

CURRICULUM VITAE

ANDREW R. BARRON

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PRESENT POSITIONS:

- 1) Charles W. Duncan, Jr. - Welch Chair of Chemistry, Department of Chemistry, Rice University.
- 2) Professor of Materials Science, Department of Mechanical Engineering and Materials Science, Rice University.
- 3) Honorary Chair, College of Engineering, Swansea University, Wales, UK
- 4) Faculty Director, National Corrosion Center, Rice University.

RESEARCH INTERESTS:

- 1) The development of soft chemical approaches to nanomaterial fabrication.
- 2) The integration of inorganic nanomaterials with biological systems.
- 3) The use of nanomaterials for energy production.

PREVIOUS POSITIONS:

- 1) Associate Dean of Industry Interactions and Technology Transfer, Rice University, 2006-2008.
- 2) Associate Professor of Chemistry, Harvard University, July 1991-July 1995.
- 3) Assistant Professor, Harvard University, July 1987 - July 1991.
- 4) Visiting Professor, University of Wales, UK (2009-2010).

EDUCATION:

- 1) 1986-1987: Post-doctoral Research Associate at the University of Texas, Austin.
- 2) 1983-1986: Ph.D. and D.I.C. at Imperial College of Science and Technology, University of London. Thesis title "Transition Metal Aluminohydrides". Research under the supervision of Professor Sir Geoffrey Wilkinson F.R.S.
- 3) 1980-1983: B.Sc. (1st Class, Hons) and A.R.C.S., Imperial College of Science and Technology, University of London.

AWARDS:

- 1) World Technology Award (Materials) – 2011.
- 2) Lifetime Achievement Award in Nanotechnology (Houston Technology Center) – 2011.
- 3) Prince of Wales Visiting Innovator – 2009.
- 4) Welch Foundation Norman Hackerman Award in Chemical Research – 2002.
- 5) Fellow, Royal Society of Chemistry - 1995.
- 6) Humboldt Senior Scientist Research Award – 1997.
- 7) Corday Morgan Medal and Prize (Royal Society of Chemistry) – 1995.
- 8) Meldola Medal and Prize (Royal Society of Chemistry) – 1991.

- 9) Alcoa Directors Fellowship 1992 – 1994.
- 10) Du Pont Young Faculty Fellow, 1987.
- 11) HVA Briscoe Prize – 1983.

RICE ORGANIZATIONS:

- 1) Richard E. Smalley Institute for Nano-Science and Technology
- 2) Rice Alliance for Technology and Entrepreneurship
- 3) National Corrosion Center

ORGANIZATIONS:

- 1) Royal Society of Chemistry
- 2) American Chemical Society
- 3) Material Research Society
- 4) American Ceramics Society

JOURNALS:

- 1) North American Regional Editor: Advanced Materials for Optics and Electronics, Wiley (1992- 2000)
- 2) Editorial Board: Advanced Materials, VCH. (1998-2005)
- 3) Editorial Board: Chemistry of Materials, ACS. (1998-2002)
- 4) Editorial Board: Polyhedron, Pergamon (1998 - 2002).
- 5) Editor/Symposium Organizer: Covalent Ceramics II, Materials Research Society Symposium Proceedings, Boston Meeting 1993.
- 6) Editor: Polyhedron Symposium-in-print number 10, Aluminium, Gallium and Indium, 1990, 9, (2,3), 149-453.
- 7) Editorial Board: Main Group Metal Chemistry (1995-1999).
- 8) Editorial Board, Dalton (2000-2008).
- 9) Editorial Board, Recent Patents in Nanotechnology (2006-2009).
- 10) Editorial Board: Main Group Chemistry (2006-present).
- 11) Editorial Board: Materials Science in Semiconductor Processing (2011-present).

INTERNAL COLLABORATIONS (past and present):

- 1) Prof. Quilin Li, Department of Chemical Engineering.
- 2) Prof. Richard Smalley, Department of Chemistry.
- 3) Prof. W. Ed Billups, Department of Chemistry.
- 4) Prof. Matteo Pasquali, Department of Chemical Engineering.
- 5) Prof. James M. Tour, Department of Chemistry.
- 6) Prof. Antonios G. Mikos, Department of Bioengineering.
- 7) Prof. Mark Wiesner, Department of Civil and Environmental Engineering.
- 8) Dr. Lawrence B. Alemany, Department of Chemistry.
- 9) Prof. Norman Hackerman, Department of Chemistry.
- 10) Prof. Andreas Lutge, Department of Earth Sciences.

EXTERNAL COLLABORATIONS (past and present):

- 1) Dr. S H. Noak, Swansea University, Wales, UK.
- 2) Prof. David Potter, University of Calgary, Canada.

- 3) Prof. Serdar Durdagi, University of Calgary, Canada.
- 4) Prof. Manthos G. Papadopoulos, The National Hellenic Research Foundation, Greece.
- 5) Prof. Claudiu T. Supurm, University of Florence, Italy.
- 6) Dr. M. Bowes Hamill, Baylor College of Medicine, Houston, TX.
- 7) Dr. Manoop Bhutani, University of Texas MD Anderson Cancer Center, Houston, TX.
- 8) Dr. Nancy Monteiro-Riviere, North Carolina State University, NC.
- 9) Dr. Lewis Norman, Halliburton Energy Services, Duncan, OK.
- 10) Dr. Benji Maruyama, Wright Patterson Air Force Base, OH.
- 11) Prof. Simon Bott, University of Houston, TX.
- 12) Prof. Herbert W. Roesky, University of Gottingen, Germany.
- 13) Prof. David R. Rankin, University of Edinburgh, Scotland, UK.
- 14) Prof. Janusz Lewinski, Warsaw University of Technology, Poland.
- 15) Dr. Al Hepp, NASA Glenn, Cleveland, OH.
- 16) Prof. Michael Stuke, Max Planck Institute, Germany.
- 17) Dr. Joseph Ziller, University of California, Irvine, CA.
- 18) Prof. J. M. Tsangaris, University of Ioannina, Greece.

FINANCIAL SUPPORT: 1987 - Present

- 1) Advanced Energy Consortium
- 2) Advanced Research Projects Agency (ARPA)
- 3) Air Force Research Lab
- 4) American Chemical Society
- 5) Coleman Foundation
- 6) Department of Defense (DOD)
- 7) Department of Energy (DOE)
- 8) Dreyfus Foundation
- 9) Elsa U. Pardee Foundation
- 10) Environmental Protection Agency (EPA)
- 11) Ford Foundation
- 12) National Academies Keck Futures Initiatives
- 13) National Science Foundation (NSF)
- 14) National Aeronautics and Space Administration (NASA)
- 15) Office of Naval Research (ONR)
- 16) Petroleum Research Fund (PRF)
- 17) Simmons Family Foundation
- 18) Texas Medical Center Fleming and Davenport Awards
- 19) Robert A. Welch Foundation

CORPORATE SUPPORT: 1987 - Present

- 1) Akzo Nobel
- 2) British Petroleum
- 3) Colgate-Palmolive Company
- 4) Gentex Optics Inc.
- 5) Halliburton Energy Services
- 6) ICI
- 7) Idemitsu Chemicals Corp.

- 8) TDA Research Inc.
- 9) Natcore Solar, Inc.
- 10) FracEnsure

TEACHING AND EDUCATION DEVELOPMENT:

Rice University

- 1) Transition Metal Chemistry, CHEM 495 (1996-present).
- 2) Chemistry of Electronic Materials, CHEM 496 (1995, 1997).
- 3) Honors Lab, CHEM 106 (1998).
- 4) Inorganic Chemistry, CHEM 360 (1997, 2001, 2003, 2004).
- 5) Special Topics in Inorganic Chemistry, CHEM 595 (1996).
- 6) Physical Methods in Inorganic Chemistry, CHEM 575 (1996-Present).
- 7) Physical Methods in Inorganic and Nano Chemistry, CHEM 575 (2009, 2010).
- 8) Effective Presentations in Chemistry, CHEM 606 (1997-2003).
- 9) Chemistry of Electronic Materials, CHEM 596 (1997, 1999).
- 10) Inorganic Seminar. CHEM 600 (1996, 1997, 1998, 1999, 2003)
- 11) Technology Management for Scientist and Engineers. CHEM/MSCI/MGMT 603 (1998, 1999).
- 12) Entrepreneurial Management for Science and Engineering, CHEM/MSCI/MGMT 750 (2000 - 2009).
- 13) New Venture Creation for Science and Engineering, CHEM/MSCI/MGMT 751 (2001-2009).
- 14) Managerial Chemistry, Jones School of Business (1998, 1999).
- 15) Advanced Module in Catalysis, CHEM 391 (2000, 2001).
- 16) Advanced Module in Experimental Chemistry, CHEM 351 (2000).
- 17) Management for Science and Engineering, NSCI/ENGI 610 (2006-present).
- 18) Automotive Engineering: Materials and Dynamics, MSCI 615-616, 2005-present).

Harvard University

- 1) Organometallic Chemistry, CHEM 105 (1987 - 1995).
- 2) Inorganic Chemistry, CHEM 40 (1993 - 1994).
- 3) General Chemistry, CHEM 5 (1988 - 1994).
- 4) Chemical Safety Seminar Series for the Faculty of Arts and Science, "Handling Hazardous Chemicals" (1988 -1995).

Houston

- 1) Scientific lecturer to the Houston Fire Department (1995-present).
- 2) Scientific lecturer to the Houston Police Department Bomb Squad (2006-present).
- 3) Scientific programs for Channel 11 (CBS) News (1997 - present).
- 4) Scientific programs for Channel 26 (Fox) News (1998 - present).
- 5) Scientific programs for Channel 2 (NBC) News (1998 - present).
- 6) "Explosions in Chemistry" demonstration to high school students (1997 and 1998).
- 7) Development program for Middle School Teachers (2004-present).

Cambridge

- 1) Scientific advisor appointed to the Cambridge School Committee (1990 – Present).

- 2) Scientific advisor and lecturer to the Cambridge Fire Department, "Hazardous Metals", "Acids and Corrosives" and "Pyrophorics", (1990 - 1995).

National

- 1) Scientific Advisor to The National Science Resource Center (jointly operated by the Smithsonian Institution and the National Academy of Science) aimed at the development of a national hands-on school science curriculum for K through 8th grade. Review and advisory role of all new chemically based programs.
- 2) Science Advisor to the Library of Congress. Review and advisory role for mass deacidification program.

International

- 1) Scientific Advisory Board Member for Scientific Fellowship Program, Republic of Ireland (2008-2009).
- 2) Advisory Board, King Abdullah University of Science and Technology (KAUST), Saudi Arabia (2009-present).
- 3) Advisor Yellow River Delta Efficient Eco-economic Development, Binzhou, China (2010-present).
- 4) Board of Directors, Zhu Zhou International Research Institute China (ZIRIC) (2011-present).
- 5) Member, Innovation and Leadership Committee of Greater Houston Energy Collaborative, Greater Houston Partnership (2006).

DEPARTMENT AND UNIVERSITY SERVICE:

- 1) Graduate Admissions Committee (1996 - 2000)
- 2) Chemistry Department Curriculum Committee (1996, 1997, 1998)
- 3) Department of Mechanical Engineering and Materials Science Chair Search Committee (1996)
- 4) School of Sciences Steering Committee (1996)
- 5) Jones School Dean Search Committee (1997)
- 6) Technology Transfer Committee (1996, 1997)
- 7) School of Continuing Studies: Lecture on Topics in Contemporary Science (1996)
- 8) Curriculum Innovations: Development of Weiss School/Jones School joint programs (1996)
- 9) Committee on Scholarships and Awards (1997, 1998)
- 10) Promotion and Tenure Committee (1998)
- 11) Search Committee for Vice Provost for Development (1999)
- 12) Materials Science Steering Committee (1998)
- 13) Departmental Seminar Committee (1998)
- 14) Provost Search Committee (1998)
- 15) Executive Education - Managerial Chemistry (1997, 1998, 1999)
- 16) Rice Alliance for Technology and Entrepreneurship, Steering Committee (1999, 2000)
- 17) Academic Advisor, Baker College (1996 - Present)
- 18) Graduate Admissions Committee (2001)
- 19) Curriculum Committee (2001, 2002)
- 20) Graduate Recruiting Committee (2002)

- 21) Division Contacts Committee (2002)
- 22) Industrial Enterprise Committee (2002)
- 23) Faculty Sponsor, Rice Cricket Club (2002)
- 24) Steering Committee Member, Rice Alliance for Technology and Entrepreneurship (2002)
- 25) Member, Advisory Board for the Energy and Environmental Systems Institute
- 26) Advisory Board, National Corrosion Center, Rice University

PUBLICATIONS:

- 1) h-factor (impact) = 45 (January 2012)
- 2) Citations = 7528 (January 2012).
- 3) Full publication list attached.

RESEARCH GROUP: Present (Total since 1987 in parentheses)

- 1) Graduate Students 4 (42)
- 2) Postdoctoral Associates 0 (18)
- 3) Undergraduate Assistants 1 (28)
- 4) Sabbatical and Visiting Scholars 0 (9)

THESES:

- 1) Sterically Crowded Aryloxides of Aluminum, M. D. Healy, Harvard University (1992).
- 2) 1,3-Diphenyltriazene Compounds of Aluminum and Indium, J. T. Leman, Ph.D., Harvard University (1993).
- 3) *Tert*-butyl Compounds of Gallium, W. M. Cleaver, Ph.D., Harvard University (1994).
- 4) Chemical Routes to Group 13-16 Materials, C. C. Landry, Ph.D., Harvard University (1994).
- 5) Intramolecular Coordination in Compounds of Aluminum, J. A. Francis, Ph.D., Rice University (1999).
- 6) Surface and Coordination Chemistry Related to GaAs, A. Keys, Ph.D., Rice University (1999).
- 7) Advanced Ceramic Composites and Coatings via Alumoxane Nanoparticles, R. L. Callender, Ph.D., Rice University (1999).
- 8) Chemical Vapor Deposition of Alumina-Based Thin Films, B. Fahlman, Ph.D., Rice University (2000).
- 9) Inorganic-Organic Materials Incorporating Alumoxane Nano-Particles, C. Vogelson, Ph.D., Rice University (2000).
- 10) Controlled Ceramic Porosity and Membrane Fabrication via Alumoxane Nanoparticles, C. Jones, Ph.D., Rice University (2000).
- 11) Cement Hydration Inhibition and Crosslinking in the Guar-Borate System, M. Bishop, Ph.D., Rice University (2001).
- 12) Aluminum and Gallium Chloride Stabilized Arene-Mercury Complexes, A. Borovik, Ph.D., Rice University (2001).
- 13) Development of Homogeneous and Heterogeneous Alkylalumoxane Catalysts, S. Obrey, Ph.D., Rice University (2001).
- 14) Controlling Ceramic Porosity Using Carboxylate-Alumoxane Nanoparticles, K. DeFriend, Ph.D., Rice University (2002).

- 15) Reversible Binding of Lewis Bases to Aluminum and Gallium Aryloxides, L. van Poppel, Ph.D., Rice University (2002).
- 16) Chemistry of Group 13 Lewis Acids, C. S. Branch, Ph.D., Rice University (2002).
- 17) Liquid Phase Deposition of Silica: Thin Films, Colloids and Fullerenes. E. Whitsitt, Ph.D., Rice University (2004).
- 18) Nanoparticles as crosslinking agents in polymer systems. N. Shahid, Ph.D., Rice University (2004).
- 19) Formation of Alumina Features & Cadmium Chalcogenide Coatings of Single-Walled Carbon Nanotubes. J. R. Loscutova, Ph.D., Rice University (2004).
- 20) Metal catalyzed reactions of fullerenes and single walled carbon nanotubes. D. Ogrin, Ph.D., Rice University (2005).
- 21) Transition Metal Catalyzed Reactions of Fullerenes and Carbon Nanotubes, R. Anderson, Ph.D., Rice University (2005).
- 22) From Fullerene Amino Acids to Fullerene Peptides. J. Yang, Ph.D., Rice University (2006).
- 23) Functionalization of Single Walled Carbon Nanotubes. L. Zhang, Ph.D., Rice University (2006).
- 24) Characterization via Nuclear Magnetic Resonance of Portland Cement and Related Materials. C. Edwards, Ph.D., Rice University (2006).
- 25) Nucleation and Growth of Carbon Nanotubes as a Function of Catalyst Composition. Christopher Crouse, Ph.D., Rice University (2008).
- 26) Single-Walled Carbon Nanotubes: Functionalization, Characterization and Application. L. Zeng, Ph.D., Rice University (2008).
- 27) Metal Ion Interactions with Single Walled Carbon Nanotubes. Jonathan Brege, Ph.D., Rice University (2009).
- 28) Functionalization, Characterization, and Coordination of Carbon Nanomaterials. C. Hamilton, Ph.D., Rice University (2009).
- 29) Various Coatings of Carbon fibers and Single Wall Carbon Nanotubes: Synthesis and Applications. H. Jafry, Ph.D., Rice University (2010).
- 30) In-vitro Model System for Calcific Band Keratopathy and Inhibitory Effects of C60 Fullerene Derivatives. N. Doostdar, Ph.D., Rice University (2010).
- 31) Fullerene Amino Acids and Peptides: Synthesis and Applications. T. A. Strom, Ph.D., Rice University (2010).
- 32) Steric Considerations in Copper(II)-Olefin Complexes Incorporating Substituted *Bis*-2-pyrrol)amines. J. Allen, Ph.D., Rice University (2011).
- 33) Regular Arrays of QDs by Solution Processing, B. Oliva, Master's, Rice University, (2011)
- 34) Polyethylenimine functionalized nano-carbons for the absorption of carbon dioxide. E. Dillon, Ph.D., Rice University (2011)
- 35) Fabrication of Petrochemical and Viral Resistant Membranes, S. Maguire Boyle, Master's, Rice University (2012)

SELECTED PRESENTATIONS: 1995 - present

- 1) "A chemical approach for structural, composite, and coating materials for automotive applications", invited lecture, World Car Conference '96, Riverside, CA, January, 1996

- 2) "Alkyl alumoxanes: destroying the myth", invited lecture, University of Texas at Arlington, Arlington, TX, January, 1996
- 3) "Alkyl alumoxanes: destroying the myth", invited lecture, University of North Texas, Denton, TX, February, 1996
- 4) "Molecular control over materials synthesis", NREL Photochemical Sciences Workshop, Estes Park, CO, February, 1996
- 5) "Environmentally benign processing of aluminum-based ceramic materials: water soluble alumoxanes", ACS National Meeting; New Orleans, LA, March, 1996
- 6) "Gallium sulfide: molecules materials and transistors", invited lecture, University of Delaware, DE, May, 1996
- 7) "Alkyl alumoxanes: destroying the myth", invited lecture, DuPont Central Research, Delaware, DE, May, 1996
- 8) "Alkyl alumoxanes: destroying the myth", invited lecture, GE; Schenectady, NY, July, 1996
- 9) "Dialkylaluminum carboxylates: models for carboxylate alumoxanes", International Coordination Chemistry Conference, Vancouver, BC, August, 1996
- 10) "The future of inorganic chemistry: nano-science and technology", Monsanto, St. Louis, MO, October, 1996
- 11) "Alkyl alumoxanes: destroying the myth", invited lecture, ACS Southwestern Regional Meeting; Houston, TX, October, 1996
- 12) "Gallium sulfide: molecules materials and transistors", invited lecture, University of Southern Illinois, IL, October, 1996
- 13) "A new route to alumina-based ceramics via a novel transmetalation reaction", American Ceramic Society, San Antonio, TX; October, 1996
- 14) "Alumoxane precursors to designer catalysts and catalyst supports: catalytic oxidation of dichloromethane", invited lecture, MRS Fall Meeting, Boston, MA, December, 1996
- 15) Inorganic Gordon Conference, Salve Regina University, Newport, RI, July, 1997
- 16) Symposium Chair for special symposium in honor of Sir. Geoffrey Wilkinson, ACS National Meeting, San Francisco, CA. April 1997
- 17) Organometallic Gordon Conference, Salve Regina University, Newport, RI, July, 1997
- 18) MRS Fall Meeting, Boston, MA, December 1997.
- 19) 81st Canadian Society for Chemistry Conference & Exhibition, Vancouver, Canada, May 31 - June 4, 1998
- 20) 2nd Fargo Conference on Main Group Chemistry, Fargo, ND, June 4 - June 6, 1998
- 21) Hunter College Symposium, New York, NY, April 28 - April 30, 1998
- 22) "A new route to hexaluminate ceramics via a novel transmetalation reaction", American Ceramic Society, Coco Beach, FL, Jan. 25-Jan. 28, 1999
- 23) "Carboxylate Alumoxanes Environmentally Benign Routes to Ceramics", Alcoa Chemical Co., Alcoa, PA, March 9, 1999
- 24) "Enhancement of Intermolecular Hydrogen Bonding Through Coordination", American Chemical Society, Anaheim, CA, March 21, 1999
- 25) "Carboxylate Alumoxane Nanoparticles", University of Oldenburg, Germany, May 17, 1999
- 26) "Carboxylate Alumoxane Nanoparticles", University of Munchen, Munich, Germany, May 19, 1999
- 27) "Analytical Facilities at Rice University", Baker Hughes, Sugar Land, TX, June 4, 1999

- 28) "CVD of Conformal Alumina Films", Gordon Conference, Chemistry of Electronic Materials, New England College, New Hampshire, July 4 - July 9, 1999
- 29) "Aluminate Interphase Coatings for FRCMC", NASA Glenn Research Center, Cleveland, OH, July 13, 1999
- 30) "Gas Phase Structure of Al(t-Bu)₃ and Ga(t-Bu)₃", Gordon Conference, Inorganic Chemistry, Newport, RI, July 19 - July 23, 1999
- 31) "Reaction of Tert-Butylalumoxane with Trimethylaluminum", American Chemical Society, New Orleans, LA, Aug. 23 - Aug. 26, 1999
- 32) "Cleavage of Organosiloxanes by Aluminum Hydrides", American Chemical Society Regional Meeting, El Paso, TX, Oct. 20 - Oct. 22, 1999
- 33) "Activation of Small Molecules by Group 12/13 Complexes", International Conference on Lewis Acidity, Nagoya, Japan, Nov. 1 - Nov. 3, 1999
- 34) "Alumoxane Nanoparticles", Toyota Motor Company, Toyota City, Japan, Nov. 4, 1999
- 35) "Understanding Methyl Alumoxane", Sumitomo Chemical, Chiba, Japan, Nov. 5, 1999
- 36) "Understanding MAO", Albemarle Corp., Baton Rouge, LA, Dec. 7, 1999
- 37) "Understanding Alumoxanes", Albemarle Corp., Baton Rouge, LA, April, 2000
- 38) "Aluminum Oxides: How a New Look at an Old Material Can Provide Unexpected Results", Society of Minerals, Metals, and Materials, Rice University, Spring, 2000
- 39) "An Investigation into the Mechanism of Cement Hydration Inhibition", Halliburton Energy, Duncan, OK, Spring, 2000
- 40) "A ¹¹B NMR Investigation into the Mechanism of Crosslinking in the Guar-Boron System", Halliburton Energy, Duncan, OK, Spring, 2000
- 41) "Fiber-Reinforced Ceramic Matrix Composites Using Alumina Nanoparticles", American Ceramic Society, St. Louis, MO, May, 2000
- 42) "Simple Solutions are Often the Best: Cross-Disciplinary Research from the Barron Group", presentation to Rice University Alumni, Rice University, March, 2000
- 43) "Carboxylate Alumoxanes: Inorganic-Organic Composite Materials for Automotive Applications", Rice University School of Continuing Studies, Spring, 2000
- 44) "Activation of Aromatics Using Group 12/13 Lewis Acids", Gordon Conference, Inorganic Chemistry, Salve Regina College, Newport, RI, July, 2000
- 45) "Aluminum and gallium chloride stabilized arene-mercury complexes", American Chemical Society National Meeting, San Diego, CA, April, 2001
- 46) "Cement hydration inhibition: In situ creation of composite structures", American Chemical Society National Meeting, San Diego, CA, April, 2001
- 47) "Carboxylate-Alumoxanes: Environmentally Benign Precursors for Developing Aluminum Based Ceramic Membranes and Filters", Halliburton Energy Services, Duncan, OK, June, 2001
- 48) "Arene-Mercury Complexes Stabilized by Aluminum and Gallium Chloride: Catalysis for H/D Exchange of Aromatic Compounds." University of Arizona, Tucson, Arizona. January 18, 2002
- 49) "Arene-Mercury Complexes Stabilized by Aluminum and Gallium Chloride: Catalysis for H/D Exchange of Aromatic Compounds." Los Alamos National Laboratory, Los Alamos, New Mexico. January 24, 2002

- 50) "Carboxylate-Alumoxanes: A Journey from Understanding Sol-Gels to Catalysts, Composites, and Membranes." Sandia National Laboratory, Albuquerque, New Mexico. January 23, 2002
- 51) "Carboxylic Acid Functionalized Alumina Nanoparticles: A Flexible Class of Pre-Ceramics for Structural Composites and Ultrafiltration Membranes." Georgia Institute of Technology, Atlanta, GA. 9/16/2002
- 52) "Carboxylic Acid Functionalized Alumina Nanoparticles: A Flexible Class of Pre-Ceramics for Structural Composites and Ultrafiltration Membranes." Central Michigan University, Mount Pleasant, MI. 9/18/2002
- 53) "Carboxylic Acid Functionalized Alumina Nanoparticles: A Flexible Class of Pre-Ceramics for Structural Composites and Ultrafiltration Membranes." University of Houston, Houston, TX. 10/8/2002
- 54) "Nanotechnology Presentation." Cleantech Venture Network, Toronto, Canada. Workshop, November 13, 2002
- 55) "A Structural and Reactivity Model for MAO: Does Anyone Believe Me Now?." American Chemical Society, New Orleans, LA, March 22, 2003
- 56) "Controlling Surface Chemistry of Oxide Membranes." CBEN NanoDays 2003, Rice University. October 14, 2003
- 57) "Coating and Exposing SWNTs." CBEN NanoDays 2003, Rice University. October 14, 2003
- 58) "Coating and Exposing SWNTs." Welch Foundation, Houston, Texas. October 28, 2003
- 59) "Coatings, Spontaneous Interconnects, Regioselective Functionalization, and Interactions with Biological Systems of SWNTs." National Science Foundation, Jackson Hole, WY. June 1, 2003
- 60) "Interface of Wet and Dry Nanotechnology." Affymetrix, Inc., San Francisco, CA, San Francisco, CA. September 9, 2003
- 61) "Interface of Wet and Dry Nanotechnology." Puretech, Inc., Boston, MA. October 23, 2003
- 62) "Nanostructure Coating Technology." Valve Technologies Technical Conference International Seminar 2003, Houston, TX. October 24, 2003
- 63) "Use of Carboxylate Alumoxanes in Bone Replacement Materials." IRIS X 10th International Symposium on Inorganic Ring Systems, Burlington, VT. August 22, 2003
- 64) "Fabrication of Nanostructured Ceramic Membrane", France/Texas Water Treatment Research Congress: Emerging Technologies and Challenges . January 12, 2004
- 65) Lecture to CBEN for high school teachers, February 17th, 2004
- 66) Teaching at Lee High School for CBEN, February 17th, 2004
- 67) "Biological and Environmental Applications of Nanotechnology", Case Fellowship 'Societal Implications of Nanotechnology' March 15, 2004
- 68) "Reinforcement of Poly Propylene Fumarate -Based Networks with Surface Modified Alumoxane Nanoparticles for Bone Tissue Engineering". Alliance for NanoHealth Workshop, Texas Heart Institute, Houston, TX. May 14, 2004
- 69) "New High Density Fuels: A Chemical Approach" DARPA/TTO Seedling Study, Rice University, Houston, TX. (August 31, 2005)
- 70) "Alumoxanes: A Journey from Research to Commercialization." Nanotechnology Colloquium, Houston, Texas. (October 31, 2005)

- 71) "Alumoxanes: A Journey from Ceramics and Catalysts to Bone Replacement and Fuel Cells" Baylor College of Medicine, Houston, TX. (January 14, 2005)
- 72) "Coating and Exposing SWNTs" University of Notre Dame, Notre Dame, IN. (February 17, 2005)
- 73) "Coating and Exposing SWNTs" United States Air Force, Wright Patterson Air Force Base, Ohio. (February 22, 2005)
- 74) "SWNTs and Fullerenes: From Composites and Catalysis to Biology and Remediation" Strategic Partnership for Research in Nanotechnology, Houston, Texas. (October 11-12, 2005)
- 75) "Membranes" Nanotechnologies for a Sustainable Environment, Rice University, Houston, TX. (December 15, 2005)
- 76) "Nano-Applications in Energy: Fuel Cells/Catalysis" Rice Energy Symposium, Rice University, Houston, TX. (January 10, 2006)
- 77) "Technology Transfer at Rice University" Nanotechnology Venture Forum 5, Rice University. (January 20, 2006)
- 78) "Evaluation and Accessing University Based Technology" Sino-US Small Business Development Forum & Expo, Houston, TX. (April 26-29, 2006)
- 79) "Water Purification with Nanostructured Membranes" VIII International Physics Symposium, Monterrey, Mexico. (February 16-18, 2006)
- 80) "How the Presence of Nanoparticles Control the Reactivity/Mobility of Biological Materials" Nano Tox Conference, Boston, MA. (April 24, 2006)
- 81) "The Chemistry Behind Explosives and the Application of Nanotechnology" Tactical Operations Division, Houston Police Department, Houston, TX. (September 11, 2006)
- 82) "Big Energy Solutions with Complex Licensing Issues" Licensing Executives Society, New York, NY. (September 10, 2006)
- 83) "Catalysts and SWNT Modification: Towards a Vision of SWNT Amplification" ACS Conference, San Francisco, CA. (September 12, 2006)
- 84) "Growth of Single Walled Carbon Nanotubes from Seeds" Trinity College, Dublin, Dublin, Ireland. (December 7, 2006)
- 85) "Fullerene Amino Acids as a Passport for Peptides Through Cell Membranes" University College Dublin, Dublin, Ireland. (December 8, 2006)
- 86) "Intellectual Property: Issues and Solutions", Baker Institute and Texas/UK Collaborative, Rice University, Houston, TX. (January 22, 2007)
- 87) "Energetic Materials", Strategic Partnership for Research in Nanotechnology, University of Houston, Houston, TX. (February 6, 2007)
- 88) "The Barron Research Group: Tackling Problems in Health and Energy Using Nanotechnology", Rice University, Houston, TX. (February 22, 2007)
- 89) "Rice's View of an Energy Future", Energy Innovation Academic Roundtable, San Francisco, CA. (March 8, 2007)
- 90) "Nanotechnology Commercialization and IP Issues", Nanoforum, Milan, Italy. (September 18, 2007)
- 91) "An Overview of Energy-Related Programs at Rice", Rice Alliance for Technology and Entrepreneurship, Houston, TX. (September 27, 2007)
- 92) "Presentation of Research and Q&A for the Beverage Institute for Health and Wellness", Rice University, Houston, TX. (September 28, 2007)

- 93) "A Vision of SWNT Amplification", NanoTX'07 Conference and Expo, Dallas, TX. (October 4, 2007)
- 94) "Nano Applications for Lockheed Martin", Rice University, Houston, TX. (October 12, 2007)
- 95) "Rice University Energy Vision", Next Generation Biofuels, Greater Houston Partnership/UK Trade & Investments, Houston, TX. (October 15, 2007)
- 96) "Recent Developments in Energy Research at Rice University", Texas/UK Research Collaborative Meeting, Glasgow, Scotland. (October 22, 2007)
- 97) "Academic and/or Company Research", Windsor Energy Group: Global Energy-Policy Needs and Priorities, Houston, TX. (November 6, 2007)
- 98) "Down Hole Nano: Investigating Nanotechnology in the Petroleum Reservoir", Baker Institute, Rice University, Houston, TX (January 8-9, 2008)
- 99) "Amplification of Carbon Nanotubes: A Problem in Understanding Catalysis", Texas Christian University, Dallas, TX. (January 15, 2008)
- 100) "The Unique Properties of Nano Materials Enable Alternative Approaches to Therapeutic Agents", Alliance for Nanohealth, Baker Institute, Rice University, Houston, TX. (March 17, 2008)
- 101) "NanoEnabled Intracellular and Trans-dermal Drug Delivery", DARPA Meeting on Nanohealth, M. D. Anderson Cancer Center, Houston, TX. (March 24, 2008)
- 102) "Down Hole Nano", BP-Rice University Meeting, Rice University, Houston, TX. (March 31, 2008)
- 103) "Single Walled Carbon Nanotubes: Metal Ion Interactions and Composite Applications", 2008 NanoMaterials for Defense Conference, Arlington, VA. (April 21-23, 2008)
- 104) "Revolutionizing Solar Energy", New Orleans Investment Conference, New Orleans, LA. (November 15, 2008)
- 105) "Carboxylate Alumoxanes - Modeling Catalysts, Surfaces, and Nanoparticles", Afton Chemicals, Richmond, VA. (November 21, 2008)
- 106) "Future of Energy at Rice University", Texas-United Kingdom Collaborative Workshop, Austin, TX. (January 25, 2009)
- 107) "Small Things, Big Changes", Windsor Energy Group, London, England. (March 8, 2009)
- 108) "Proving Covalent Attachment to Carbon Nanotubes", PittCon Conference and Expo, Chicago, IL. (March 12, 2009)
- 109) "Fabrication Approaches", American Physical Society, Pittsburgh, OH. (March 14, 2009)
- 110) "Nanotechnology for the Oil & Gas Industry." Houston Technology Center, Houston, TX. (September 18)
- 111) "Reactive Nanoparticle Materials for Enhanced Warfighter Operational Capabilities"." Naval Surface Warfare Center, Panama City, FL. (October 8, 2009)
- 112) "Nanotechnology Investing: Where Is It Going?" New Orleans 2009 Investment Conference, New Orleans, LA. (October 10, 2009)
- 113) "An Academic Perspective of Collaboration: Bringing the Human Element to the Front." King Abdullah University of Science and Technology, Riyadh, Saudi Arabia. (November 1, 2009)

- 114) "Environmental Catalysis and Nanotechnology" to Nankai University Delegation Meeting, Rice University. (January 21, 2010)
- 115) "Patent Pooling in Energy and Nanotechnology". Energy R&D and Intellectual Property in the New "Green Economy", Baker Institute, Rice University. (January 26, 2010)
- 116) "Applications of Connexions in Teaching", Connexions Conference, Rice University. (February 2, 2010)
- 117) "Applications in Energy", Rice Alliance for Technology and Entrepreneurship, Rice University. (February 18, 2010)
- 118) "Challenges for the Future of the Automobile". Galveston College, Galveston, TX. (March 24, 2010).
- 119) "One Man's Inhibition is a Blind Man's Cure", South Texas Section of the American Institute of Chemical Engineers, Rice University. (April 8, 2010)
- 120) "Innovation in Carbon Capture Through Nanotechnology", Saudi Aramco Technology Symposium, Houston, TX. (October 11, 2010)
- 121) "Nanotechnology Applications for CO₂ Extraction From Gas Streams", Saudi Aramco Technology Symposium, Houston, TX. (October 12, 2010)
- 122) "The Evolution of a Serial Entrepreneur in Nanotechnology", The Rice Alliance Nanotechnology and Sustainability Venture Forum, Duncan Hall Atrium, Rice University, February 17, 2011
- 123) "How We Take Nanotechnology to Market", The MIT Enterprise Forum, McMurtry Hall, Rice University, February 16, 2011
- 124) "SWNT Amplification: Concepts and Results" Guadalupe Workshop on Nucleation and Growth Mechanisms of Single Wall Carbon Nanotubes (SWCNT), Boerne, TX, (April 12, 2011)
- 125) "Can Nanotechnology Provide a New Approach to Oil and Gas Shale Production?", Ryder Scott Reserves Conference, Houston, TX, (September 16, 2011)
- 126) "How Can Nanotechnology Make Your Frac More Productive, Environmentally Friendly, and Less Open to Litigation?", American Association of Mineral Owners, Houston, TX (September 15, 2011)
- 127) "Can Nanotechnology Provide a New Approach to Oil and Gas Shale Production?", Platts 6th Annual Oil & Gas Shale Developer Conference, Houston, TX (June 21, 2011)
- 128) "Nano Technology & Shale Gas Production", Korean-American Energy E&P Society, Houston, TX (November 4, 2011)
- 129) "Nanotechnology Has the Potential to Provide Power to the World", Pioneer Oil Producers Society, Houston, TX (November 21, 2011)
- 130) "How Can Nanotechnology Make Your Play More Productive, Environmentally Friendly, and Less Open to Litigation?", The Energy Forum Frontier Plays 2011, Farmers Branch, TX (September 14, 2011)
- 131) "Saving the E & P Industry, Nano Style", EPNano Net Summit, Houston, TX (June 22, 2011)

CORPORATE:

- 1) Founder and Chairman Scientific Advisory Board, Gallia Inc. (1992-1997).
- 2) President: Aluminum Research Board (1991-1997).

- 3) Founder, Scientific Advisory Board, and Board Member, Oxane Materials, Inc. (2002-present)
- 4) Founder, Scientific Advisory Board, NatCore Technology, Inc. (2004-present).
- 5) Founder, Scientific Advisory Board, NewCyte (2005-2009 acquired by Natcore Technology, Inc.).
- 6) Founder, Scientific Advisory Board, Vanguard Solar (2007-2009 acquired by Natcore Technology, Inc.).
- 7) Founder, Scientific Advisory Board, Molecular Filtration (2010-present).
- 8) Board Member, Velocita, Inc. (2008-present).
- 9) Board Member, Houston Clean Energy Park (2009-present).
- 10) Science Advisory Board, Nanotech Innovations (2008 -present).
- 11) Science Advisory Board, Yellowstone Energy Ventures (2008-2009).
- 12) Scientific Advisory Board, Tego Biosciences (2007-2009).