 1989). "Highly Oxidized and Reduced Electronically Conducting Polymers: Finite Windows of High Conductivity"

1. University of Wisconsin (Madison, WI, January, 1989). "Highly Oxidized and Reduced Electronically Conducting Polymers: Finite Windows of High Conductivity"

### **Government Laboratories & Agencies, and Businesses**

18. Intel Corporation (Santa Clara, CA, March, 2010) "Bipolar Electrodes: a Simple Means for Concentration, Separation, and Detection of Analytes in Microfluidic Channels"
17. 3M Innovation Center (Austin, TX, September, 2006) "Electrochemical Detection and Photonic Reporting in Microfluidic-Based Chemical Sensors"
16. DuPont (Wilmington, DE, April, 2005) "Synthesis, Characterization, and Catalytic Applications of 1-3 nm-Diameter Dendrimer-Encapsulated Nanoparticles"
15. GlaxoSmithKline (RTP, NC, April, 2003) "Microfluidic Biosensors: Reactions, Mixing, and Detection"
14. WTEC Biosensing Study (NIH, Bethesda, MD, December, 2002) "Bio/Chemical Sensing using Thin Film Recognition Elements"
13. Michigan Molecular Institute (Midland, MI, May, 2002). "Dendrimer-Encapsulated Metal Nanoparticles"
12. Shell Chemical Co. (Houston, TX, February, 2001). "Dendrimer Encapsulated Catalysts"
11. ACLARA Biosciences (Mountain View, CA, July, 1999). "Hyperbranched Polymers: New Materials for Chemical Sensing and Biological Chemistry"
10. Sandia National Laboratories (Albuquerque, NM, March, 1999). "Hyperbranched Polymers: New Materials for Chemical Sensing and Biological Chemistry"
9. ATP Workshop on Chemical Sensors and Biosensors (NIST, Gaithersburg, MD, July, 1998). "An Integrated, Consortium-based Approach for Chemical Sensor R&D"
8. Workshop on Properties and Applications of Dendritic Polymers (NIST, Gaithersburg, MD, July, 1998). "Chemical Sensors Based on Surface-Confined Dendrimers and Surface Acoustic Wave (SAW) Devices"
7. NIST (Gaithersburg, MD, July, 1998). "Electrocatalysis using Dendrimer-Encapsulated Metal Nanoclusters"
6. Amoco Chemical (Naperville, IL, December, 1997). "Hyperbranched Polymers on Surfaces: Synthesis, Characterization, and Applications to Corrosion Passivation and Permselective Membranes"
5. Michigan Molecular Institute (Midland, MI, January, 1997). "Chemical Sensors and Interfacial Design"
4. NIST (Gaithersburg, MD, July, 1996). "Chemical Sensors and Interfacial Design"
3. Naval Research Laboratory (Washington, DC, August, 1991) "Surface-Confined Monolayers that Perform Specific Tasks"
2. Dow Chemical Company (Midland, MI, June, 1991). "Electrochemical Routes to Ceramics and Ceramic Precursors"
1. Sandia National Laboratories (Albuquerque, NM, January, 1991). "Self-Assembling Monolayers"

## U. S. Scientific Conferences

130. Second Annual Workshop on Capillary-Based Microfluidics for Bioanalysis (aka Microfluidics 2.0) (Boston, MA, November, 2012) "Amplification and Electrochemical Detection Strategies Implemented in Origami-based Paper Fluidic Devices"
129. Bioanalytical Sensors Gordon Research Conference (Newport, RI, June, 2012) "Paper-based Microelectrochemical Systems"
128. 34th Solar Photochemistry Program Research Meeting (Annapolis, MD, June, 2012). "Correlation of Theory and Function in Well-Defined Bimetallic Electrocatalysts" (guest speaker).
127. Pittsburgh Conference (Orlando, FL, March, 2012). "Self-powered microelectrochemical devices".
126. Southwest Regional Meeting of the ACS (Austin, TX, November, 2011). "Bipolar Electrodes: a Simple Modality for Concentration, Separation and Detection of Analytes in Microfluidic Channels".
125. Seventh Potter's Lodge Meeting on Electrochemistry (Blue Mtn. Lake, NY, September, 2011). "Self-Powered Electrochemical Devices".
124. Pittsburgh Conference (Atlanta, GA, March, 2011). "Electrocatalytic Properties of Core/Shell Nanoparticles".
123. PacifiChem (Honolulu, Hawaii, December, 2010). "Electrochemical Synthesis of Core/Shell Dendrimer-Encapsulated Nanoparticles"
122. PacifiChem (Honolulu, Hawaii, December, 2010). "Bipolar Electrode Focusing"
121. First Student Potter's Lodge Meeting on Electrochemistry (Blue Mtn. Lake, NY, September, 2010). "Bipolar Electrodes: A Simple Means for Concentration, Separation, and Detection of Analytes in Microfluidic Channels"
120. DOE Separations and Analysis Contractors' Meeting (Baltimore, MD, April, 2010) "Bipolar Electrode Focusing for Concentration Enrichment and Analyte Separations"
119. Materials Research Society (San Francisco, CA, April, 2010). "Electrochemical Synthesis of Core/Shell Dendrimer-Encapsulated Nanoparticles"
118. Pittsburgh Conference (Orlando, FL, March, 2010). "Bipolar Electrode Arrays" Charles N. Reilley Award Address.
117. 2010 Center for Electrochemistry Annual Workshop on Electrochemistry (Austin, TX, February, 2010). "Bipolar Electrodes: A Simple Means for Concentration, Separation, and Detection of Analytes in Microfluidic Channels".
116. Chemical and Biological Defense Science and Technology Conference (Dallas, TX, November, 2009). "Understanding and Implementing Large-Scale Bipolar Electrode Arrays".
115. Sixth Potter's Lodge Meeting on Electrochemistry (Blue Mtn. Lake, NY, September, 2009). "Bipolar Electrodes: A Simple Means for Concentration, Separation, and Detection of Analytes in Microfluidic Channels".
114. Extreme Biosensing (Makena, Maui, Hawaii, December, 2008). "Extreme Bipolar



Electrodes".

113. ACS National Meeting (Philadelphia, PA, August, 2008). "Electrochemical Array Sensors Based on Bipolar Electrodes" and "Synthesis, Characterization, and Electrocatalytic Properties of Well-defined PdCu Dendrimer-encapsulated Nanoparticles"
112. Gordon Research Conference on Bioanalytical Chemistry (Smithfield, RI, July, 2008). "Wireless Electrochemical DNA Microarrays"
111. Pittsburgh Conference (New Orleans, LA, March, 2008). "Electrocatalysis Using Nanoscale Bimetallic Nanoparticles"
110. 2008 Mesilla Chemistry Workshop on New Frontiers of Electrocatalysis (Mesilla, NM, February, 2008). "Electrocatalysis Using Nanoscale Bimetallic Nanoparticles"
109. Fifth Potter's Lodge Meeting on Electrochemistry (Blue Mtn. Lake, NY, Sept., 2007). "Synthesis, Characterization, and Electrocatalytic Applications of Dendrimer-Encapsulated Nanoparticles"
108. 2007 Meeting of the DOE/BES Catalysis and Chemical Transformations Program (Wintergreen, VA, May, 2007) "Understanding Multimetallic Catalysts using Dendrimer-Encapsulated Nanoparticles" (poster)
107. CNM Nanomaterials Conference (The University of Texas at Austin, Austin, TX, November, 2006) "Electrocatalytic Oxygen Reduction using Well-defined PtPd Bimetallic Nanoparticles"
106. Texas Section of the Electrochemical Society (Austin, TX, October, 2006). "Electrocatalytic Oxygen Reduction using Well-defined PtPd Bimetallic Nanoparticles"
105. American Chemical Society National Meeting (San Francisco, CA, September, 2006). "Electrocatalytic O<sub>2</sub> Reduction at Glassy Carbon Electrodes Modified with Well-defined dendrimer-encapsulated PtPd Alloy Nanoparticles"
104. DOE-BES Analysis Research Meeting (Warrenton, VA, April, 2006). "A Fundamental Study of Transport within a Single Nanoscopic Channel"
103. Pittsburgh Conference (Orlando, FL, March, 2006). "Analytical Applications of Single-Pore Membranes Based on Carbon Nanotubes"
102. Fourth Potter's Lodge Meeting on Electrochemistry (Blue Mountain Lake, NY, September, 2005). "A Highly Sensitive Electrochemical Array Detector for DNA and Proteins"
101. Materials Research Society (San Francisco, CA, March, 2005). "Synthesis, Characterization, and Catalytic Applications of 1-3 nm-Diameter Dendrimer-Encapsulated Nanoparticles"
100. Pittsburgh Conference (Orlando, FL, March, 2005). "Preconcentration of DNA using a Hydrogel-Based Transport Modulator"
99. Eastern Analytical Symposium (Somerset, NJ, November, 2004). "Characterization of Polymeric Particles using a Nanotube-Based Coulter Counter"
89. American Chemical Society ProSpectives Conference on Emerging Opportunities in Chemical and Biosensing (Santa Fe, NM, May, 2004). "ECL-Based Diagnostics: Commercial Success and Prospects for the Future"

88. William H. Nichols Distinguished Symposium (White Plains, NY, April, 2004). "Electrochemical Detection and Photonic Reporting in Microfluidic Systems"
87. Gordon Research Conference on Facilitated Chemical Synthesis (Ventura, CA, March, 2004). "Dendrimer-Encapsulated Metal Nanoparticles: Synthesis, Characterization, and Catalysis"
86. Second International Symposium on Nanobiotech 2004 (Big Island, HI, January, 2004). "Coulter Counters Based on Carbon Nanotube Membranes"
85. 204<sup>th</sup> Electrochemical Society Meeting (Orlando, FL, October, 2003). "Analytical Applications of Single-Pore Membranes Based on Carbon Nanotubes" (Carl Wagner Memorial Award Address)
84. Third Potter's Lodge Meeting on Electrochemistry (Blue Mtn. Lake, NY, Sept., 2003). "Electrochemistry on a Chip"
83. Gordon Research Conference on the Physics and Chemistry of Microfluidics (Big Sky, MT, August, 2003). "Electrokinetic Trapping on a Chip"
82. SmallTalk 2003 (San Jose, CA, July, 2003). "Electrogenerated Chemiluminescence as a Sensitive Detection Strategy in Microfluidic Systems"
81. Gordon Research Conference on Analytical Chemistry (New London, CT, June, 2003). "An Electrochemical-Based Nanoparticle Counter with Applications to Bioanalysis"
80. LabAutomation (Palm Springs, CA, February, 2003). "Electrochemical Detection and Photonic Reporting in Microfluidic Systems"
79. Materials Research Society (Boston, MA, December, 2002). "Composite Thin Films of Dendrimer-Encapsulated Metal Nanoparticles and Conducting Polymers"
78. SmallTalk 2002 (San Diego, CA, July, 2002). "Electrochemical Sensing in Microfluidic Systems Using Electrogenerated Chemiluminescence (ECL) as a Photonic Reporter of Redox Reactions"
77. Golden Gate Polymer Forum (San Jose, CA, May, 2002). "Selective Transport through Well-Defined Dendrimeric Polymers"
76. The Pittsburgh Conference (New Orleans, LA, March, 2002). "Molecular Filtration Using Single Porous Molecules"
75. Second Potter's Lodge Meeting on Electrochemistry (Blue Mtn. Lake, NY, Sept., 2001) "Single Molecule Filtration"
74. Gordon Research Conference on Analytical Chemistry (New London, CT, June, 2001). "Dendrimer-Encapsulated Catalysts"
73. Materials Research Society (San Francisco, CA, April, 2001). "Dendrimer-Encapsulated Catalysts"
72. 199<sup>th</sup> Electrochemical Society Meeting (Washington, DC, March, 2001). "Single Carbon-Nanotube Membranes: A Well-Defined Model for Studying Mass Transport through Nanoporous Matrixes"
71. The Pittsburgh Conference (New Orleans, LA, March, 2001). "Mass Transfer through Carbon Nanotubes"

70. Gordon Research Conference on Electrochemistry (Ventura, CA, January, 2001). "Single File in a Single Pore"
69. Army Research Office Agent Water Monitors Workshop (Aberdeen Proving Grounds, MD, August, 2000) "A General Approach for High Throughput Screening of Mutant Enzymes for Remediation of Chemical and Biological Agents Using Arrays of Living Cells"
68. American Chemical Society National Meeting (Washington, DC, August, 2000). "Patterned Arrays of Cells"
67. American Chemical Society National Meeting (Washington, DC, August, 2000). "Dendrimer-Encapsulated Nanoparticles: Applications to Catalysis"
66. Department of Energy Council on Chemical Sciences Workshop on Emergent Properties and Functions in Nanoscale Chemistry (Santa Fe, NM, April, 2000). "Template Approaches for Preparing Nanostructures"
65. American Chemical Society National Meeting (San Francisco, CA, March, 2000). "A Simple Approach for Preparing Patterned, Micron Scale Corrals for Controlling Cell Growth"
64. The Pittsburgh Conference (New Orleans, LA, March, 2000). "Electrochemical Studies at Geometrically Well-Characterized Nanoelectrode Arrays"
63. The Pittsburgh Conference (New Orleans, LA, March, 2000). "Carbon Nanotube Electrodes"
62. Materials Research Society (Boston, MA, November, 1999). "A Simple Approach for Preparing Patterned, Micron-Scale Corrals for Controlling Cell Growth: Applications to Biosensing"
61. Materials in the Heartland (Carbondale, IL, October, 1999). "Dendrimer-Encapsulated Metal and Semiconductor Nanoparticles"
60. Joint International Meeting of The Electrochemical Society, The Electrochemical Society of Japan, and the Japan Society of Applied Physics (Honolulu, HI, October, 1999). "Catalysis Using Dendrimer-Encapsulated Metal Nanoparticles"
59. Joint International Meeting of The Electrochemical Society, The Electrochemical Society of Japan, and the Japan Society of Applied Physics (Honolulu, HI, October, 1999). "Electrochemistry Using Single Carbon Nanotubes and Applications to Scanning Electrochemical Microscopy"
58. American Chemical Society National Meeting (New Orleans, LA, August, 1999). "Dendrimer-Encapsulated Nanoparticles: Synthesis, Characterization, and Applications"
57. South Texas Local Section of The Electrochemical Society (Austin, TX, June, 1999). "Dendrimer-Encapsulated Metal Particles for Homogeneous and Heterogeneous Catalysis"
56. 195<sup>th</sup> Electrochemical Society Meeting (Seattle, WA, May, 1999). "Heterogeneous and Homogeneous Catalysis Using Monodisperse, Dendrimer-Encapsulated Metallic Nanoparticles"
55. 195<sup>th</sup> Electrochemical Society Meeting (Seattle, WA, May, 1999). "Electrochemistry Using Single Carbon Nanotubes"
54. Materials Research Society National Meeting (Boston, MA, November, 1998). "Deposition of Metallic Nanoclusters within Dendrimer Templates"

53. 194th Electrochemical Society National Meeting (Boston, MA, November, 1998). "Design of Chemically Sensitive Interfaces Based on Hydrophilic and Hydrophobic Dendrimers"
52. 194th Electrochemical Society National Meeting (Boston, MA, November, 1998). "Deposition of Metallic Nanoclusters within Dendrimer Templates"
51. 194th Electrochemical Society National Meeting (Boston, MA, November, 1998). "Single-Molecule Electrodes Based on Composite Dendrimer Films"
50. Federation of Analytical Chemistry and Spectroscopy Societies (Austin, TX, October, 1998). "Dendrimer Thin Films for Chemical Sensing"
49. American Vacuum Society, Rocky Mountain Regional Meeting (Arvada, CO, August, 1998) "Chemical Sensors and Interfacial Design"
48. Gordon Research Conference on Chemical Sensors and Interfacial Design (Henniker, NH, July, 1998). "Electrocatalysis using Dendrimer-Encapsulated Metal Nanoclusters"
47. 72nd American Chemical Society Colloid & Surface Science Symposium (University Park, PA, June, 1998). "Dendrimer-Confined, Nanoscopic Metal Clusters"
46. American Chemical Society National Meeting (Dallas, TX, March, 1998). "Electrocatalysts Based on Dendrimer-Confined, Nanoscopic Metal Clusters"
45. Florida Advanced Materials Chemistry Conference (Palm Coast, FL, March, 1998). "Design, Synthesis, Characterization, and Applications of Hyperbranched Polymer Films"
44. Gordon Research Conference on Electrochemistry (Ventura, CA, January, 1998). "Electrocatalysts Based on Dendrimer-Encapsulated Metal Clusters"
43. Federation of Analytical Chemists and Chemical Spectroscopists (Providence, RI, October, 1997). "Chemical Sensors Based on Surface-Confined Dendrimers"
42. 192<sup>nd</sup> Meeting of The Electrochemical Society, Inc. and the 48th Annual Meeting of the International Society of Electrochemistry (Paris, France, August/September, 1997). "Chemical Sensors Based on Surface-Confined Dendrimers"
41. American Society of Photobiology (St. Louis, MO, July, 1997). "Interfacial Design for Chemical Sensor Arrays"
40. First NSF Workshop on Chemical Sensors (Blue Mountain Lake, NY, May, 1997). "Organic Monolayers for Chemical Sensing"
39. NSF-GOALI Workshop (Keystone, CO, August, 1996). "New Materials for Chemically Sensitive Interfaces"
38. Sixth International Meeting on Chemical Sensors (Gaithersburg, MD, July, 1996). "Chemically Receptive Surfaces Based on Surface-Confined Dendrimers and Hyperbranched Polymers"
37. 190<sup>th</sup> Electrochemical Society Meeting (San Antonio, TX, October, 1996). "Surface-Confined Dendrimers as Chemically Sensitive Interfaces in SAW-based Sensor Arrays"
36. 190<sup>th</sup> Electrochemical Society Meeting (San Antonio, TX, October, 1996). "Hyperbranched Polymer Films Containing Fluorescent, Hydrophobic, Metal-ion Binding, and Electroactive Functionalities"

35. 190<sup>th</sup> Electrochemical Society Meeting (San Antonio, TX, October, 1996). "Synthesis, Characterization, and Chemical Sensitivity of Self-Assembled Polydiacetylene/Calix[n]arene Bilayers"
34. 190<sup>th</sup> Electrochemical Society Meeting (San Antonio, TX, October, 1996). "An In-situ Electrochemical STM Study of Au(111) Passivated by Self-Assembled Monolayers in Corrosive Environments"
33. Pittsburg Conference (Chicago, IL, March, 1996). "Synthesis, Structural Characterization, and Lithographic Applications of Mono- and Multilayer Diacetylenic Self-Assembled Films on Electrodes"
32. The Adhesion Society National Meeting (Myrtle Beach, SC, February, 1996). "Probing Adhesion Forces at the Molecular Scale" (Plenary talk).
31. Pacifichem '95 (Honolulu, HI, December, 1995). "Electrochemical STM Analysis of Au Corrosion and Corrosion Passivation"
30. American Chemical Society Southeast/Southwest Regional Meeting (Memphis, TN, November, 1995). "Synthesis, Structural Characterization, Photonic Properties, and Lithographic Applications of Mono- and Multilayer Diacetylenic Self-Assembled Films"
29. American Chemical Society Southeast/Southwest Regional Meeting (Memphis, TN, November, 1995). "Molecular Interactions Between Organized, Surface-Confined Monolayers and Vapor-Phase Probe Molecules. Reactions Between Acid-Terminated Self-Assembled Monolayers and Vapor-Phase Bases"
28. Materials Research Society (Boston, MA, November, 1995). "Synthesis, Structural Characterization, Photonic Properties, and Lithographic Applications of Mono- and Multilayer Diacetylenic Self-Assembled Films"
27. 188<sup>th</sup> Electrochemical Society Meeting (Chicago, IL, October, 1995). "An Electrochemical STM Study of the Corrosion Inhibition of Au by Self-Assembled Monolayers"
26. 188<sup>th</sup> Electrochemical Society Meeting (Chicago, IL, October, 1995). "A General Approach for the Electrosynthesis of Metal-Nitride Powders and Thin Films"
25. 188<sup>th</sup> Electrochemical Society Meeting (Chicago, IL, October, 1995). "STM Lithography of Self-Assembled Monolayer Resists: Experimental Parameters Affecting Pattern Quality and Resolution"
24. American Chemical Society National Meeting (Chicago, IL, August, 1995). "A Combined Electrochemical/STM Approach for Patterning Organic Thin Films"
23. American Chemical Society National Meeting (Chicago, IL, August, 1995). "An Electrochemical Method Suitable for Preparing Nine Metal Nitride Powders"
22. American Chemical Society Colloid & Surface Science Symposium (Salt Lake City, UT, June, 1995). "Fabrication of Electrodes and Electrode Arrays Using Self-Assembled Monolayer Resists"
21. American Chemical Society National Meeting (Anaheim, CA, April, 1995). "Selective Molecular Adsorption at the Self-Assembled Monolayer/Vapor-Phase Interface"
20. American Chemical Society Southwest Regional Meeting (Ft. Worth, TX, November, 1994). "STM Lithography: Nanostructures and Nanochemistry"

19. Pittsburgh Conference on Analytical Chemistry and Applied Microscopy (Chicago, IL, March, 1994). "Characterization of Electrode-Confined Nanoporous Membranes by Scanning Tunneling Microscopy and Molecular Probes"
18. Gordon Research Conference, Organic Thin Films (Ventura, CA, February, 1994). "Synthesis and Characterization of Chemically Sensitive Organic Monolayer Surfaces"
17. 184<sup>th</sup> Electrochemical Society Meeting (New Orleans, LA, October, 1993). "Synthesis and Characterization of Arrays of Zero-Dimensional Ultramicroelectrodes"
16. 184<sup>th</sup> Electrochemical Society Meeting (New Orleans, LA, October, 1993). "Electrosynthesis and Characterization of NbN Ceramic Materials"
15. American Chemical Society Regional Meeting (Austin, TX, October, 1993). "Synthesis and Characterization of Simple Self-Assembling Nanoporous Monolayer Assemblies: A New Strategy for Molecular Recognition"
14. The First NSF Materials Chemistry Workshop (Albuquerque, NM, October, 1993). "Interfacial Force Microscopy of Metal Surfaces"
13. American Chemical Society National Meeting (Chicago, IL, August, 1993). "Synthesis and Characterization of Simple Self-Assembling Nanoporous Assemblies: Electrochemical, Scanning Probe Microscopic, and Theoretical Analyses of Two-Dimensional Molecular Recognition Membranes"
12. Gordon Research Conference, Electrochemistry (Ventura, CA, January, 1993). "Molecules and Organized Monolayers: A Basis for Molecular Recognition"
11. American Chemical Society National Meeting (Washington, D. C., 1992). "Interactions Between Ions in Solution and Monolayers of Mercaptan Derivatives Adsorbed to Au Substrates"
10. American Chemical Society National Meeting (Washington, D. C., 1992). "Electrochemical Measurement of the Acid Dissociation Constants of Surface-Confined *n*-Alkanethiol Monolayers Terminated with pH-Sensitive Pendant Groups"
9. 82<sup>nd</sup> Electrochemical Society Meeting (Toronto, Canada, October, 1992). "Hydrogen Bonding Interactions Between Vapor-Phase Probe Molecules and Functionalized Self-Assembled Monolayers: A Combined Study Using Surface Acoustic Wave Devices, FTIR Spectroscopy, and Ellipsometry"
8. 182<sup>nd</sup> Electrochemical Society Meeting (Toronto, Canada, October, 1992). "STM-Induced Lithography: A New Method for Fabricating Ultramicroelectrodes"
7. American Chemical Society National Meeting (San Francisco, CA, April, 1992). "Molecular Recognition: a New Function for Organized Monolayers on Metal Surfaces"
6. Materials Research Society (San Francisco, CA, April, 1992). "Electrochemical Routes to Ceramics and Ceramic Precursors"
5. Rocky Mountain Conference on Analytical Chemistry (Denver, CO, July, 1991). "Scanning Tunneling Microscopy of Defects Contained Within Self-Assembling Monolayers: Kinetics of Formation"
4. Federation of Analytical Chemistry and Spectroscopy Societies (Anaheim, CA, October, 1991). "Controlled Perforation of Self-Assembling *n*-Alkylthiol Monolayers"

3. Pittsburgh Conference on Analytical Chemistry and Applied Microscopy (Chicago, IL, March, 1991). "Molecular Recognition-Based Microelectrochemical Sensors"
2. Federation of Analytical Chemistry and Spectroscopies Societies, 16th Annual Meeting (Chicago, IL, February, 1989). "Electrochemical Studies in Supercritical Fluids"
1. 176<sup>th</sup> Electrochemical Society National Meeting (Los Angeles, CA, October, 1989). "Electrochemical Studies in Supercritical Fluids: CH<sub>3</sub>CN and SO<sub>2</sub>"

### **CONTRIBUTED PRESENTATIONS**

36. Chemical and Biological Defense Science and Technology Conference (Orlando, FL, November, 2010). "Bipolar Electrode Arrays for Chemical and Biological Sensing"
35. Gordon Research Conference: The Physics and Chemistry of Microfluidics (Lucca, Italy, June, 2009). "Chemical Sensing using Large-scale Electrode Arrays" (poster)
34. MicroTAS 2003 (Squaw Valley, CA, October, 2003). "Electrochemical Detection and Photonic Reporting in a Dual-Channel, Microfluidic-Based Chemical Sensors" (poster)
33. 203<sup>rd</sup> Electrochemical Society Meeting (Paris, France, April, 2003). "Electrochemical Detection and Photonic Reporting in Microfluidic-Based Chemical Sensors"
32. American Chemical Society National Meeting (San Francisco, CA, March, 2000). "Interfacial Reactivity of Hydroxyl-Terminated Monolayers in the Absence of Solvents"
31. Joint International Meeting of The Electrochemical Society, The Electrochemical Society of Japan, and the Japan Society of Applied Physics (Honolulu, HI, October, 1999). "A Simple Lithographic Approach for Preparing Patterned, Micron-Scale Corrals for Controlling Cell Growth: Applications to Biosensing"
30. Materials Research Society National Meeting (Boston, MA, November, 1998). "Aqueous Solvation and Functionalization of Hyperbranched Polyelectrolyte Thin Films"
29. 72nd American Chemical Society Colloid & Surface Science Symposium (University Park, PA, June, 1998). "Self-Assembling Dendrimer Monolayers"
28. 1996 Solid State Sensor and Actuator Workshop (Hilton Head Island, SC, June 1996). "Versatile Materials for use as Chemically Sensitive Interfaces in SAW-Based Sensor Arrays"
27. Materials Research Society (Boston, MA, November, 1995). "A Simple Electrochemical Method for the Preparation of Nine Metal-Nitride Powders"
26. American Vacuum Society National Meeting (Minneapolis, MN, October, 1995). "STM-induced Patterning of Organomercaptan SAMs: Characterization and Control of Patterning"
25. American Vacuum Society National Meeting (Minneapolis, MN, October, 1995). "Photolithographic and STM-Induced Patterning of an Ultrathin, Self-Assembled Diacetylenic Resist"
24. American Vacuum Society National Meeting (Denver, CO, October, 1994). "STM-Induced Etching of Ultra-thin Organic Resists: Structure, Mechanism, and Post-etching Elaboration"
23. American Chemical Society National Meeting (Washington, DC, August, 1994). "Synthesis and Characterization of Self-Assembled Monolayers of  $\omega$ -Functionalized Organomercaptans Containing Diacetylene Functional Groups"

22. American Chemical Society National Meeting (Washington, DC, August, 1994). "Layer-by-Layer Growth of One-Dimensional Nylon Fibers by Chemical Vapor Deposition"
21. 1994 Meeting of the Southwestern Analytical Professors (Fresno, CA, January, 1994). "Analysis of Metal Surfaces by Interfacial Force Microscopy"
20. American Chemical Society/Northwest Regional Meeting (Laramie, WY, June, 1993). "Synthesis and Characterization of Simple Self-Assembling Nanoporous Monolayer Assemblies: A New Strategy for Molecular Recognition"
19. American Chemical Society/Northwest Regional Meeting (Laramie, WY, June, 1993). "Electrochemical Synthesis of a Niobium Nitride Precursor and Characterization of Niobium Nitride Powder"
18. American Vacuum Society/New Mexico Chapter (Santa Fe, NM, April, 1993). "Contact Potential Difference Measurement of Thin, Well-Ordered Monolayer Films"
17. American Vacuum Society/New Mexico Chapter (Santa Fe, NM, April, 1993). "Scanning Tunneling Microscope-Induced Lithography of Self-Assembled *n*-Alkanethiol Monolayer Resists"
16. American Vacuum Society/New Mexico Chapter (Santa Fe, NM, April, 1993). "The Nano-Mechanics of Gold Films"
15. 182<sup>nd</sup> Electrochemical Society Meeting (Toronto, Canada, October, 1992). "Selective Organophosphonate Detection Using Self-Assembled Monolayers on SAW Devices"
14. Materials Research Society (San Francisco, CA, April, 1992). "Electrophoretic Deposition of Sol-Gel-Derived Ceramic Coatings"
13. 180<sup>th</sup> Electrochemical Society Meeting (Phoenix, AZ, October, 1991). "Imaging of Defect Structures Within *n*-Alkylthiol Monolayers by a Combination of Underpotential Deposition and Scanning Tunneling Microscopy"
12. 180<sup>th</sup> Electrochemical Society Meeting (Phoenix, AZ, October, 1991). "Formation, Structural Characteristics, and Reactivity of Vapor-Deposited Polyfunctional Organic Mono- and Multilayers on Au"
11. 180<sup>th</sup> Electrochemical Society Meeting (Phoenix, AZ, October, 1991). "Selective Electrostatic Binding of Ions by Monolayers of Mercaptan Derivatives Adsorbed to Au Substrates"
10. 180<sup>th</sup> Electrochemical Society Meeting (Phoenix, AZ, October, 1991). "Electrochemical Synthesis and Characterization of Metal Nitride Ceramics and Ceramic Precursors"
9. Nanoscope Scanning Tunneling Microscope Users Conference (Santa Barbara, CA, June, 1991). "STM Imaging of the Defect Structures within Self-Assembled Monolayers"
8. American Ceramics Society (Cincinnati, OH, April, 1991). "Properties of Bulk and Surface-Confined Electrolytically Generated AlN Ceramics"
7. 178<sup>th</sup> Electrochemical Society Meeting (Seattle, Washington, October, 1990). "Mechanical Properties and Formation Kinetics of Self-Assembled Monolayers"
6. Materials Research Society (San Francisco, CA, April, 1990). "Solid State Microelectrochemical Devices Employing a Solid Polymer Electrolyte"



5. Electrochemical Society, 175th National Meeting (Los Angeles, CA, October, 1989). "Highly Oxidized and Reduced Electronically Conducting Polymers: Finite Windows of Conductivity"
4. Electrochemical Society, 175th National Meeting (Los Angeles, CA, October, 1989). "Measurements of Neutron and Gamma Ray Emission Rates and Calorimetry in Electrochemical Cells Having Pd Cathodes"
3. Gordon Research Conference on Electrochemistry (Oxnard, CA, 1988). "Electrochemistry in Supercritical Organic Fluids"
2. Electrochemical Society -regional meeting (Winedale, TX, 1986). "Reaction Kinetics in Nonaqueous Near-Critical and Supercritical Fluids"
1. Gordon Research Conference on Electrochemistry (Santa Barbara, CA, 1986). "Electrochemistry in Supercritical Fluids"

#### **SIGNIFICANT SYMPOSIA AND MEETINGS FOUNDED AND ORGANIZED**

27. Co-organizer (with Paul Bohn), Pittcon (Orlando, FL, March, 2012) Symposium Title: "Extreme Electrochemistry - Electrochemistry in Microstructures and Nanostructures".
26. Senior Mentor, Gordon Research Seminar on Electrochemistry (Ventura, CA, January, 2012).
25. Co-organizer (with Keith Stevenson), 67<sup>th</sup> Southwest Regional ACS Meeting (Austin, TX, November, 2011), Symposium Title: "Electrochemical Methods: Fundamentals and Applications, a Symposium in Honor of Bard and Faulkner".
24. Co-organizer (with Henry S. White), Seventh Potter's Lodge Workshop on Electrochemistry (Blue Mountain Lake, NY, September, 2009).
23. Founder and organizer: First Student Potter's Lodge Meeting on Electrochemistry (Blue Mtn. Lake, NY, September, 2010).
22. Co-organizer, DOE Workshop on the Oxygen Reduction Reaction (Brookhaven, NY, November, 2009).
21. Co-organizer (with Henry S. White), Sixth Potter's Lodge Workshop on Electrochemistry (Blue Mountain Lake, NY, September, 2009).
20. Organizer, Fifth Potter's Lodge Workshop on Electrochemistry (Blue Mountain Lake, NY, September, 2007).
19. The Academy of Medicine, Engineering, and Science of Texas (TAMEST) Conference Program Committee Member (2006-2007)
18. Co-organizer, Fourth Potter's Lodge Workshop on Electrochemistry (Blue Mountain Lake, NY, September, 2005; with Henry S. White).
17. Founder and Chair, Gordon-Kenan Graduate Research Seminar on Analytical Chemistry (Roscoff, France, June, 2005).
16. Chair, Gordon Research Conference on Analytical Chemistry (Roscoff, France, June, 2005).
15. Co-organizer, Third Potter's Lodge Workshop on Electrochemistry (Blue Mountain Lake, NY, September, 2003; with Henry S. White).

14. Vice Chair, Gordon Research Conference on Analytical Chemistry (New London, CT, June, 2003).
13. Co-organizer, Materials Research Society (San Francisco, CA, April, 2002), Symposium Title: "Chemical and Biological Sensors: Materials and Devices".
12. Co-organizer, Second Potter's Lodge Workshop on Electrochemistry (Blue Mountain Lake, NY, September, 2001; with Debra Rolison and Henry S. White).
11. Co-organizer, Department of Energy Council on Chemical Sciences "Workshop on Emergent Properties and Functions in Nanoscale Chemistry" (Santa Fe, NM, April, 2000).
10. Co-organizer, Federation of Analytical Chemistry and Chemical Spectroscopy (Austin, TX, October, 1998; with David E. Bergbreiter), Symposium Title: "Thin Organic Films for Chemical Sensors".
9. Co-organizer, Second NSF Workshop on Chemical Sensors (Henniker, NH, July, 1998; with Antonio J. Ricco and Jiri (Art) Janata)
8. Co-founder and co-organizer, First NSF Workshop on Chemical Sensors (Blue Mountain Lake, NY, May, 1997; with Antonio J. Ricco and Jiri (Art) Janata)
7. Co-founder and co-chairman, Gordon Research Conference on *Chemical Sensors & Interfacial Design*, July, 1996; with Antonio J. Ricco)
6. Co-founder and co-organizer, First Potter's Lodge Workshop on Electrochemistry (Blue Mountain Lake, NY, September, 1996; with Henry S. White).
5. Co-organizer, American Chemical Society SE/SW Regional Meeting (Memphis, TN, November, 1995; with Charles H. Hussey), Symposium Title: "Spectroscopy and Electrochemistry of Surface-Bound Molecules"
4. Co-organizer, American Chemical Society Colloid & Surface Science Symposium (Salt Lake City, UT, June, 1995; with Henry S. White), Symposium Title: "Electrochemistry of Organized Molecular Interfaces"
3. Co-organizer, Electrochemical Society National Meeting (New Orleans, LA, October, 1993; with Adrian Michael), Symposium Title: "Electrochemistry in Unconventional Media and Under Extreme Conditions"
2. Co-organizer, American Chemical Society National Meeting (Washington, DC, August, 1992; with Marcin Majda), Symposium Title: "Electroanalysis and Surfaces"
1. Organizer, Electrochemical Society National Meeting (Toronto, Canada, October, 1992), Symposium Title: "Scanning Probe Microscopy and Fabrication"

## **RESEARCH COLLABORATORS**

### **Research Scientists**

- |                                  |                                   |
|----------------------------------|-----------------------------------|
| 3. Mr. John Crooks, 2008 – 2009  | (Eastern Virginia Medical School) |
| 2. Dr. Li Sun, 1997 – 2005       | (Pine Research Instr., RTP, NC)   |
| 1. Ms. Claudia Ross, 1990 – 1993 | (Albuquerque, NM)                 |

### **Visiting Scholars**

Richard M. Crooks

Curriculum Vitae

4. Dr. Frank Dalton, 2004 (Pine Instruments Research, RTP, NC)
3. Dr. Jyh-Myng Zen, 2003 (Natl. Chung Hsing Univ., Taiwan)
2. Mr. Michael Lennartz, 1999 (Univ. Bonn, Bonn, Germany)
1. Dr. Atsushi Aoki, 1999-2000 (Nagoya Inst. Tech., Nagoya, Japan)

### Postdoctoral

63. Dr. Hong Liu, 2012-Present
62. Dr. Christophe Renault, 2011-Present (UT-Austin)
61. Dr. Emily V. Carino, 2010 (Brookhaven National Lab)
60. Dr. Ravikumar Iyyamperumal, 2011 - present (UT-Austin)
59. Dr. Tae-Yeol Jeon, 2011 - 2012 (Korea)
58. Dr. Timothy Alligrant, 2011 - present (UT-Austin)
57. Dr. Abdou Diallo, 2011 - 2012 (Total, France)
56. Dr. Rachel Behrens, 2010 - 2011 (Texas Tech University)
55. Dr. Ioana Dumitrescu, 2009 - 2011 (QXV Communications, UK)
54. Dr. Eoin Sheridan, 2009 - present (University of Queensland, Australia)
53. Dr. Arther Gates, 2008 – 2010 (Syngenta Crop Protection)
52. Dr. Surojit Pande, 2009 - 2012 (Birla Inst. of Techn. & Sci., India)
51. Dr. Byoung-Yong Chang, 2008 – 2010 (Pukyong National U., Korea)
50. Dr. Derek R. Laws, 2008 – 2009 (Siemens, Lowell, MA)
49. Dr. François Mavr , 2007 - 2009 (University of Paris Diderot-Paris 7)
48. Dr. Rahul Dhopeswarkar, 2007 – 2008 (Advanced Liquid Logic, RTP, NC)
47. Dr. Iksoo Shin, 2007 - 2008 (unknown)
46. Dr. Fco. Javier Guerra Navarro, 2006 - 2008 (Universidad de Castilla-La Mancha)
45. Dr. Arnaud Chovin, 2005 - 2006 (University Paris Diderot-Paris 7)
44. Dr. Young Jin Jeon, 2004 - 2006 (Konkuk Univ., Korea)
43. Dr. Nokyoung Park, 2004 (unknown)
42. Dr. Marc R. Knecht, 2004 - 2007 (University of Miami-Florida)
41. Dr. Sungwon Lee, 2004 – 2005 (unknown)
40. Dr. Marcos Malta dos Santos, 2004 – 2005 (Brazil)
39. Dr. Haohao Lin, 2004 – 2005 (3M, Austin, TX)
38. Dr. Young-Min Bae, 2004 – 2005 (Korea)
37. Dr. Daojun Liu, 2003 – 2004 (Medical Dept., Shantou Univ., China)
36. Dr. Joaquin C. Garcia-Martinez, 2003 – 2005 (Universidad de Castilla-La Mancha)
35. Dr. Jinhua Dai, 2002 - 2004 (Michigan State University)
34. Dr. Robert W. J. Scott, 2002 – 2004 (U. Saskatchewan, Canada)

33. Dr. Stephen Bell, 2001 - 2003 (Halliburton, Houston, TX)
32. Dr. Takashi Ito, 2001 - 2004 (Kansas State Univ.)
31. Dr. Gi Hun Seong, 2001 - 2003 (Hanyang Univ., Seoul, So. Korea)
30. Dr. Sang Keun Oh, 2000-2004 (Ajou University, Ajou, So. Korea)
29. Dr. Julio Alvarez, 2000-2004 (Virginia Commonwealth U.)
28. Dr. K. Joseph Thomas, 2000-2002 (Becton-Dickinson Tech., RTP, NC)
27. Dr. Lee K. Yeung, 1999-2000 (Dow Chemical Co., Freeport, Texas)
26. Dr. Buford Lemon, 1999-2001 (Dow Chemical Co., Midland, MI)
25. Dr. Mi-Kyung Oh, 1998-1999 (Boston)
24. Dr. Pradyut Ghosh, 1998-2000 (Indian Association for the Cultivation of Science, Kolkata, India)
23. Dr. Sheela Berchmans, 1998-1999 (Cent. Electrochemical Res. Inst., India)
22. Dr. Victor Chechik, 1998-1999 (University of York, York, UK)
21. Dr. Charles R. Sabapathy, 1998-2000 (Dallas Independent School System)
20. Dr. William Lackowski, 1997-2000 (Clean Energy Labs, Inc., Austin, TX)
19. Dr. Maurie Garcia, 1997-1998 (Indiana)
18. Dr. Robert Peez, 1997-1998 (Maxit Holding, Freiburg, Germany)
17. Dr. Andreas Hierlemann, 1997-1998 (ETH, Zürich, Switzerland)
16. Dr. Hideo Tokuhisa, 1996-1998 (Natl. Inst. Adv. Res., Tsukuba, Japan)
15. Dr. Bizuneh Workie, 1996-1997 (Jackson St. Univ., Jackson, MS)
14. Dr. Merlin Bruening, 1995-1997 (Michigan State Univ., E. Lansing, MI)
13. Dr. Vimala Mariagnanam, 1995-1996 (Cibavision, GA)
12. Dr. Lenny Tender, 1995 (Naval Research Lab, Washington, DC)
11. Dr. Kwok-Chu Chan, 1994-1996 (unknown)
10. Dr. Laurel Knott, 1994-1996 (U. North Carolina, Chapel Hill, NC)
9. Dr. Huey Yang, 1993-1996 (unknown)
8. Dr. Taisun Kim, 1993-1995 (Hallym University, S. Korea)
7. Dr. Yinquan Li, 1993-1995 (unknown)
6. Dr. Chuanjing Xu, 1993-1994 (Nanomaterials Res. Corp, Tucson, AZ)
5. Dr. Mark Bryant, 1991-1993 (Manchester Coll., N. Manchester, IN)
4. Dr. Yining Zhang, 1991-1993 (unknown)
3. Dr. Larry Kepley, 1991-1992 (TPL, Inc., Albuquerque, NM)
2. Dr. Jongman Park, 1991-1992 (unknown)
1. Dr. Li Sun, 1991-1993 (Pine Research Instrumentation, RTP,

NC)

**Graduate Students**

Ms. Alma D. Castaneda (2012 - present)

Mr. Li Xiang (2012 - present)

Ms. Josephine Cunningham (2012 - present)

Mr. Morgan Anderson (2011 - present)

Ms. Rachel Anderson (2010 - present)

Ms. Karen Scida (2010 - present)

Mr. Jim Loussaert (2010 - present)

Mr. Kyle Knust (2010 – present)

Mr. Stephen Fosdick (2009 – present)

Mr. David Yancey (2009 – present)

30. Mr. Hong Liu; Ph.D., December, 2012

- Thesis title: "Simple and Inexpensive Biosensors for Point-of-Care Diagnostics"
- Current employment: University of Texas (Austin, TX).

29. Ms. Elizabeth Nettleton; M.S., December, 2012

- Thesis title: "Detecting Single-Particle Insulating Collisions in Microfluidics as a Function of Flow Rate"
- Current employment: Trinity Consultants (Austin, TX).

28. Ms. Daphne Sung; M.S., December, 2011

- Thesis title: "Synthesis and Characterization of PtNi Dendrimer-Encapsulated Nanoparticles"
- Current employment: unknown.

27. Dr. V. Sue Myers; Ph.D., December, 2011

- Dissertation title: "Characterization of Dendrimer Encapsulated Nanoparticles by Extended X-ray Absorption Fine Structure and Electrochemical Methods"
- Significant awards and honors: Graduate Student Award to Attend the 60th Meeting of Nobel Laureates in Lindau, Germany
- Current employment: Intel Corporation (Portland, OR).

26. Dr. Emily V. Carino; Ph.D., August, 2011

- Dissertation title: "Underpotential Deposition as a Synthetic and Characterization Tool for Core@Shell Dendrimer-Encapsulated Nanoparticles "
  - Current employment: Postdoc, Brookhaven National Lab (Upton, NY).
25. Dr. Brian A. Zaccheo; Ph.D., August, 2011
- Dissertation title: "Application of Enzymatic Catalysis and Galvanic Processes for Biosensor Development"
  - Current employment: Intel Corporation (Portland, OR).
24. Dr. Robbyn K. Perdue; Ph.D., December, 2010
- Dissertation title: "Electrokinetic Focusing of Charged Species at a Bipolar Electrode in a Microfluidic Device"
  - Significant awards and honors: NSF Graduate Fellowship Awardee
  - Current employment: Postdoctoral Associate, University of Washington (Seattle, WA).
  -
23. Dr. Michael G. Weir ; Ph.D., December, 2010
- Dissertation title "Dendrimer-Encapsulated Nanoparticles: Synthetic Methods and Characterization Including Extended X-ray Absorption Fine Structure"
  - Current employment: Postdoctoral Associate, Univ. of Nevada, Las Vegas (Las Vegas, NV).
22. Dr. Kwok-Fan Chow; Ph.D., August, 2010
- Dissertation title: "Development of Wireless DNA Microarray Sensors"
  - Significant awards and honors: UT Chemistry Department Dorothy B. Banks Fellowship.
  - Current employment: Postdoctoral Associate, The University of North Carolina (Chapel Hill, NC).
21. Ms. Christina Wales; M.S., May, 2010
- Thesis title: Hydrodynamic Radii of Pt Dendrimer-Encapsulated Nanoparticles and Precursors
  - Current employment: U.S. Patent and Trademark Office.
20. Mr. Tim Balasavage; M.S., August, 2009
- Thesis title: "Quantitative Measurements of the Transfer Efficiency of DNA Microarray Replication"
  - Current employment: unknown.
19. Dr. Joohoon Kim; Ph. D., August, 2007
- Dissertation title: "Development of Microdevices for Applications to Bioanalysis"
  - Significant awards and honors: ACS Division of Analytical Chemistry Summer Fellowship.
  - Current employment: Assistant Professor, Kyung Hee University (Seoul, South Korea).

18. Dr. Rahul Dhopeswarkar ; Ph. D., August, 2007
  - Dissertation title: "Electrokinetic Concentration Enrichment within a Microfluidic Device Integrated with a Hydrogel Microplug"
  - Current employment: Advanced Liquid Logic (RTP, NC).
17. Dr. Heechang Ye; Ph. D., December, 2006.
  - Dissertation title: "Dendrimer-Encapsulated Metal Nanoparticle Thin Films on Solid Surfaces: Preparation, Characterization, and Applications to Electrocatalysis"
  - Current employment: OCI Corporation (So. Korea).
16. Mr. Raphael Lezutekong; M.S., August, 2006
  - Thesis title: "Application of Dendrimer-Encapsulated Pd Nanoparticles in Homogeneous Catalysis: Carbon-Carbon Coupling Reaction (The Stille Reaction)"
15. Dr. Orla M. Wilson; Ph. D., December, 2005
  - Dissertation title: "Structure-Function Relationships in Dendrimer-Encapsulated Metal Nanoparticles"
  - Significant awards and honors: ACS Division of Analytical Chemistry Summer Fellowship.
  - Current employment: Lecturer, The Johns Hopkins University (Baltimore, MD).
14. Dr. Jinseok Heo; Ph. D., December, 2005
  - Dissertation title: "Characterization and Applications of Microfluidic Devices Based on Immobilized Biomaterials"
  - Current employment: Assistant Professor, Buffalo State College (Buffalo, NY)
13. Dr. Yong-Gu Kim; Ph. D., December, 2005
  - Dissertation title: "Synthesis and Electrochemical Characterization of Highly Monodisperse Dendrimer-Templated Monolayer-Protected Clusters"
  - Current employment: Hyundai Motors, Korea
12. Dr. Wei Zhan; Ph. D., May, 2004
  - Dissertation title: "Integration of Functional Components into Microfluidic Chemical Systems: Bioimmobilization and Electrochemiluminescent Detection on Chip"
  - Significant awards and honors: 2004 Celanese Outstanding Graduate Student Award; ACS Division of Analytical Chemistry Summer Fellowship.
  - Current employment: Assistant Professor, Auburn University (Auburn, AL)
11. Dr. Gregory P. Perez; Ph. D., May, 2004
  - Dissertation title: "Chemically-Sensitive, Polymer-Mediated Nanoporous Alumina SAW Sensors for the Detection of Vapor-Phase Analytes"
  - Current employment: Halliburton (Houston, TX)
10. Dr. Yanhui Niu; Ph. D., May, 2003

- Dissertation title: "Dendrimer-Encapsulated Metal Nanoparticles: Synthesis, Characterization, and Applications to Catalysis"
  - Significant awards and honors: Best Poster Presentation Award, Gordon Research Conference on Catalysis; Outstanding Research Presentation Award, PacificChem 2000 International Meeting.
  - Current employment: Research Scientist, DuPont Central Research (Wilmington, DE)
9. Dr. Wendy S. Baker; Ph. D., May, 2002
- Dissertation title: "Electrochemical and Spectroscopic Studies of Novel Electroactive Nanostructures"
  - Significant awards and honors: The Colin Garfield Fink Fellowship of The Electrochemical Society.
  - Current employment: Postdoctoral Fellow, University of Texas Medical Branch (Galveston, TX)
8. Dr. Lane A. Baker; Ph. D., December, 2001
- Dissertation title: "Endgroup Interactions in Poly(amidoamine) and Modified Poly(propylene imine) Dendrimers"
  - Current Employment: Assistant Professor, Indiana University (Bloomington, IN)
7. Dr. Mingqi Zhao; Ph. D., December, 1999
- Dissertation title: "Hyperbranched Polymer Films and Dendrimers: Their Chemistry and Applications"
  - Significant awards and honors: Electrochemical Society Summer Fellowship, Eastman Chemical Company Fellowship, Phillips Petroleum Fellowship, Materials Research Society Graduate Student Award (Gold Medal), Celanese Award for best dissertation.
  - Current employment: NDC (a J&J company in Fremont, CA).
6. Dr. Daniel L. Dermody; Ph. D., December, 1998
- Dissertation title: "Synthesis and Characterization of Organic Thin Films Incorporating Macrocycles"
  - Current employment: Research Scientist, Dow Chemical Company (Midland, MI)
5. Dr. Francis P. Zamborini; Ph. D., December, 1998
- Dissertation title: "Scanning Tunneling Microscopy Studies of Corrosion Passivation and Nanometer-Scale Lithography with Self-Assembled Monolayers"
  - Current employment: Professor, University of Louisville (Louisville, KY)
4. Dr. Jonathan Schoer; Ph. D., May, 1997
- Dissertation title: "Fabrication, Characterization, and Applications of Nanometer-Scale Features within Organomercaptan Self-Assembled Monolayers"
  - Significant awards and honors: Electrochemical Society Summer Fellowship, IBM Graduate Fellowship
  - Current employment: Associate Professor, Valparaiso University (Valparaiso, IN).



3. Dr. Travis Wade; Ph. D., December, 1995.
  - Dissertation title: “Electrochemical Synthesis of Metal-Nitride Ceramic Powders and Metal-Nitride Ceramic Coatings”
  - Current employment: Institut De Physique Experimentale (Lausanne, Switzerland)
2. Dr. Orawon Chailapakul; Ph. D., December, 1994
  - Dissertation title: “Synthesis and Characterization of Nanoporous Organomercaptan Self-Assembling Monolayers“
  - Current employment: Professor, Chulalongkorn University (Bangkok, Thailand).
1. Dr. Ross C. Thomas; Ph. D., December, 1994
  - Dissertation title: “Chemical Reactivity and Mechanical Properties of Well-Ordered Organic Films Confined to Conducting Substrates”
  - Current employment: President and founder, Syntrotek Corp. (Boulder, CO).

### **Undergraduate Students**

22. Mr. Jason Yoo, 2012 (current group member)
21. Mr. Allen Chen, 2007 (currently: a graduate student at Rice University)
20. Mr. Michael Gabay, 2006 - 2007
19. Mr. John Crooks, 2006 (currently: graduate student at U. Wisconsin)
18. Ms. Maria de Lourdes Cabezas, 2006 - 2011 (currently: graduate student at Northwestern U.)
17. Mr. Mark Nguyen, 2006-2007 (currently: UT Southwest Medical School)
16. Ms. Marquita D. Bradshaw, 2005 (NSF-REU student, current a pharmacy resident at Oklahoma University)
15. Mr. Tom Fennewald, 2004 (currently: graduate student at Indiana University)
14. Ms. Robbyn Perdue, 2003 (currently: postdoc at U. Washington)
13. Mr. Nathan Gaubert, 2003 (NSF-REU student, presently a graduate student at Ohio State U.)
12. Ms. Meghan Campbell, 2002 (NSF REU student, presently an undergrad at Northwestern U.)
11. Ms. Erin Docking, 2001 (Dow Chemical Company, Freeport, TX)
10. Mr. Stephen Hansen, 2000 - 2001 (location unknown)
9. Ms. Melissa Wheeler, 2000 (Forensic chemist, DEA, San Francisco)
8. Ms. Janell Neulinger, 1999 (Chemistry graduate student at UC-Berkeley)
7. Mr. Garrett Slaton, 1999 (Chemistry graduate student at TAMU)
6. Mr. Grant Edwards, 1998, 1999 (Chemistry graduate student at Iowa State University)
5. Mr. Vy Phan, 1997 (location unknown)
4. Mr. Stephen Willis, 1996 (location unknown)

3. Ms. Robin Dahlgren, 1995 (Ph.D., U. Illinois 2002, current location unknown)
2. Mr. Greg Perez, 1993-1994 (Halliburton, Houston, TX)
1. Mr. Bryan Johnson, 1990 (Currently employed at 3M Corporation)