

ARVIND VARMA

R. Games Slayter Distinguished Professor
School of Chemical Engineering
Purdue University
West Lafayette, IN 47907-2100

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A. Personal Information

Date of Birth: October 13, 1947
Place of Birth: Firozabad, U.P., India - U.S. Naturalized Citizen
Marital Status: Married, two children

B. Education

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| B.S. (Chem. Eng.), Panjab University, India | 1966 |
| M.S. (Chem. Eng.), University of New Brunswick, Canada | 1968 |
| Ph.D. (Chem. Eng.), University of Minnesota | 1972 |

C. Professional Experience

| | |
|---|----------------|
| Assistant Professor, University of Minnesota | 1972-73 |
| Senior Research Engineer, Union Carbide Corporation Dept. of Chemical Engineering, Univ. of Notre Dame | 1973-75 |
| Assistant Professor | 1975-77 |
| Associate Professor | 1977-80 |
| Professor | 1980-88 |
| Chairman | 1982 - 88 |
| Arthur J. Schmitt Professor | 1988-2003 |
| Director (<i>founding</i>), Center for Molecularly Engineered Materials | 2000-2003 |
| School of Chemical Engineering, Purdue University | |
| R. Games Slayter Distinguished Professor | 1/2004-present |
| Head, School of Chemical Engineering | 1/2004-8/2012 |
| Jay & Cynthia Ihlenfeld Head of Chemical Engineering | 9/2012-7/2016 |

Visiting Appointments:

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| Visiting Professor, University of Wisconsin-Madison | Fall 1981 |
| Chevron Visiting Professor, California Institute of Technology | Spring 1982 |
| Visiting Professor, Indian Institute of Technology - Kanpur | Spring 1989 |
| Visiting Chair Professor, University of Cagliari, Italy | Summer 1989, July 1992 |
| Visiting Fellow, Princeton University | Spring 1996 |
| Piercy Distinguished Visiting Professor, University of Minnesota | Fall 2001 |
| G.P. Kane Visiting Professor, UICT-Mumbai | January 2007 |
| Golden Jubilee Visiting Fellow, UICT-Mumbai | March 2008 |
| B.D. Tilak Visiting Fellow, ICT-Mumbai | March 2012 |
| Visiting Scholar, University of California – Santa Barbara | 1/2017 – 3/2017 |
| Visiting Professor, ETH-Zurich | 4/2017 – 7/2017 |

D. Fellowships, Honors and Recognitions

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| NSF US-India Exchange Visitor | April 1982 |
| Fellow, American Institute of Chemists | 1987 |
| Indo-American Fellowship, Fulbright Scholar Award | 1988-89 |
| College of Engineering Outstanding Teacher of the Year Award | 1991 |
| Special Presidential Award, Univ. of Notre Dame | 1992 |
| R.H. Wilhelm Award, American Institute of Chemical Engineers | 1993 |
| Burns Graduate School Award, Univ. of Notre Dame | 1997 |
| Ernest W. Thiele Award, AIChE (Chicago section) | 1998 |
| Chemical Engineering Lectureship Award, ASEE | 2000 |
| Research Achievement Award (<i>Inaugural</i>), Univ. of Notre Dame | 2001 |
| Honorary Fellow (<i>Inaugural batch</i>), Indian Institute of Chem. Engrs | 2001 |
| Technology and Innovation Award, <i>Industry Week</i> | 2005 |
| Honoree, 60 th Birthday sessions - I & II, AIChE Annual Meeting | 2007 |
| Distinguished Chemical Engineering Alumnus (<i>Inaugural batch of 3</i>), Panjab University | 2008 |
| Distinguished University Alumnus, Panjab University | 2008 |
| Fellow, AIChE | 2008 |
| Honoree, Festschrift issue, I&EC Research (Volume 47, No. 23) | 2008 |
| Elected Foreign Member, Academy of Engineering, Mexico | 2010 |
| Fellow, American Association for the Advancement of Science | 2011 |
| Fellow, Industrial & Engineering Chemistry Division, American Chemical Society | 2011 |
| Leadership Award, College of Engineering, Purdue University | 2011 |
| Warren K. Lewis Award, AIChE | 2013 |
| Sigma Xi Faculty Research Award (Purdue Chapter) | 2015 |
| Arden L. Bement Jr. Award for Pure or Applied Science or Engineering, Purdue University | 2016 |
| Innovator Hall of Fame, Purdue University | 2016 |
| Giulio Natta Medal in Chemical Engineering, Politecnico di Milano, Italy | 2017 |
| <i>Special Lectureships:</i> | |
| Plenary Lecture, ISCRE-12, Torino, Italy | 1992 |
| Warren McCabe Lecture, North Carolina State University | 1992 |
| UOP Invitational Lecture | 1994 |
| G. C. A. Schuit Lecture, University of Delaware | 1994 |
| Robb Distinguished Lecture, Penn State University | 1997 |
| Kuloor Lecture, Indian Institute of Science – Bangalore | 1999 |
| Amundson Lectures, University of Guadalajara, Mexico | 2001 |
| Piercy Lecture, University of Minnesota | 2001 |
| Perkin Elmer Chemcon Distinguished Lecture, Chennai, India (<i>Inaugural Speaker</i>) | 2001 |
| Paul C. Wilber Lecture, Rice University | 2002 |
| Research Highlight Series Lecture, NSF | 2002 |
| ConocoPhillips Lecture, Oklahoma State University | 2003 |

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| Johansen-Crosby Lecture, Michigan State University | 2004 |
| G.P. Kane Lectures, UICT-Mumbai | 2007 |
| Golden Jubilee Lecture, UICT-Mumbai | 2008 |
| CNR Rao Distinguished Lecture, Chemcon, Chandigarh, India | 2008 |
| Distinguished Chemical Engineering Lecture, Univ. of Utah | 2009 |
| Distinguished Engrg Lecture, Univ. of Western Ontario | 2010 |
| Induction Lecture, Academy of Engineering, Mexico | 2010 |
| Lindsay Lecture, Texas A&M University | 2012 |
| B.D. Tilak Lecture, ICT-Mumbai | 2012 |
| 125 th Anniversary Lecture, Academy of Engineering, Mexico | 2013 |
| ChE Academy Lecture, Missouri Univ of Science & Tech | 2015 |
| Lyman Handy Lecture, University of Southern California | 2017 |
| Giulio Natta Medal Lecture, Politecnico di Milano, Italy | 2017 |
| Dow/Jean B. Copley Lecture, West Virginia University | 2017 |

Listed in:

American Men and Women of Science, Who's Who in the World,
Who's Who in America, and other biographical listings.

E. Principal Research Interests

Chemical and Catalytic Reaction Engineering, New Energy Sources, Synthesis of
Advanced Materials
Author of over 305 research publications in these areas.

F. Professional Society Memberships

American Institute of Chemical Engineers (AIChE) - Fellow
American Chemical Society (ACS)
American Society for Engineering Education (ASEE)
American Association for the Advancement of Science (AAAS) - Fellow
Sigma Xi

G. Books

Mathematical Methods in Chemical Engineering, A. Varma and M. Morbidelli,
690 + xvi pages, Oxford University Press, New York, 1997.
Parametric Sensitivity in Chemical Systems, A. Varma, M. Morbidelli and H. Wu,
342 + xvi pages, Cambridge University Press, Cambridge, U.K., 1999; paperback
2005.
Catalyst Design: Optimal Distribution of Catalyst in Pellets, Reactors and Membranes,
M. Morbidelli, A. Gavriilidis and A. Varma, 227 + xii pages, Cambridge University
Press, Cambridge, U.K., 2001; paperback 2005.

Edited Books

*The Mathematical Understanding of Chemical Engineering Systems: Selected Papers of
N. R. Amundson, R. Aris and A. Varma (Editors)*, Pergamon Press, 829 pages, 1980.

Chemical Reaction and Reactor Engineering, J. J. Carberry and A. Varma (Editors), Marcel Dekker, 1069 pages, 1987.

H. Editorships

| | |
|---|----------------|
| Series Editor (<i>founding</i>), <i>Cambridge Series in Chemical Engineering</i> Cambridge University Press | 1996 – present |
| Member of Editorial Board, <i>Catalysis Reviews - Science and Engineering</i> | 1976-1986 |
| <i>International Journal of Self-Propagating High-Temperature Synthesis</i> | 1992 – 2006 |
| <i>International Journal of Petroleum Science and Technology</i> | 2005-2013 |
| <i>Industrial & Engineering Chemistry Research</i> | 2012-14 |
| <i>Changing Issues in Chemical Engineering</i> A. G. Fredrickson, G. R. Gavalas, W. H. Ray and A. Varma (Editors) Special Issue of <i>Chemical Engineering Science</i> (Vol. 44, No. 9) in honor of Rutherford Aris, Pergamon Press, 334 pages. | 1989 |
| <i>ISCRE-18: From Molecular to Product and Process Engineering</i> A. Varma, B. Subramanian and K. VandenBussche (Editors) Special Issue of <i>Chemical Engineering Science</i> (Vol. 59, No. 22-23; 1033 pages) | 2004 |
| <i>Doraiswami Ramkrishna Festschrift</i> A. Varma and G.D. Yadav (Editors), <i>Industrial & Engineering Chemistry Research</i> , <u>54</u> (42), pages 10135-10552. | 2015 |

I. Professional Activities

AIChE

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|---|--------------|
| Member, National Program Committee on Kinetics, Catalysis and Reaction Engineering (Area 1b) | 1978-95 |
| Director (<i>founding</i>), Catalysis and Reaction Engineering Division | 1995-98 |
| Member, AIChE Awards Committee | 1994-99 |
| Program Evaluator for Chemical Engineering Accreditation, AIChE/ABET | 1988-98 |
| Member, AIChE Awards Solicitation Committee | 2009-11 |
| Member, Program Steering Committee, AIChE Midwest Regional Conference | Jan 2013 |
| Member, International Committee | 2012-15 |
| Member, Fellows Council | 2014-16 |
| Member, Industry-Academia Alignment Task Force | 2014-16 |
| Trustee, AIChE Foundation | 2014-present |

ISCRE

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| Member, ISCRE Board of Directors | 2001 -13 |
| Member, Scientific Committee, ISCRE-15, Newport Beach, CA | Sept. 1998 |
| Member, Scientific Committee, ISCRE-17, Hong Kong, China | Sept. 2002 |
| Chair, ISCRE-18, Chicago, IL | 2004 |
| Member, Scientific Committee, ISCRE-19, Potsdam/Berlin, Germany | Sept. 2006 |
| Chair, Amundson Award Committee | 2006 |
| Member, Scientific Committee, ISCRE-20, Kyoto, Japan | Sept. 2008 |
| Chair, Amundson Award Committee | 2009-10 |
| Member, Organizing Committee, ISCRE-21, Philadelphia, PA | Aug. 2010 |
| Member, Scientific Committee, ISCRE-22, Maastricht, the Netherlands | Sept. 2012 |
| Member, Scientific Committee, ISCRE-23, Bangkok, Thailand | Sept. 2014 |
| Member, Scientific Committee, ISCRE-25, Florence, Italy | May 2018 |

Other Committee Memberships

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| Member, Examination Board for Chemical Engineering and Applied Mathematics, National Council of Engineering Examiners | 1976-79 |
| Departmental Representative, CACHE (National Committee on Computer Aids for Chemical Engineering Education) | 1976-80 |
| Member, CACHE Task Force on Large-Scale Systems | 1978-80 |
| Member, CACHE Task Force on Personal Computers | 1979-81 |
| Member, National Program Committee, I & EC Division, American Chemical Society | 1983-85 |
| Member, Engineering Research Equipment Review Panel, NSF | March 1990 |
| Member, SBIR Proposal Evaluation Panel, NSF | Sept. 1993 |
| Member, Career Award Proposal Evaluation Panel, NSF | Jan. 1996 |
| Member, Microgravity Combustion Peer Review Panel, NASA | June 2000 |
| Member, Chemical Engineering Division Award Committee, ASEE | 2001-03 |
| Member, Career Award Proposal Evaluation Panel, NSF | Nov. 2001 |
| Diversity Award Committee, Council for Chemical Research Member - 2006, 2007; Chair – 2008 | 2006-08 |
| Member, GCEP Proposal Review Panel, Stanford University | May 2008 |
| Member, GCEP Proposal Review Panel, Stanford University | April 2010 |
| Chair, Awards Committee, I&EC Division, ACS | 2012- 16 |
| Engineering Research Council Awards Cmte, ASEE Member – 2012, Chair – 2013-16 | 2012- 16 |
| Member, Isadore T. Davis Award Committee, ASEE | 2012-14 |
| Member, Advisory Committee, Department of Chemical and Biological Engineering, University of Colorado-Boulder | 2012-present |
| Member, Board of Judges for 2013 Kirkpatrick Award, <i>Chemical Engineering</i> magazine | 2013 |
| Member, Board of Judges for 2015 Kirkpatrick Award, | 2015 |

*Chemical Engineering magazine**Session Chair at Conferences*

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|---|------------|
| Chairman, Sessions on Advances in Modeling and Analysis of Chemical Engineering Systems, AIChE Annual Meeting, San Francisco, CA | Nov. 1979 |
| Chairman, Session on Fixed-Bed Reactors, ACS National Meeting, Las Vegas, NV | Aug. 1980 |
| Chairman, Sessions on Chemical and Catalytic Reactor Modeling, AIChE Annual Meeting, Chicago, IL | Nov. 1980 |
| Co-Chairman, Session on New Methods in Mathematical Modeling and Analysis, AIChE Annual Meeting, New Orleans, LA | Nov. 1981 |
| Chairman, Session on Mixing and Polymerization, Seventh International Symposium on Chemical Reaction Engineering, Boston, MA | Oct. 1982 |
| Chairman, Session on Chemical and Catalytic Reactor Modeling, AIChE Annual Meeting, Los Angeles, CA | Nov. 1982 |
| Chair or Vice-Chair, Session on Chemical Reactor Stability and Dynamics, AIChE Annual Meeting, San Francisco (1984), Chicago (1985), Miami (1986), New York (1987), Washington, DC (1988), Chicago (1990), Los Angeles (1991), Miami (1992) | |
| Chairman, Chemical Engineering Courses Group, NSF Indo-US Seminar on Chemical Engineering Education: Curricula for the Future, Bangalore, India | Jan. 1988 |
| Chairman, Session on Reactor Modeling, Scale - up and Control, Twelfth International Symposium on Chemical Reaction Engineering, Torino, Italy | June 1992 |
| Chair, Murphree Award Symposium, ACS National Meeting, Denver, CO | April 1993 |
| Co-Chair, Session on Synthesis of New Materials, International Symposium on Chemical Reaction Engineering-13, Baltimore, MD | Sept. 1994 |
| Chair, Session on Future Directions in Chemical Reaction Engineering, AIChE Annual Meeting, San Francisco, CA | Nov. 1994 |
| Chair, Session on Reactor Operation with Flow Reversal, 2nd International Conference on Unsteady-State Processes in Catalysis, St. Louis, MO | Sept. 1995 |
| Chair, Session on SHS Methods: New Variations and New Problems, 3rd International Symposium on Self-Propagating High-Temperature Synthesis, Wuhan, China | Oct. 1995 |
| Co-Chair, Session on Catalyst Design, AIChE Annual Meeting, Miami Beach, FL | Nov. 1995 |
| Chair, Session on Future Directions in Reaction Engineering Research: Papers in Honor of Rutherford Aris, AIChE Annual Meeting, Chicago, IL | Nov. 1996 |

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| Chair, Session on Fundamentals of SHS, 4th International Symposium on Self-Propagating High-Temperature Synthesis, Toledo, Spain | Oct. 1997 |
| Chair, Session on "Dynamic Processes on Catalyst Surfaces," Third International Conference on Unsteady State Processes in Catalysis, St. Petersburg, Russia | July 1998 |
| Chair, Session on "Catalytic Reactors," International Symposium on Chemical Reaction Engineering-15, Newport Beach, CA | Sep. 1998 |
| Chair, Session on Future Directions in Reaction Engineering Research, AIChE Annual Meeting, Miami Beach, FL | Nov. 1998 |
| Chair, Session on Combustion Mechanisms, 5 th International Symposium on Self-Propagating High-Temperature Synthesis, Moscow, Russia | Aug. 1999 |
| Chair, Round Table on SHS in Chemical Engineering, 5 th International Symposium on Self-Propagating High-Temperature Synthesis, Moscow, Russia | Aug. 1999 |
| Chair, Session on Membrane Reactors, AIChE Annual Meeting, Dallas, TX | Nov. 1999 |
| Chair, Sessions on Inorganic Membranes for Reaction and Separation, North American Membrane Society Meeting, Boulder, CO | May 2000 |
| Chair, Session on Metallic Membranes, International Conference on Inorganic Membranes, Montpellier, France | June 2000 |
| Chair, Session on Conversion Enhancement, International Conference on Catalysis in Membrane Reactors, Zaragoza, Spain | July 2000 |
| Chair, Session on Reactor Dynamics and Control, International Symposium on Chemical Reaction Engineering-16, Cracow, Poland | Sep. 2000 |
| Chair, Session on Future Directions in Reaction Engineering Research, AIChE Annual Meeting, Los Angeles, CA | Nov. 2000 |
| Chair, Plenary Session, International Symposium on Chemical Reaction Engineering-17, Hong Kong | Aug. 2002 |
| Chair, Session on Future Directions in Reaction Engineering Research, AIChE Annual Meeting, Indianapolis, IN | Nov. 2002 |
| Chair, Session on Novel Reactors and Process Developments, International Symposium on Chemical Reaction Engineering-19, Potsdam/Berlin | Sep. 2006 |
| Chair, Sessions (2) in honor of Neal Amundson's 90 th Birthday, AIChE Annual Meeting, San Francisco, CA | Nov. 2006 |
| Chair, Sessions (2) in honor of Wilhelm Award Recipient, AIChE Annual Meeting, San Francisco, CA | Nov. 2006 |
| Chair, Session on Materials Processing, International Symposium on Chemical Reaction Engineering-20, Kyoto, Japan | Sep. 2008 |
| Chair, Plenary Session – 1, International Symposium on Chemical Reaction Engineering-21, Philadelphia, PA | June 2010 |

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| Chair, Session in honor of Roger Schmitz' 75 th Birthday, AIChE Annual Meeting, Salt Lake City, UT | Nov. 2010 |
| Chair, Session on Reaction Path Analysis & Reaction Kinetics, International Symposium on Chemical Reaction Engineering-22, Maastricht, The Netherlands | Sep. 2012 |
| Chair, Panel Discussion on "The Next Steps," U.S.-India Symposium on Energy, Environment and Sustainability, AIChE Annual Meeting, Pittsburgh, PA | Oct. 2012 |
| Chair, Panel Discussion on "The Next Steps," U.S.-India Symposium on Energy, Environment and Sustainability, Chemcon 2013, Mumbai, India | Dec. 2013 |
| Chair, Panel Discussion on Future Education of Chemical Engineers, 8th Sino-US Joint Conference of Chemical Engineering, Shanghai, China | Oct. 2015 |
| Chair, Session on "Trends and Challenges in Chemical Engineering Research," World Congress of Chemical Engineering, Barcelona, Spain | Oct. 2017 |

Other Conference Related Activities

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| Invited Reporter for Reactors, First International Conference on Foundations of Computer-Aided Process Design, Henniker, NH | July 1980 |
| Academic Co-Reporter, Workshop on Catalysis, Council for Chemical Research Meeting, Houston, TX | Sept. 1982 |
| Plenary Lecturer, International Chemical Reaction Engineering Conference, Pune, India | Jan. 1984 |
| Invited Lecture, International Chemical Reaction Engineering Conference-2, Pune, India | April 1987 |
| Plenary Lecturer, International Conference on Advances in Chemical Engineering, Kanpur, India | Jan. 1989 |
| Member, Program and Publication Committee, Second International Symposium on Self-Propagating High Temperature Synthesis, Honolulu, HI | Nov. 1993 |
| Member of Organizing Committee, 2nd International Conference on Unsteady-State Processes in Catalysis, St. Louis, MO | Sept. 1995 |
| Member, Program and Publication Committee, Third International Symposium on Self-Propagating High-Temperature Synthesis, Wuhan, China | Oct. 1995 |
| Invited Lecture, International Conference on Advances in Chemical Engineering, Madras, India | Dec. 1996 |
| Member, International Advisory Committee, Fourth International Symposium on Self-Propagating High-Temperature Synthesis, Toledo, Spain | Oct. 1997 |
| Member of Organizing Committee, 3rd International Conference on Unsteady-State Processes in Catalysis, St. Petersburg, Russia | July 1999 |

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| Member, International Advisory Committee, Fifth International Symposium on Self-Propagating High-Temperature Synthesis, Moscow, Russia | Aug. 1999 |
| Member, International Advisory Committee, Sixth International Symposium on Self-Propagating High-Temperature Synthesis, Haifa, Israel | Oct. 2001 |
| Member, Scientific Committee, International Conference on Catalysis in Membrane Reactors, Dalian, China | June 2002 |
| Member of Organizing Committee, 4th International Conference on Unsteady-State Processes in Catalysis, Montreal, Canada | Oct. 2003 |
| Member of Organizing Committee, 5th International Conference on Unsteady-State Processes in Catalysis, Osaka, Japan | Nov. 2006 |
| Chair, International Advisory Board, Energy Center Hydrogen Initiative Symposium – 2, Purdue University | April 2007 |
| Organizer, US-India Chemical Engineering Conference and Workshop on Energy and Sustainability, Chandigarh, India | Dec. 2008 |
| Member, Scientific Advisory Committee, Sino-US Conference of Chemical Engineering, Beijing, China | Oct. 2009 |
| Member, International Advisory Committee, 9th World Congress of Chemical Engineering, Seoul, Korea | Aug. 2013 |
| Member, International Advisory Committee, International Symposium on Self-Propagating High-Temperature Synthesis - 13, South Padre Island, TX | Oct. 2013 |
| Co-Organizer, Indo-US Chemical Engineering Conference on Energy, Environment and Sustainability, Mumbai, India | Dec. 2013 |
| Member, International Advisory Committee, Chemcon-2013, Mumbai, India | Dec. 2013 |
| Member, Advisory Committee, Chemcon-2014, Chandigarh, India | Dec. 2014 |

Consulting

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| Ford Motor Company | 1978 - 83 |
| Olin Chemicals | 1990 - 91 |
| Union Carbide Corporation | 1990 - 98 |
| International Specialty Products (Member of Science Advisory Board) | 1992 - 97 |
| B/E Aerospace | 1999- 2002 |
| Alexza Corporation | 2006-2007 |
| Heritage Research Group | 2008 |
| Kleiner Perkins Caufield & Byers | 2008 |
| Sriya Green Materials | 2009-2010 |
| BASF | 2013-14 |
| Air Liquide – Member, Science Advisory Board | 2015-present |

J. Doctoral Dissertations Directed

Completed

1. * C. J. Pereira, "Modeling of the Catalytic Converter for Automotive Exhaust Gas," University of Notre Dame, August 1978; 209 + xii pages.
2. * A. L. DeVera, "Some Problems Concerning Transport in Random Heterogeneous Media and Chemically Reacting Systems," University of Notre Dame, January 1979; 339 + xii pages.
3. S. C. Paspek, "Experimental and Theoretical Investigation of Ethylene Oxidation in a Fixed-Bed Reactor," University of Notre Dame, August 1979; 135 + ix pages.
4. J. B. Wang, "Problems Involving Diffusion and Reaction in Porous Catalyst Pellets, and the Modeling of Catalytic Converter for Automotive Exhaust System," University of Notre Dame, February 1980; 125 + ix pages.
5. D. T.-J. Huang, "Steady State and Dynamic Behavior of Gas-Liquid Reactors," University of Notre Dame, June 1980; 173 + xii pages.
6. * V. Ravichandran, "Characterization, Sintering and Transient Reaction Kinetics for Model Three-Way Catalysts," University of Notre Dame, September 1981; 89 + vii pages.
7. N. Jothi, "Reaction Kinetics for Carbon Monoxide Oxidation on a Commercial Three-Way Catalyst," University of Notre Dame, October 1982; 151 + viii pages.
8. A. Shaikh, "Studies on the Steady State Behavior of Gas-Liquid Reactors," University of Notre Dame, December 1983; 172 + xii pages.
9. B. Subramaniam, "Reactions of CO, NO, O₂ and H₂O on Pt/ γ -Al₂O₃ and Commercial Three-Way Catalysts," University of Notre Dame, February 1984, 190 + ix pages.
10. S. Dhalewadikar, "Ethylene Oxidation on Supported Platinum Catalyst in a Non-Adiabatic Fixed-Bed Reactor: Experiments and Model," University of Notre Dame, July 1984, 200 + ix pages.
11. M. Kosanovich, "Reactions of Propylene, Nitric Oxide, and Oxygen on Platinum/ γ -Al₂O₃, Iridium/ γ -Al₂O₃ and Platinum-Iridium/BaO-Al₂O₃ Catalysts," University of Notre Dame, August 1986, 290 + xviii pages.
12. R. Chemburkar, "Optimal Catalyst Activity Profiles in Pellets: Single Pellet Theory and Experiments," University of Notre Dame, December 1986, 104 + x pages.
13. M. Morbidelli, "Parametric Sensitivity and Runaway in Chemically Reacting Systems," University of Notre Dame, April 1987, 248 + xi pages.
14. R. Herrera, "Effect of Gold in the Oxidation of Ethylene over α -Alumina Supported Silver-Gold Catalysts," University of Notre Dame, July 1987, 203 + xiv pages.
15. C. Lee, "Theoretical and Experimental Studies of Fixed-Bed Reactors with Non-Uniformly Active Catalyst Pellets," University of Notre Dame, September 1987, 157 + xi pages.
16. E. Bauman, "Parametric Sensitivity in Non-Adiabatic Catalytic Fixed-Bed Reactors: Theory and Experiments," University of Notre Dame, September 1988, 148 + x pages.
17. D. Price, "Preparation of Pt/ γ -Al₂O₃ Pellets with an Internal Step-Distribution of Catalyst: Experiments and Theory," University of Notre Dame, October 1988, 141+ x pages.
18. R. Pigeon, "Chemical Reaction Engineering Considerations in the Synthesis of Silicon Nitride," University of Notre Dame, March 1992, 235 + xv pages.
19. J. -P. Lebrat, "Mechanistic and Processing Studies Related to Combustion Synthesis of Advanced Materials," University of Notre Dame, December 1992, 118 + xiii pages.

20. A. Gavriilidis, "Optimal Distribution of Silver Catalyst in Pellets for Epoxidation of Ethylene," University of Notre Dame, July 1993, 218 + xvi pages.
- 21.* D. Chatzopoulos, "Experimental and Modeling Studies on Membrane-Aerated Granular Activated Carbon-Sequencing Batch Biofilm Reactors," University of Notre Dame, September 1994, 309 + xxiii pages.
- 22.* U. Stafford, "Photocatalytic Oxidation of a Model Halogenated Aromatic Compound: A Mechanistic Study," University of Notre Dame, October 1994, 223 + xvii pages.
23. C. Kachelmyer, "Mechanistic and Product Structure Formation Studies in the Combustion Synthesis of Advanced Materials," University of Notre Dame, April 1996, 151 + xv pages.
- 24.* M. Maalmi, "Reaction-Bonded Silicon Nitride Synthesis: Modeling, Analysis and Experiments," University of Notre Dame, August 1996, 200 + xix pages.
- 25.* R. Wu, "Enhancing Performance of Three-Phase Packed-Bed Catalytic Reactors by Pulsing-Flow Regime: Modeling and Experimental Study," University of Notre Dame, June 1997, 183 + xiii pages.
26. J. Szegner, "Effects of Nonuniform Catalyst Distribution on Inorganic Membrane Reactor Performance: Experiments and Theory," University of Notre Dame, June 1997, 206 + xix pages.
27. S. Hwang, "Microstructure of Wave Propagation during Combustion Synthesis of Advanced Materials: Experiments and Theory," University of Notre Dame, November 1997, 158 + x pages.
28. A. Pelekh, "Combustion Synthesis of Advanced Materials: Studies of the Influence of Gravity and Reaction Kinetics," University of Notre Dame, June 1999, 115 + ix pages.
29. R. Souleimanova, "Palladium-Composite Membranes: Synthesis, Characteristics and Properties," University of Notre Dame, September 2000, 115 + ix pages.
30. L. Thiers, "Mechanistic Studies Involving Kinetics of Rapid High-Temperature Reactions for Materials Synthesis," University of Notre Dame, April 2002, 116 + xv pages.
- 31.* B. Wilhite, "Pulsing-Flow Regime in Trickle-Bed Reactors: Hydrodynamics and Reactor Design," University of Notre Dame, September 2002, 140 + xiii pages.
32. C. Lau, "The Effects of Gravity on Combustion Synthesis of Advanced Materials," University of Notre Dame, October 2002, 151 + xiv pages.
33. V. Diakov, "Methanol Oxidative Dehydrogenation in a Catalytic Packed-Bed Membrane Reactor: Experiments and Model," University of Notre Dame, October 2002, 89 + xi pages.
- 34.* R. Huang, "Flow Patterns and their Influence on Trickle-Bed Reactors: Experiments and Theory," University of Notre Dame, October 2002, 92 + xv pages.
35. K. Deshpande, "Nanoscale Advanced Materials Using Aqueous Combustion Synthesis," University of Notre Dame, January 2005, 97 + xi pages.
36. C. Norfolk, "Processing of Mesocarbon Microbeads to High-Performance Materials for Friction Applications," University of Notre Dame, March 2005, 96 + xvi pages.
37. P. Erri, "Solution Combustion Synthesis for Catalytic and Power Generation Applications," Purdue University, March 2007, 111 + xiv pages.
38. T. Andrzejak, "Experimental Studies on the Ignition of Single Ni/Al, Fe/Al, and Ti Particles," Purdue University, September 2007, 146 + xvi pages.
39. M. Diwan, "Hydrogen Generation for Fuel Cell Applications," Purdue University, August 2009, 111 + xviii pages.
40. W. Hu, "Catalytic Oxidation of Glycerol to High-Value Chemical Dihydroxyacetone Over Pt-Bi/C Catalyst," Purdue University, May 2011, 89 + xix pages.

41. A. Al-Kukhun, "Hydrogen Generation for Fuel Cell Vehicle Applications," Purdue University, May 2012, 198 + xviii pages.
42. R. Ghose, "Oxidative Coupling of Methane using Catalysts Synthesized by Solution Combustion Method," Purdue University, September 2013, 123 + xix pages.
43. D. Gao, "Catalytic Hydrodeoxygenation of Guaiacol over Noble Metal Catalysts," Purdue University, September 2014, 109 + xvi pages.
- 44.* Y. Xiao, "Heterogeneous Catalysis for Biodiesel Production and Utilization of its Byproduct Crude Glycerol by Selective Oxidation," Southeast University (China), November 2014, 137 + xii pages.
45. G. Honda, "The Hydrodynamics of Trickle Bed Reactors," Purdue University, August 2015, 102 + xi pages.
46. S. B. Lee, "Multiphase Reaction Studies in Stirred Tank and Fixed Bed Reactors," Purdue University, December 2015, 198 + xxv pages.

In Progress

- * Ryan Adams, joined Fall 2014
- Wooram Kang, joined Fall 2014
- * Johnny Zhuchen, joined Fall 2016
- Rex Lagare, joined Fall 2017

Note: * indicates joint supervision.

K. Invited Lectures (Graduate Research Seminars)

| <i>Institution</i> | <i>Date</i> |
|---|----------------|
| 1. University of Michigan, Ann Arbor, MI | October 1978 |
| 2. Ford Motor Company, Dearborn, MI | March 1979 |
| 3. Northwestern University, Evanston, IL | April 1979 |
| 4. University of Minnesota, Minneapolis, MN | May 1979 |
| 5. Purdue University, West Lafayette, IN | September 1979 |
| 6. Illinois Institute of Technology, Chicago, IL | October 1979 |
| 7. Universidad Autonoma Metropolitana-Iztapalapa, Mexico City | January 1980 |
| 8. University of Houston, Houston, TX | February 1980 |
| 9. University of Florida, Gainesville, FL | May 1980 |
| - Also a series of ten special lectures in stability theory and applications to reactor design | October 1980 |
| 10. Iowa State University, Ames, IA | February 1981 |
| 11. University of Illinois, Urbana, IL | September 1981 |
| 12. University of Wisconsin, Madison, WI | October 1981 |
| 13. University of California, Davis, CA | January 1982 |
| 14. University of California, Berkeley, CA | February 1982 |
| 15. University of California, Santa Barbara, CA | February 1982 |
| 16. University of California, San Diego, CA | February 1982 |
| 17. Stanford University, Stanford, CA | March 1982 |
| 18. National Chemical Laboratory, Pune, India | April 1982 |
| 19. University of Bombay, Bombay, India | April 1982 |
| 20. Regional Research Laboratory, Hyderabad, India | April 1982 |

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| 21. | Indian Institute of Science, Bangalore, India | April | 1982 |
| 22. | Engineers India Limited, Delhi, India | April | 1982 |
| 23. | Politecnico di Milano, Milano, Italy | May | 1982 |
| 24. | California Institute of Technology, Pasadena, CA | May | 1982 |
| 25. | University of Southern California, Los Angeles, CA | May | 1982 |
| 26. | Carnegie-Mellon University, Pittsburgh, PA | November | 1982 |
| 27. | University of Virginia, Charlottesville, VA | October | 1983 |
| 28. | Indian Institute of Technology, Kanpur, India | January | 1984 |
| 29. | Miles Laboratories, Elkhart, IN | August | 1984 |
| 30. | University of Rochester, Rochester, NY | December | 1985 |
| 31. | Penn State University, University Park, PA | March | 1986 |
| 32. | Exxon Research and Engineering, Florham Park, NJ | August | 1986 |
| 33. | University of Texas, Austin, TX | November | 1986 |
| 34. | Indian Institute of Technology, Kanpur, India | April | 1987 |
| 35. | University of Virginia, Charlottesville, VA | September | 1987 |
| 36. | Wayne State University, Detroit, MI | October | 1987 |
| 37. | University of Pennsylvania, Philadelphia, PA | February | 1988 |
| 38. | Union Carbide Corporation, South Charleston, WV | May | 1988 |
| 39. | Allied Signal Research Center, Des Plaines, IL | May | 1988 |
| 40. | University of Tübingen, Tübingen, West Germany | September | 1988 |
| 41. | Indian Institute of Technology, Kanpur, India | April | 1989 |
| 42. | Harcourt Butler Technological Institute, Kanpur, India | April | 1989 |
| 43. | Indian Institute of Technology, Bombay, India | May | 1989 |
| 44. | Indian Petrochemicals Corporation, Baroda, India | May | 1989 |
| 45. | University of Bombay, Bombay, India | May | 1989 |
| 46. | National Chemical Laboratory, Pune, India | May | 1989 |
| 47. | Università di Cagliari, Cagliari, Italy | June | 1989 |
| 48. | Università di Roma, Rome, Italy | June | 1989 |
| 49. | Università di Pisa, Pisa, Italy | June | 1989 |
| 50. | Università di Bologna, Bologna, Italy | June | 1989 |
| 51. | Università di Padova, Padova, Italy | June | 1989 |
| 52. | Politecnico di Milano, Milan, Italy | June | 1989 |
| 53. | Olin Chemicals, Charleston, TN | February | 1990 |
| 54. | University of California, Davis, CA | February | 1990 |
| 55. | Union Carbide Corporation, South Charleston, WV | April | 1990 |
| 56. | Argonne National Laboratory, Argonne, IL | July | 1990 |
| 57. | Texaco Research Center, Beacon, NY | October | 1990 |
| 58. | Washington University, St. Louis, MO | March | 1991 |
| 59. | Shell Development Company, Houston, TX | June | 1991 |
| 60. | Union Carbide Corporation, South Charleston, WV | July | 1991 |
| 61. | University of Wisconsin, Madison, WI | January | 1992 |
| 62. | International Specialty Products, Wayne, NJ | June | 1992 |
| 63. | Università di Cagliari, Cagliari, Italy | July | 1992 |
| 64. | Reilly Industries, Indianapolis, IN | January | 1993 |
| 65. | Northwestern University, Evanston, IL (Depts. of Chem. Engg. & Appl. Math.) | February | 1993 |
| 66. | McGill University, Montreal, Canada | March | 1993 |
| 67. | Monsanto Company, St. Louis, MO | March | 1993 |
| 68. | EPA Research Laboratory, Cincinnati, OH | May | 1993 |

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| 69. | University of Southern Mississippi, Hattiesburg, MS (Dept. of Chemistry and Biochemistry) | October | 1993 |
| 70. | Arco Chemical Company, Newtown Square, PA | December | 1993 |
| 71. | University of Kansas, Lawrence, KS | October | 1994 |
| 72. | Chevron Research & Technology Company, Richmond CA | December | 1994 |
| 73. | University of Naples, Naples, Italy | February | 1995 |
| 74. | University of Akron, Akron, OH | March | 1995 |
| 75. | Alfred University, Alfred, NY (School of Ceramic Engineering & Sciences) | April | 1995 |
| 76. | Princeton University, Princeton, NJ (Dept. of Mechanical & Aerospace Engg.) | February | 1996 |
| 77. | Exxon Research & Engineering Company, Annandale, NJ | March | 1996 |
| 78. | Iowa State University, Ames, IA | March | 1996 |
| 79. | Princeton University, Princeton, NJ | April | 1996 |
| 80. | University of Minnesota, Minneapolis, MN | April | 1996 |
| 81. | Lummus Company, Bloomfield, NJ | April | 1996 |
| 82. | City College of the City University of New York, New York, NY | April | 1996 |
| 83. | University of Houston, Houston, TX | April | 1996 |
| 84. | Engelhard Corporation, Iselin, NJ | May | 1996 |
| 85. | Union Carbide Corporation, South Charleston, WV | August | 1996 |
| 86. | Du Pont Central Research, Wilmington, DE | October | 1996 |
| 87. | Institute of Catalysis, Madrid, Spain | October | 1997 |
| 88. | ETH - Zurich, Switzerland | March | 1998 |
| 89. | Universita di Cagliari, Cagliari, Italy | July | 1998 |
| 90. | Hong Kong Univ. of Science & Technology, Hong Kong | June | 1999 |
| 91. | National University of Singapore, Singapore | June | 1999 |
| 92. | Indian Institute of Technology, Delhi, India | June | 1999 |
| 93. | Eindhoven University of Technology, The Netherlands | August | 1999 |
| 94. | Rutgers University, Piscataway, NJ | October | 1999 |
| 95. | Cornell University, Ithaca, NY | January | 2000 |
| 96. | DSM Research, Geleen, The Netherlands | March | 2000 |
| 97. | CPE-Lyon, Lyon, France | June | 2000 |
| 98. | University of Texas, Austin, TX (Institute for Advanced Technology) | November | 2000 |
| 99. | University of Delaware, Newark, DE | December | 2000 |
| 100. | Shell Chemicals Company, Houston, TX | January | 2001 |
| 101. | University of California, Berkeley, CA | February | 2001 |
| 102. | Worcester Polytechnic Institute, Worcester, MA | March | 2001 |
| 103. | University of Minnesota, Minneapolis, MN | September | 2001 |
| 104. | North Carolina State University, Raleigh, NC | October | 2001 |
| 105. | University of Michigan, Ann Arbor, MI | October | 2001 |
| 106. | Lehigh University, Bethlehem, PA | April | 2002 |
| 107. | General Motors R&D Center, Warren, MI | February | 2003 |
| 108. | University of Arizona, Tucson, AZ | March | 2003 |
| 109. | ExxonMobil Research & Engineering Co., Annandale, NJ | March | 2003 |
| 110. | Purdue University, West Lafayette, IN | May | 2003 |
| 111. | University of California, Los Angeles, CA | February | 2005 |
| 112. | CPE-Lyon, Lyon, France | June | 2005 |

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| 113. | Politecnico di Milano, Milano, Italy | June | 2005 |
| 114. | Drexel University, Philadelphia, PA | May | 2006 |
| 115. | Rose-Hulman Inst of Technology, Terre Haute, IN | October | 2006 |
| 116. | Purdue University, School of Mechanical Engineering | December | 2006 |
| 117. | Univ. Institute of Chemical Technology (UICIT), Mumbai | January | 2007 |
| 118. | Texas Tech University, Lubbock, TX | March | 2007 |
| 119. | University of Houston, Houston, TX | March | 2007 |
| 120. | University of Pittsburgh, Pittsburgh, PA | September | 2007 |
| 121. | Carnegie-Mellon University, Pittsburgh, PA | September | 2007 |
| 122. | Reliance Industries Ltd, Mumbai, India | March | 2008 |
| 123. | New Jersey Institute of Technology, Newark, NJ | March | 2008 |
| 124. | Indian Institute of Technology – Bombay, Mumbai, India | January | 2009 |
| 125. | Tata Chemicals Innovation Center, Pune, India | January | 2009 |
| 126. | MATRIC, Inc, South Charleston, WV | August | 2009 |
| 127. | University of Texas, Austin, TX | September | 2009 |
| 128. | Lamar University, Beaumont, TX | April | 2010 |
| 129. | Columbia University, New York, NY | October | 2010 |
| 130. | Georgia Institute of Technology, Atlanta, GA | December | 2010 |
| 131. | Vanderbilt University, Nashville, TN | February | 2011 |
| 132. | Tsinghua University, Beijing, China | October | 2011 |
| 133. | Universidad de los Andes, Bogota, Colombia | November | 2011 |
| 134. | Illinois Institute of Technology, Chicago, IL | January | 2012 |
| 135. | Texas A&M University, College Station, TX | February | 2012 |
| 136. | Cornell University, Ithaca, NY | April | 2012 |
| 137. | ExxonMobil Research & Engineering Co., Annandale, NJ | January | 2013 |
| 138. | The Dow Chemical Company, Freeport, TX | July | 2013 |
| 139. | Korea Institute of Science & Technology, Seoul, Korea | August | 2013 |
| 140. | Korea University (50 th anniversary symposium), Seoul, Korea | August | 2013 |
| 141. | Kazan National Research Technical Univ., Kazan, Russia | September | 2013 |
| 142. | National Chemical Laboratory, Pune, India | January | 2014 |
| 143. | Northwestern University, Evanston, IL | March | 2014 |
| 144. | UOP, Des Plaines, IL | March | 2014 |
| 145. | The Dow Chemical Company, Midland, MI | June | 2014 |
| 146. | East China University of Science and Technology, Shanghai | October | 2015 |
| 147. | University of Houston, Houston, TX | April | 2016 |
| 148. | University of California, Los Angeles, CA | March | 2017 |
| 149. | University of California, Santa Barbara, CA | March | 2017 |
| 150. | ETH-Zurich, Switzerland (3 seminars) | April | 2017 |
| 151. | EPFL, Lausanne, Switzerland | May | 2017 |
| 152. | University of Bologna, Italy | June | 2017 |
| 153. | Paul Scherrer Institute, Villigen, Switzerland | July | 2017 |
| 154. | University of California, Davis, CA | November | 2017 |
| 155. | New York University, New York, NY | March | 2018 |

L. **Papers Presented at Conferences** - over 330 in all, at various professional society meetings (separate list available).

M. **Selected List of Services to the University**

I. PURDUE UNIVERSITY

| | |
|---|----------------------|
| Member, College of Engineering Leadership Team | 2004-2016 |
| Member, Engineering Area Promotions Committee | 2004-2016 |
| Member, College of Engineering Research Advisory Committee | 2004-05 |
| Member, Head Search Committee, Dept. of Chemistry | 2004 |
| Member, Director Search Committee, Birck Nanotechnology Center | 2005-06 |
| College of Engineering Financial Affairs Team | |
| Member | 2005-08 |
| Chair | 2006-08 |
| Chair, Internal Assessment Committee to review the College of Engineering Graduate Programs | 2005-06 |
| Member, Engineering Dean Search Committee | 2006 |
| Member, Distinguished Professor Committee, College of Science | March 2006 |
| Member, Distinguished Professor Committee, College of Engrg | Oct 2006 |
| Chair, International Advisory Board, Energy Center Hydrogen Symposium – 2 | 2007 |
| Member, H. C. Brown Award Committee, Energy Center Hydrogen Symposium – 3 | 2009 |
| Purdue Engineering Strategic Plan, ELT Co-Champion, Team 2 – The Research Enterprise | 2009 |
| Member, CoE Heads' On-Boarding program Mentoring; Research Enterprise and SPS Services | 2009 |
| Chair, Distinguished Professor Committee, College of Engineering College of Engineering ELT Committees | Sep 2009 |
| Member, ELT Task Force on Ways to Encourage Ph.D. Graduates to Seek Faculty Careers | Oct 2008 |
| Member, ELT Strategic Topic: Growth of Research | Nov 2008 |
| Member, ELT <i>ad hoc</i> Cmte for Tracking Faculty Awards | Jan 2010 |
| Member, ELT <i>ad hoc</i> Cmte on Committees | July 2010 |
| Lead, ELT <i>ad hoc</i> Cmte for Ethics/Academic Honor Code | July 2010 |
| Member, CoE Budget Contingency Planning Team | Fall 2010, Fall 2011 |
| Chair, Civil Engineering Head Search Committee | 2011-12 |
| Member, Distinguished Professor Committee, College of Engrg | Spring 2013 |
| Member, Planning Team, Purdue-Lilly Tech Day (2) | 2014 |
| Chair, Distinguished Professor Committee, College of Engrg | Fall 2014 |
| Member, Planning Team, Sumitomo Chemical – Purdue University Grand Challenge Workshop | January 2015 |
| Member, Distinguished Professor Committee, College of Engrg | Spring 2015 |
| Member, Faculty Awards and Recognition Committee, Purdue U. | 2015-2016 |

II. UNIVERSITY OF NOTRE DAME

a. *University*

| | |
|---|------------------------------|
| Faculty Senate | 1978-81 |
| Committee on Admissions, Sigma Xi | 1978-83 |
| Committee on Research & Sponsored Programs | 1980-83, 1989-92, 1992-95 |
| Committee on Final Examinations Policy (Ad Hoc) | 1983-84 |
| Committee to Select the Grace-Rupley Chairholder in Chemistry (Ad Hoc) | 1986-88 |

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| Graduate Council | 1987-90, 1995-98 |
| Chairman, Internal Review Team, Dept. of Physics | |
| Review of Graduate Program | 1988 |
| Committee on Doctoral Student Teaching (Ad Hoc) | 1989-90 |
| Budget Priorities Committee | 1989-90 |
| Committee for Policy on Racial Harassment (Ad Hoc) | 1990 |
| Chairman, Task Force on Research Systems | 1990 |
| Member of Internal Review Team, Kellogg Institute for | 1991 |
| International Studies and Institute for International Peace Studies | |
| Academic Council | 1991-94 |
| Member of Executive Committee (1991-92, 1992-93, 1993-94) | |
| Member, Task Force on Cultural Diversity | 1991-92 |
| Member, Provost Review Committee | 1992 |
| Member, Search Committee for Director, | |
| Institute for International Peace Studies | 1992 |
| Academic and Faculty Affairs Committee | |
| of the Board of Trustees | 1994-97 |
| Member, Burns Award Committee | 1998 |
| Member, Task Force on Strategic Directions in Science | 1999 |
| and Engineering | |
| Director (founding), Center for Molecularly Engineered Materials | 2000-03 |
| Member, Research Achievement Award Committee | 2002, 2003 |
| | |
| b. <i>College</i> | |
| Systems Matrix Group | 1975-81 |
| Engineering Computer Committee | 1975-81 |
| Applied Mathematics Committee | 1977-81 |
| Executive Committee | 1982-88 |
| College Council | 1982-88, 1990-93 |
| Committee for Evaluation of Chaired Professorship | |
| Candidates | 1984, 87 |
| Member, Dean Search Committee | 1987 |
| Member of Executive Committee, | |
| Center for Bioengineering and Pollution Control | 1988-96 |
| Organizer of Sesquicentennial Year Symposium: | Spring 1992 |
| Frontiers of Engineering Research | |
| Committee to Select Teacher of the Year | 1993, 1994 |
| (Chair - 1994) | |
| Member of Executive Committee, | 1993-99 |
| Center for Catalysis and Reaction Engineering | |
| Co-Chair, Committee on the Role of Materials | 1995-96 |
| Science and Engineering in the College of Engineering | |
| Coordinator, Center for Materials Research | 1997-98 |
| Co-Chair, Session on Critical Technologies of the 21 st Century, | Sep. 1998 |
| Advisory Council Meeting | |
| Chair, Committee on Materials Technologies | 1998-99 |
| | |
| c. <i>Department</i> | |
| Committee for Appointments and Promotions (elected) | 1977-2003 |

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|---------------------------------------|------------------|
| Graduate Recruiting | 1977-79, 1982-86 |
| | 1989-91, 1995-96 |
| Standards | 1975-79 |
| Graduate and Undergraduate Curriculum | 1975-79 |
| Director of Graduate Studies | 1977-79, 1982-86 |
| Graduate Studies and Research | 1980-86 |
| Chairman Search Committee | 1981-82 |
| Dept. Chairman | 1982-88 |
| Honors and Awards | 1996-2003 |

LIST OF PUBLICATIONS**Arvind Varma**

1. "Spontaneous Ignition of High Voidage Cellulosic Fuels," A. Varma and F. R. Steward, *Journal of Fire and Flammability*, 1, 154-165 (1970).
2. "Global Asymptotic Stability in Distributed Parameter Systems - Comparison Function Approach," A. Varma and N. R. Amundson, *Chemical Engineering Science*, 27, 907-918 (1972).
3. "Some Problems Concerning the Non-Adiabatic Tubular Reactor - Qualitative Behavior, A Priori Bounds, Preliminary Uniqueness and Stability Considerations," A. Varma and N. R. Amundson, *Canadian Journal of Chemical Engineering*, 50, 470-485 (1972).
4. "Maximal and Minimal Solutions, Effectiveness Factors for Chemical Reaction in Porous Catalysts," A. Varma and N. R. Amundson, *Chemical Engineering Science*, 28, 91-104 (1973).
5. "Some Observations on Uniqueness and Multiplicity of Steady States in Non-Adiabatic Chemically Reacting Systems," A. Varma and N. R. Amundson, *Canadian Journal of Chemical Engineering*, 51, 206-226 (1973).
6. "Local Stability of Tubular Reactors," A. Varma and N. R. Amundson, *AIChE Journal*, 19, 395-398 (1973).
7. "The Non-Adiabatic Tubular Reactor Stability Considerations," A. Varma and N. R. Amundson, *Canadian Journal of Chemical Engineering*, 51, 459-467 (1973).
8. "Some Remarks Concerning Reversible Chemical Reactions in Porous Catalysts," A. Varma, *Chemical Engineering Science*, 29, 1340-1343 (1974).
9. "Some General Considerations of Reversible Chemical Reactions in Batch and Tubular Reactors," A. Varma and N. R. Amundson, *Canadian Journal of Chemical Engineering*, 52, 580-590 (1974).
10. "Computational Methods for the Tubular Chemical Reactor," A. Varma, C. Georgakis, N. R. Amundson and R. Aris, *Computer Methods in Applied Mechanics and Engineering*, 8, 319-330 (1976).
11. "Stirred Pots and Empty Tubes," A. Varma and R. Aris, Chapter 2 in *Chemical Reactor Theory - A Review*, L. Lapidus and N. R. Amundson (Editors), pgs 79-155, Prentice-Hall (1977).
12. "Bounds on the Concentration and Temperature in a Tubular Reactor," A. Varma, *Canadian Journal of Chemical Engineering*, 55, 629-632 (1977).
13. "Effectiveness Factors for the Case of Mildly Concentration-Dependent Diffusion Coefficients," C. J. Pereira and A. Varma, *Chemical Engineering Science*, 33, 396-399 (1978).
14. "Some Comments on the Upward Spiral," A. Varma, *AIChE Journal*, 24, 158-159 (1978).
15. "Catalytic Effectiveness and Yield: The Case Involving Finite External and Internal Area," P. Varghese, A. Varma and J. J. Carberry, *Industrial and Engineering Chemistry Fundamentals*, 17, 195-199 (1978).
16. "Effectiveness Factors for Pellets with Step-Distribution of Catalyst," J. B. Wang and A. Varma, *Chemical Engineering Science*, 33, 1549-1552 (1978).

17. "Uniqueness Criteria of the Steady State in Automotive Catalysis," C. J. Pereira and A. Varma, *Chemical Engineering Science*, 33, 1645-1657 (1978).
18. "Yield Optimization in Complex Reaction Networks," A. L. DeVera and A. Varma, *Modeling and Simulation*, 9, 1425-1431 (1978).
19. "Uniqueness Criteria for First Order Catalytic Reactions with External Transport Limitations," C. J. Pereira, J. J. Carberry and A. Varma, *Chemical Engineering Science*, 34, 249-255 (1979).
20. "Substrate-Inhibited Enzyme Reaction in a Tubular Reactor with Axial Dispersion," A. L. DeVera and A. Varma, *Chemical Engineering Science*, 34, 275-278 (1979).
21. "Catalytic Reactions in Transport-Line Reactors," P. Varghese and A. Varma, *Chemical Engineering Science*, 34, 337-343 (1979).
22. "Yield Optimization for the Van de Vusse Reaction," A. L. DeVera and A. Varma, *Chemical Engineering Journal*, 17, 163-167 (1979).
23. "Stability of the Steady States and Transient Behavior for a Non-Isothermal Bimolecular Langmuir-Hinshelwood Reaction," C. J. Pereira and A. Varma, *Chemical Engineering Science*, 34, 1187-1193 (1979).
24. "Dynamics of Selectivity Reactions in Isothermal CSTRs," A. Varma and A. L. DeVera, *Chemical Engineering Science*, 34, 1377-1386 (1979).
25. "Mathematical Methods in Chemical Engineering," A. Varma, *Chemical Engineering Education*, 13, 184-188 (1979).
26. "A Justification of the Internal Isothermal Model for Gas-Solid Catalytic Reactions," C. J. Pereira, J. B. Wang and A. Varma, *AIChE Journal*, 25, 1036-1043 (1979).
27. "An Experimental and Theoretical Investigation of Ethylene Oxidation on Supported Platinum in an Adiabatic Fixed-Bed Reactor," S. C. Paspek and A. Varma, *Chemical Engineering Science*, 35, 33-40 (1980).
28. "On Shape Normalization for Non-Uniformly Active Catalyst Pellets," J. B. Wang and A. Varma, *Chemical Engineering Science*, 35, 613-617 (1980).
29. "Utilization of the Recycle Reactor in Determining Kinetics of Gas-Solid Catalytic Reactions," S. C. Paspek, A. Varma and J. J. Carberry, *Chemical Engineering Education*, 14, 78-82 (1980).
30. "Yield Optimization in a Tube-Wall Reactor," D. T.-J. Huang and A. Varma, *American Chemical Society Symposium Series*, 124, 469-480 (1980).
31. *The Mathematical Understanding of Chemical Engineering Systems: Selected Papers of N. R. Amundson*, R. Aris and A. Varma (Editors), Pergamon Press, 829 pgs (1980).
32. "On the Number and Stability of Steady States of a Sequence of CSTRs," A. Varma, *Industrial and Engineering Chemistry Fundamentals*, 19, 316-319 (1980).
33. "Optimal Bulk Phase Composition for an Isothermal Second Order Reaction in a Catalyst Slab -- Elliptic Integral Method," A. L. DeVera and A. Varma, *Industrial and Engineering Chemistry Fundamentals*, 19, 320-322 (1980).
34. "On the Reference Time in the Multiplicity Analysis for CSTRs," D. T.-J. Huang and A. Varma, *Chemical Engineering Science*, 35, 1806-1809 (1980).
35. "Gas Absorption with Consecutive Second-Order Reactions," D. T.-J. Huang, J. J. Carberry and A. Varma, *AIChE Journal*, 26, 832-839 (1980).
36. "Diffusion-Reaction of CO, NO and O₂ in Automotive Exhaust Catalysts," J. W. Kress, N. C. Otto, M. Bettman, J. B. Wang and A. Varma, *AIChE Symposium Series*, 76 (201), 202-211 (1980).

37. "Steady State and Dynamic Behavior of Fast Gas-Liquid Reactions in Non-Adiabatic CSTRs" D. T.-J. Huang and A. Varma, *Chemical Engineering Journal*, 21, 47-57 (1981).
38. "Steady State Multiplicity of a Non-Adiabatic Bubble Column with Fast Reactions," D. T.-J. Huang and A. Varma, *AIChE Journal*, 27, 111-120 (1981).
39. "Steady State Uniqueness and Multiplicity of Non-Adiabatic Gas-Liquid CSTRs; Part I: The Second-Order Reaction Model," D. T.-J. Huang and A. Varma, *AIChE Journal*, 27, 481-489 (1981).
40. "Steady State Uniqueness and Multiplicity of Non-Adiabatic Gas-Liquid CSTRs; Part II: Discrimination Among Rival Reaction Models," D. T.-J. Huang and A. Varma, *AIChE Journal*, 27, 489-495 (1981).
41. "Explicit Multiplicity Criteria for First-Order Catalytic Reactions with External Transport Limitations," M. Morbidelli and A. Varma, *Chemical Engineering Science*, 36, 1211-1218 (1981).
42. "Catalytic Converters for Automotive Exhausts," A. Varma, *Perspectives in Computing*, 1 (2), 22-27 (1981).
43. "Packed-Bed Reactors: An Overview," A. Varma, *ACS Symp. Series*, 168, 279-286 (1981).
44. "Simultaneous Reactions of CO, NO and O₂ in a Tubular Reactor," N. Jothi and A. Varma, *AIChE Journal*, 27, 848-851 (1981).
45. "Chaos in a Continuous Stirred Tank Reactor with Two Consecutive First-Order Reactions," C. Kahlert, O. E. Rossler and A. Varma, *Springer Series in Chemical Physics*, 18, 355-365 (1981).
46. "Some Historical Notes on the Use of Mathematics in Chemical Engineering," A. Varma, in *A Century of Chemical Engineering*, Plenum Press, 353-387 (1982).
47. "Optimal Catalyst Activity Profiles in Pellets, I. The Case of Negligible External Mass Transfer Resistance," M. Morbidelli, A. Servida and A. Varma, *Ind. Eng. Chem. Fundamentals*, 21, 278-284 (1982).
48. "Optimal Catalyst Activity Profiles in Pellets, II. The Case Involving External Mass Transfer Resistance," M. Morbidelli and A. Varma, *Ind. Eng. Chem. Fundamentals*, 21, 284-289 (1982).
49. "Parametric Sensitivity and Runaway in Tubular Reactors," M. Morbidelli and A. Varma, *AIChE Journal*, 28, 705-713 (1982).
50. "Simultaneous Reactions of CO, NO, O₂ and NH₃ on Pt/ γ -Al₂O₃ Catalyst in a Tubular Reactor," B. Subramaniam and A. Varma, *Chemical Engineering Communications*, 20, 81-91 (1983).
51. "Isothermal Diffusion-Reaction in a Catalyst Slab with Bimolecular Langmuir-Hinshelwood Kinetics: Connections with Negative First-Order Kinetics," M. Morbidelli and A. Varma, *Chemical Engineering Science*, 38, 289-296 (1983).
52. "On Shape Normalization for Non-Uniformly Active Catalyst Pellets-II," M. Morbidelli and A. Varma, *Chemical Engineering Science*, 38, 297-305 (1983).
53. "Complex Dynamic Behavior in the Case of CO-NO-O₂-H₂O Reaction System on Pt/ γ -Al₂O₃ Catalyst," B. Subramaniam and A. Varma, *Chemical Engineering Communications*, 21, 221-233 (1983).
54. "Modeling of Gas-Liquid CSTRs," A. A. Shaikh and A. Varma, *ACS Symp. Series*, 237, 95-106 (1984).

55. "Reactions of CO, NO, O₂ and H₂O on Three-Way and Pt/ γ -Al₂O₃ Catalysts," B. Subramaniam and A. Varma, in *Frontiers in Chemical Reaction Engineering*, Wiley Eastern, pgs. 231-240 (1984).
56. "Gas Absorption with Chemical Reaction: The Case Involving a Volatile Liquid Reactant," A. A. Shaikh and A. Varma, *Chemical Engineering Science*, 39, 1639-1641 (1984).
57. "On Steady-State Uniqueness and Multiplicity in Gas-Liquid CSTRs with Fast Reactions," A. A. Shaikh and A. Varma, *Chemical Engineering Journal*, 29, 59-65 (1984).
58. "Consecutive Bimolecular Reactions of General Order in Gas-Liquid Reactors," M. Morbidelli, A. Servida, S. Carra and A. Varma in *Recent Advances in the Engineering Analysis of Chemically Reacting Systems*, Wiley Eastern, pgs. 336-362 (1984).
59. "Optimal Distribution of Immobilized Enzyme in a Pellet for a Substrate-Inhibited Reaction," M. Morbidelli, A. Servida and A. Varma, *Biotechnology and Bioengineering*, 26, 1508-1510 (1984).
60. "Optimal Catalyst Activity Profiles in Pellets, 3. The Nonisothermal Case with Negligible External Transport Limitations," M. Morbidelli, A. Servida, S. Carra and A. Varma, *Ind. Eng. Chem. Fundamentals*, 24, 116-119 (1985).
61. "Approximate Solutions of Nonlinear Boundary Value Problems," A. Varma and W. Strieder, *IMA Journal of Applied Mathematics*, 34, 165-171 (1985).
62. "On Parametric Sensitivity and Runaway Criteria of Pseudohomogeneous Tubular Reactors," M. Morbidelli and A. Varma, *Chemical Engineering Science*, 40, 2165-2168 (1985).
63. "Reaction Kinetics on a Commercial Three-Way Catalyst: CO-NO-O₂-H₂O System," B. Subramaniam and A. Varma, *Ind. Eng. Chem. Prod. Res. Dev.*, 24, 512-516 (1985).
64. "Parametric Sensitivity in Fixed-Bed Catalytic Reactors: The Role of Interparticle Transfer Resistances," M. Morbidelli and A. Varma, *AIChE Journal*, 32, 297-306 (1986).
65. "Optimal Catalyst Activity Profiles in Pellets," A. Varma, Chapter in *Reacting Flows: Combustion and Chemical Reactors*, Part 2, *Lectures in Applied Mathematics*, 24, 41-62 (1986).
66. "Parametric Sensitivity and Runaway in Fixed-Bed Catalytic Reactors," M. Morbidelli and A. Varma, *Chemical Engineering Science*, 41, 1063-1071 (1986).
67. "Parametric Sensitivity of a CSTR," R. Chemburkar, M. Morbidelli and A. Varma, *Chemical Engineering Science*, 41, 1647-1654 (1986).
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2. "Uniqueness Criteria and Stability of the Steady States in Automotive Catalysis," Fifth North American Meeting of the Catalysis Society, Pittsburgh, PA, April 1977.
3. "Reactor Design for Complex Reactions: A Case Study," First International Conference on Mathematical Modeling, St. Louis, MO, August 1977.
4. "Some Modeling Aspects in Automotive Catalysis," AIChE Annual Meeting, New York, NY, November 1977.
5. "Yield Optimization in Complex Reaction Networks," Ninth Annual Pittsburgh Conference on Modeling and Simulation, Pittsburgh, PA, April 1978.
6. "Some Modeling and Simulation Aspects in Automotive Catalysis," 1978 Summer Computer Simulation Conference, Newport Beach, CA, July 1978.
7. "A Justification of the Internal Isothermal Model for Gas-Solid Catalytic Reactions," Sixth North American Meeting of the Catalysis Society, Chicago, IL, March 1979.
- * 8. "Chemical and Catalytic Reactor Models - A Survey," Second International Conference on Mathematical Modeling, St. Louis, MO, July 1979.
9. "Yield Optimization in a Tube-Wall Reactor," ACS National Meeting, Washington, D.C., September 1979.
10. "Connections of the Bimolecular Langmuir-Hinshelwood with Negative First-Order Kinetics," ACS National Meeting, Washington, D.C., September 1979.
11. "On Various Normalizations for Diffusion-Reaction in Catalyst Pellets," AIChE Annual Meeting, San Francisco, CA, November 1979.
12. "Diffusion-Reaction of CO, NO and O₂ in Automotive Exhaust Catalysts," AIChE Annual Meeting, San Francisco, CA, November 1979.
13. "An Experimental and Theoretical Investigation of Ethylene Oxidation on Supported Platinum in an Adiabatic Fixed-Bed Reactor," ISCRE-6, Nice, France, March 1980.
- * 14. "A History of the Use of Mathematics in Chemical Engineering," ACS National Meeting, Las Vegas, NV, August 1980.
- * 15. "Fixed-Bed Reactors: A Review," ACS National Meeting, Las Vegas, NV, August 1980.
16. "Multiplicity Criteria for Gas-Liquid Stirred Tank and Bubble Column Reactors," AIChE Annual Meeting, Chicago, IL, November 1980.
17. "Parametric Sensitivity and Runaway in Tubular Reactors," AIChE Annual Meeting, Chicago, IL, November 1980.
18. "Reaction Kinetics on Three-Way Catalysts for Automotive Exhausts," Seventh North American Meeting of the Catalysis Society, Boston, MA, October 1981.
19. "Influence of Ceria on Platinum Catalysts," AIChE Annual Meeting, New Orleans, LA, November 1981.
20. "Optimal Catalyst Activity Profiles in Pellets," AIChE Annual Meeting, New Orleans, LA, November 1981.
- * 21. "Ernest W. Thiele and Diffusion-Reaction in Catalyst Pellets," ACS National Meeting, Las Vegas, NV, March 1982.
22. "Modeling of Gas-Liquid CSTRs," AIChE Annual Meeting, Los Angeles, CA, November 1982.
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 - * 25. International Chemical Reaction Engineering Conference, Pune, India, January 1984.
 26. "Optimal Catalyst Activity Profiles in Pellets: Analytical Evaluation of the Isothermal Fixed-Bed Reactor," AIChE Annual Meeting, Washington, D.C., November 1983.
 27. "Optimal Catalyst Pellet Design for an Isothermal Bimolecular Langmuir-Hinshelwood Reaction in a Fixed-Bed Reactor," ACS National Meeting, Philadelphia, PA, August 1984.
 28. "Ethylene Oxidation on Supported Platinum in a Nonadiabatic Fixed-Bed Reactor: Experiments and Model," AIChE Annual Meeting, San Francisco, CA, November 1984.
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 31. "Reactions of C₃H₆, NO, O₂ and H₂O over a Platinum Catalyst," Ninth North American Meeting of the Catalysis Society, Houston, TX, March 1985.
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 32. "Approximate Solutions for Nonlinear Reaction - Diffusion from Maximum Principle," SIAM Spring Meeting, Pittsburgh, PA, June 1985.
 - * 33. "Optimal Catalyst Activity Profiles in Pellets," AMS - SIAM Summer Seminar Lecture, Cornell University, Ithaca, NY, June 1985.
 34. "Parametric Sensitivity and Runaway in Fixed-Bed Catalytic Reactors," ACS National Meeting, Chicago, IL, September 1985.
 - * 35. "Diffusion-Reaction in Nonuniformly Active Catalyst Pellets," Symposium held in honor of 90th Birthday of Dr. E. W. Thiele, AIChE Meeting, Chicago, IL, November 1985.
 36. "Parametric Sensitivity in Fixed-Bed Catalytic Reactors," AIChE Annual Meeting, Chicago, IL, November 1985.
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 39. "Optimal Catalyst Activity Profiles in Pellets: Theory and Experiments," AIChE Annual Meeting, Chicago, IL, November 1985.
 40. "Parametric Sensitivity and Runaway in Fixed-Bed Catalytic Reactors," ISCRE 9, Philadelphia, PA, May 1986.
 41. "Optimal Catalyst Activity Profiles in Pellets," World Congress III of Chemical Engineering, Tokyo, Japan, September 1986.
 42. "Modeling of Fixed-Bed Reactors with Non-Uniformly Active Catalyst Pellets," AIChE Annual Meeting, Miami Beach, FL, November 1986.
 43. "Parametric Sensitivity in Chain Polymerization Reactors," AIChE Annual Meeting, Miami Beach, FL, November 1986.
 - * 44. "Optimal Catalyst Activity Profiles in Pellets," International Chemical Reaction Engineering Conference - 2, Pune, India, April 1987.
 45. "Parametric Sensitivity and Runaway in Fixed-Bed Catalytic Reactors: Effects of Radial Heat and Mass Dispersion," AIChE Annual Meeting, New York, NY, November 1987.
 46. "Preparation of Pt/ γ -Al₂O₃ Pellets with Internal Step-Distribution of Catalyst: Experiments and Theory," AIChE Annual Meeting, New York, NY, November 1987.

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57. "Combustion Synthesis of TiC and Intermetallic Compounds," AIChE Annual Meeting, Chicago, IL, November 1990.
58. "Optimal Catalyst Activity Profiles in Pellets: The Case of Catalyst Surface Area Varying with Catalyst Loading," AIChE Annual Meeting, Chicago, IL, November 1990.
59. "Combustion Synthesis of Intermetallic and Composite Materials," TMS Annual Meeting, New Orleans, LA, February 1991.
60. "Combustion Synthesis of the $\text{YBa}_2\text{Cu}_3\text{O}_{7-x}$ Superconductor," Sintering '91, Vancouver, Canada, July 1991.
- * 61. "Self-Propagating Reactions in Finite Pellets: Theory and Experiments," 1st International Symposium on Self-Propagating High-Temperature Synthesis, Alma-Ata, USSR, September 1991.
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63. "Optimal Catalyst Activity Profiles in Pellets: An Experimental Study of Ethylene Epoxidation," AIChE Annual Meeting, Los Angeles, CA, November 1991.
64. "Self-Propagating High-Temperature Synthesis of Ceramic Superconductors," AIChE Annual Meeting, Los Angeles, CA, November 1991.
65. "Combustion Synthesis of Advanced Materials," AIChE Annual Meeting, Los Angeles, CA, November 1991.
66. "The Effects of Semiconductor Properties Upon Photocatalytic Rates for Organic Contaminant Degradation," AIChE Annual Meeting, Los Angeles, CA, November 1991.
67. "Optimal Catalyst Activity Profiles in Pellets," ACS National Meeting, San Francisco, CA, April 1992.
- * 68. "Combustion Synthesis of Advanced Materials," Plenary Lecture, ISCRE 12, Torino, Italy, June 1992.

69. "Chemical Reaction Engineering Considerations in the Synthesis of Silicon Nitride," ISCRE 12, Torino, Italy, June 1992.
70. "Optimal Distribution of Silver Catalyst for Epoxidation of Ethylene," ACS National Meeting, Washington, D.C., August 1992.
71. "Mechanistic Studies of Combustion Synthesis," AIChE Annual Meeting, Miami Beach, FL, November 1992.
72. "Instabilities During the Combustion Synthesis of Nickel Aluminides," AIChE Annual Meeting, Miami Beach, FL, November 1992.
73. "Optimal Distribution of Silver Catalyst in Pellets for Epoxidation of Ethylene," AIChE Annual Meeting, Miami Beach, FL, November 1992.
74. "Adsorption and Desorption Studies in the Aqueous Phase for the Toluene/Activated Carbon System," AIChE Annual Meeting, Miami Beach, FL, November 1992.
75. "Combustion Synthesis of Advanced Materials," ACS Meeting, Denver, CO, April 1993.
76. "Optimal Distribution of Silver Catalyst in Pellets for Epoxidation of Ethylene," 13th North American Meeting of The Catalysis Society, Pittsburgh, PA, May 1993.
77. "Optimal Distribution of Catalyst in Pellets," US-Japan-China Symposium on Heterogeneous Catalysis, Beijing, China, June 1993.
78. "Combustion Synthesis of Intermetallic Aluminides: Processing and Mechanistic Studies," National Heat Transfer Conference, Atlanta, GA, August 1993.
79. "Some New Considerations Involving Gas-Solid Reactions Following the Sharp Interface Model," AIChE Annual Meeting, St. Louis, MO, November 1993.
80. "Experimental and Modeling Studies on the Aqueous-Phase Adsorption and Desorption of Toluene in Activated Carbon Fixed Beds," AIChE Annual Meeting, St. Louis, MO, November 1993.
81. "Combustion Synthesis of Intermetallic Aluminides: Mechanistic and Processing Studies," AIChE Annual Meeting, St. Louis, MO, November 1993.
82. "A New Expression for the Velocity of a Combustion Front During SHS," AIChE Annual Meeting, St. Louis, MO, November 1993.
- * 83. "Combustion Synthesis of Intermetallic Aluminides," Second International Symposium on Self-Propagating High Temperature Synthesis, Honolulu, HI, November 1993.
84. "Microstructural Aspects of SHS in the Ti-Si and Ti-Al Systems," Second International Symposium on Self-Propagating High Temperature Synthesis, Honolulu, HI, November 1993.
85. "Mechanistic and Processing Studies in Combustion Synthesis of Niobium Aluminide Matrix Composites," Materials Research Society Meeting, San Francisco, CA, April 1994.
86. "On the Velocity of the Combustion Front during Self-Propagating High Temperature Synthesis," Eighth World Ceramics Congress & Forum on New Materials, Florence, Italy, June 1994.
87. "Nonuniform Catalyst Distribution for Catalytic Membrane Reactors," Third International Conference on Inorganic Membranes, Worcester, MA, July 1994.
88. "A Comparison Between Uniform and Nonuniform Catalyst Distribution for Inorganic Membrane Reactors," International Symposium on Synthetic Membranes in Science and Industry, Tübingen, Germany, August 1994.
89. "Microstructure of Gasless Combustion Waves," Zeldovich Memorial-International Conference on Combustion, Moscow, Russia, September 1994.
90. "On the Performance of Inorganic Membrane Reactors with Nonuniform Catalyst Distribution," First International Workshop on Catalytic Membranes, Lyon, France, September 1994.

91. "Novel Preparation Techniques for Supported Thin Metallic Membranes and Inorganic Ceramic Membranes," First International Workshop on Catalytic Membranes, Lyon, France, September 1994.
92. "Mechanism of Structure Formation during Combustion Synthesis of Materials," ISCRE 13, Baltimore, MD, September 1994.
93. "Nonuniform Catalyst Distribution for Catalytic Membrane Reactors," ISCRE 13, Baltimore, MD, September 1994.
94. "Modeling and Analysis of the Reaction-Bonded Silicon Nitride Synthesis," AIChE Annual Meeting, San Francisco, CA, November 1994.
95. "Mechanistic Investigation of Structure Formation during Combustion Synthesis using a Particle-Foil Experiment," AIChE Annual Meeting, San Francisco, CA, November 1994.
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97. "The Effect of Gravity on the Combustion Synthesis of Ni-Al and Ni₃Al-TiB₂ Composites from Elements," Third International Microgravity Combustion Workshop, NASA Lewis Research Center, Cleveland, OH, April 1995.
98. "Effects of 1, 2 Dichloroethane Addition on the Optimal Silver Catalyst Distribution in Pellets for Epoxidation of Ethylene," 14th North American Meeting of The Catalysis Society, Snowbird, UT, June 1995.
99. "Experimental Study of Gasless Combustion Wave Microstructure," International Pyrotechnic Conference, Moscow, Russia, September 1995.
100. "Influence of Pulsing Frequency on Performance of Three-Phase Packed-Bed Reactors," 2nd International Conference on Unsteady-State Processes in Catalysis, St. Louis, MO, September 1995.
- * 101. "Mechanistic Studies in the Combustion Synthesis of Aluminides and Silicides," 3rd International Symposium on Self-Propagating High-Temperature Synthesis, Wuhan, China, October 1995.
102. "The Influence of Experimental Parameters on the Effective Kinetics of SHS Processes," 3rd International Symposium on Self-Propagating High-Temperature Synthesis, Wuhan, China, October 1995.
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105. "Effect of Catalyst Activity Distribution on Inorganic Membrane Reactor Performance," AIChE Annual Meeting, Miami, FL, November 1995.
106. "An Experimental and Theoretical Study of Combustion Wave Microstructure," AIChE Annual Meeting, Miami, FL, November 1995.
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108. "Enhancement of Three-Phase Packed-Bed Reactor Performance by Tuning the Pulsing Frequency in Pulse-Flow Regime," AIChE Annual Meeting, Miami, FL, November 1995.
109. "Investigation of Phase Transformations and Ordering during Combustion Synthesis," Materials Research Society Fall Meeting, Boston, MA, November 1995.

110. "Metal Composite Membranes: Synthesis, Characterization and Reaction Studies," 11th International Congress on Catalysis, Baltimore, MD, July 1996.
- * 111. "Metal Composite Membranes: Synthesis, Characterization and Reaction Studies," 5th World Congress in Chemical Engineering, San Diego, CA, July 1996.
112. "Microporous Ceramic Membranes: Synthesis, Characterization and Reaction Studies," 5th World Congress in Chemical Engineering, San Diego, CA, July 1996
- * 113. "Mechanistic Studies in Combustion Synthesis of Advanced Materials," 5th World Congress in Chemical Engineering, San Diego, CA, July 1996.
114. "Synthesis of Reaction-Bonded Silicon Nitride: Experiments and Theory," 5th World Congress in Chemical Engineering, San Diego, CA, July 1996.
115. "Membrane Synthesis and Catalyst Distribution Studies for Ethane Dehydrogenation in Microporous Alumina Membrane Reactors," Fourth International Conference on Inorganic Membranes, Gatlinburg, TN, July 1996.
116. "Microporous Ceramic Membranes for Dehydrogenation and Oxidation Reactions," AIChE Annual Meeting, Chicago, IL, November 1996.
117. "Mechanisms of Structure Formation and Wave Microstructure during Combustion Synthesis," AIChE Annual Meeting, Chicago, IL, November 1996.
118. "The Effects of Gravity on Combustion and Structure Formation during Combustion Synthesis in Gasless Systems," Fourth International Microgravity Combustion Workshop, Cleveland, OH, May 1997.
- * 119. "Combustion Wave Microstructure in Heterogeneous Reaction Systems: Experiments and Theory," 4th International Symposium on Self-Propagating High-Temperature Synthesis, Toledo, Spain, October 1997.
120. "The Effects of Gravity on Combustion and Structure Formation in Heterogeneous Systems," 4th International Symposium on Self-Propagating High-Temperature Synthesis, Toledo, Spain, October 1997.
121. "Ethane Dehydrogenation and Ethylene Epoxidation Reactions in a Membrane Reactor," Asia-Pacific Congress on Catalysis, Kyongju, Korea, November 1997.
122. "The Role of Gravity on the Mechanism of Combustion Synthesis of Advanced Materials," AIChE Annual Meeting, Los Angeles, CA, November 1997.
123. "Enhancing Performance of Three-Phase Packed-Bed Catalytic Reactors by Pulsing-Flow Regime," AIChE Annual Meeting, Los Angeles, CA, November 1997.
124. "Supported Pd and Pd-Ag Alloy Membranes: Relationships Between Plating Kinetics, Film Microstructure and Membrane Permeation," AIChE Annual Meeting, Los Angeles, CA, November 1997.
125. "Effect of Pulsing on Reaction Outcome in a Gas-Liquid Catalytic Packed-Bed Reactor," 2nd International Symposium on Catalysis in Multiphase Reactors, Toulouse, France, March 1998.
126. "Enhancing Performance of Three-Phase Packed-Bed Catalytic Reactors by Pulsing-Flow Regime," Third International Conference on Unsteady State Processes in Catalysis, St. Petersburg, Russia, July 1998.
127. "Mechanisms of Reaction Wave Propagation during Combustion Synthesis of Advanced Materials," ISCRE 15, Newport Beach, CA, September 1998.
128. "Study of Structure Formation during Electroless Plating of Metal-Composite Membranes," ISCRE 15, Newport Beach, CA, September 1998.
- * 129. "Dynamics of Structure Formation during Electroless Plating of Metal-Ceramic Composite Membranes," First Annual Users' Meeting, Burleigh Instruments, Baltimore, MD, November 1998.
130. "Complex Behavior of Self-Propagating Reaction Waves during Combustion Synthesis

- of Advanced Materials," AIChE Annual Meeting, Miami Beach, November 1998.
131. "Ethylene Epoxidation in a Catalytic Packed-Bed Membrane Reactor," AIChE Annual Meeting, Miami Beach, November 1998.
 132. "Kinetics of Rapid High-Temperature Reactions in Gas-Solid Systems," AIChE Annual Meeting, Miami Beach, November 1998.
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 135. "The Effects of Gravity on Combustion and Structure Formation during Synthesis of Advanced Materials," Fifth International Microgravity Combustion Workshop, Cleveland, OH, May 1999.
 - * 136. "Combustion Synthesis of Advanced Materials," Plenary Lecture, Asia-Pacific Chemical Reaction Engineering Symposium, Hong Kong, June 1999.
 - * 137. "Complex Behavior of Self-Propagating Reaction Waves in Heterogeneous Media," Fifth International Symposium on Self-Propagating High-Temperature Synthesis, Moscow, Russia, August 1999.
 138. "Macroscopic Mechanisms of Pulsating Combustion in Gasless Systems," Fifth International Symposium on Self-Propagating High-Temperature Synthesis, Moscow, Russia, August 1999.
 139. "Influence of Heating Rate on Kinetics of Rapid High-Temperature Reactions," Fifth International Symposium on Self-Propagating High-Temperature Synthesis, Moscow, Russia, August 1999.
 140. "Ethylene Epoxidation in a Catalytic Packed-Bed Membrane Reactor: Experiments and Model," AIChE Annual Meeting, Dallas, TX, November 1999.
 141. "Dense Palladium Composite Membranes: Synthesis, Characterization and Permeation Properties," AIChE Annual Meeting, Dallas, TX, November 1999.
 142. "Oscillation Combustion Modes in Gasless Reaction Systems," AIChE Annual Meeting, Dallas, TX, November 1999.
 143. "Influence of Heating Dynamics on Kinetics of Rapid High-Temperature Reactions," AIChE Annual Meeting, Dallas, TX, November 1999.
 144. "Ethylene Epoxidation in a Catalytic Packed-Bed Membrane Reactor," Membrane Conference on Technology/Planning, Newton, MA, December 1999.
 145. "Palladium Composite Membranes: Synthesis, Characterization and Hydrogen Permeation Studies," North American Membrane Society Annual Meeting, Boulder, CO, May 2000.
 146. "Methanol Oxidative Dehydrogenation in a Catalytic Packed-Bed Membrane Reactor," North American Membrane Society Annual Meeting, Boulder, CO, May 2000.
 - * 147. "Combustion Synthesis of Advanced Materials," Chemical Engineering Lectureship Award Lecture, ASEE Annual Meeting, St. Louis, MO, June 2000.
 148. "Pd Composite Membranes Prepared by Electroless Plating and Osmosis: Synthesis, Characterization, and H₂ Permeation Studies," Sixth International Conference on Inorganic Membranes, Montpellier, France, June 2000.
 149. "Perovskite Membranes Prepared by Combustion Technique: Synthesis, Characterization and O₂ Permeation Studies," Sixth International Conference on Inorganic Membranes, Montpellier, France, June 2000.
 150. "Methanol Partial Oxidation in a Catalytic Packed-Bed Membrane Reactor," Fourth International Conference on Catalysis in Membrane Reactors, Zaragoza, Spain, July 2000.

151. "Microstructural Mechanism of Combustion in Heterogeneous Reaction Media," Twenty-eighth International Symposium on Combustion, Edinburgh, Scotland, August 2000.
152. "Ethylene Epoxidation in a Catalytic Packed-Bed Membrane Reactor: Experiments and Model," ISCRE 16, Cracow, Poland, September 2000.
153. "Dynamics of Self-Propagating Reactions in Heterogeneous Media: Experiments and Model," ISCRE 16, Cracow, Poland, September 2000.
154. "Perovskite Membranes Prepared by Combustion Synthesis: Synthesis and Characterization," AIChE Annual Meeting, Los Angeles, CA, November 2000.
155. "Kinetics of Phase Formation during Combustion Synthesis of Advanced Materials," AIChE Annual Meeting, Los Angeles, CA, November 2000.
156. "Methanol Oxidative Dehydrogenation in a Catalytic Packed-Bed Membrane Reactor: Selectivity to Formaldehyde and Membrane Effect on Reactor Stability," AIChE Annual Meeting, Los Angeles, CA, November 2000.
157. "Combustion Synthesis of NiAl-TiB₂ Composites," AIChE Annual Meeting, Los Angeles, CA, November 2000.
158. "Properties of Perovskite Materials Prepared by Aqueous Combustion Synthesis for Fuel Cell Applications," NASCRE-1, Houston, TX, January 2001.
159. "Methanol Oxidative Dehydrogenation in a Catalytic Packed-Bed Membrane Reactor: Experiments and Model," NASCRE-1, Houston, TX, January 2001.
160. "Combustion of Levitated Clad Al/Ni Particles," Joint US Sections Meeting of the Combustion Institute, Oakland, CA, March 2001.
161. "Membranes for Solid Oxide Fuel Cells by Aqueous Combustion Synthesis," North American Membrane Society Annual Meeting, Lexington, KY, May 2001.
162. "Mechanistic Studies of Combustion and Structure Formation during Synthesis of Advanced Materials," Sixth International Microgravity Combustion Workshop, Cleveland, OH, May 2001.
163. "Methanol Oxidative Dehydrogenation in a Catalytic Packed-Bed Membrane Reactor: Experiments and Model," 2nd International Symposium on Multifunctional Reactors, Nuremberg, Germany, June 2001.
164. "Mechanistic Studies of Combustion and Structure Formation during Synthesis of Advanced Materials: Effects of Gravity," Gordon Research Conference on Gravitational Effects in Physicochemical Systems, New London, NH, July 2001.
165. "Novel Synthesis Route for Perovskite Membranes," ACS National Meeting, Chicago, IL, August 2001.
166. "Reactant Distribution by Inert Membrane Enhances Packed-Bed Reactor Stability," AIChE Annual Meeting, Reno, NV, November 2001.
167. "Measurements of Local, Transient, Fluid-Solid Heat Transfer in a Cocurrent Gas-Liquid- Flow Packed-Bed," AIChE Annual Meeting, Reno, NV, November 2001.
168. "Phenylacetylene Hydrogenation over Pt/Al₂O₃ Catalyst: Kinetics, Modeling and Reactor Performance," AIChE Annual Meeting, Reno, NV, November 2001.
169. "Combustion Synthesis of Orthopedic Implant Materials," AIChE Annual Meeting, Reno, NV, November 2001.
- * 170. "Combustion Synthesis of Advanced Materials," Perkin Elmer Chemcon Distinguished Lecture, Indian Institute of Chemical Engineers Meeting, Chennai, India, December 2001.
- * 171. "Mechanistic Studies of Combustion and Structure Formation during Synthesis of Advanced Materials," 40th AIAA Aerospace Sciences Meeting, Reno, NV, January 2002.

172. "Combustion of Low-Exothermic Condensed Systems for Oxygen Generation," Meeting of the Central States Section, Combustion Institute, Knoxville, TN, April 2002.
173. "Novel Technique for Synthesis of Dense CoCrMo Implant Materials," 28th Annual Society for Biomaterials Meeting, Tampa, FL, April 2002.
174. "Methanol Oxidative Dehydrogenation in a Packed-Bed Membrane Reactor: Yield Optimization Experiments and Model," ISCRE-17, Hong Kong, China, August 2002.
175. "Phenylacetylene Hydrogenation in a Three-Phase Catalytic Packed-Bed Reactor: Experiments and Model," ISCRE-17, Hong Kong, China, August 2002.
176. "Sintering Mechanisms in Mesocarbon Microbeads for Use as High-Performance Composite Friction Materials," AIChE Annual Meeting, Indianapolis, IN, November 2002.
177. "Single and Multi-Wall Carbon Nanotubes by Floating Catalyst Method: Synthesis and Properties," AIChE Annual Meeting, Indianapolis, IN, November 2002.
178. "Methanol Oxidative Dehydrogenation in a Packed-Bed Membrane Reactor: Yield Optimization Experiments and Model," AIChE Annual Meeting, Indianapolis, IN, November 2002.
179. "Novel Membrane Trickle-bed Reactor for Pharmaceuticals and Fine Chemicals," AIChE Annual Meeting, Indianapolis, IN, November 2002.
180. "Yield and Productivity Enhancement in a Packed-Bed Membrane Reactor: A Case Study," MRS Fall Meeting, Boston, MA, December 2002.
- * 181. "Combustion Synthesis of Bio-Alloys: Phase Separation Mechanism," 41st AIAA Aerospace Sciences Meeting, Reno, NV, January 2003.
182. "Combustion of Complex Metal Particles," Third Joint U.S. Sections Meeting of the Combustion Institute, Chicago, IL, March 2003.
183. "Mechanistic Studies of Combustion and Structure Formation during Combustion Synthesis of Advanced Materials: Phase Separation Mechanism for Bio-Alloys," 7th International Workshop on Microgravity Combustion and Chemically Reacting Systems, Cleveland, OH, June 2003.
184. "Rapid Reaction Wave Propagation in Porous Media," 7th International Symposium on SHS, Krakow, Poland, July 2003.
185. "Influence of Heating Rate on Kinetics of Rapid High-Temperature Reactions in Condensed Heterogeneous Systems," 7th International Symposium on SHS, Krakow, Poland, July 2003.
186. "Packed-Bed Reactor Performance Enhancement by Membrane Distributed Feed: The Case of Methanol Oxidative Dehydrogenation," ISMR-3, Bath, U.K., August 2003.
187. "Effects of Induced-Pulsing Flow on Trickle-Bed Reactor Performance," USPC-4, Montreal, Canada, October 2003.
188. "Novel Preparation of Perovskite Catalysts," AIChE Annual Meeting, San Francisco, CA, November 2003.
189. "Novel Synthesis of Nanoscale Iron Oxides," AIChE Annual Meeting, San Francisco, CA, November 2003.
190. "Nanostructured Carbon-Based Composites for Advanced Friction Applications," AIChE Annual Meeting, San Francisco, CA, November 2003.
- * 191. "Combustion Synthesis of Nanomaterials: Mechanism, Characterization and Properties," MRS Fall Meeting, Boston, MA, December 2003.
192. "Microstructural Correlations between Reaction Medium and Combustion Wave Propagation in Heterogeneous Systems," A.S. Mukasyan, A.S. Rogachev, M. Mercedes and A. Varma, ISCRE-18, Chicago, IL, June 2004.

193. "Nickel-Coated Aluminum Particles: A Promising Fuel for Mars Missions," Strategic Research to Enable NASA's Exploration Missions Conference and Workshop, Cleveland, OH, June 2004.
- * 194. "Future Directions in Chemical Engineering Education: A New Path to Glory," Industrial Biotechnology Congress, Mayaguez, PR, September 2004.
195. "High Throughput Analysis of Perovskite Catalysts for Reforming of Heavy Hydrocarbons," AIChE Annual Meeting, Austin, TX, November 2004.
196. "Combinatorial Approach to Catalyst Improvement for Direct Methanol Fuel Cells," AIChE Annual Meeting, Austin, TX, November 2004.
197. "In-situ Reinforcement Formation in Mesocarbon Microbeads," AIChE Annual Meeting, Austin, TX, November 2004.
- * 198. "Future Directions in Chemical Engineering Education: A New Path to Glory," First Joint AIChE-IChE Meeting, Mumbai, India, December 2004.
199. "Combustion of Condensed Systems for Oxygen and Hydrogen Generation," Joint Meeting of the US Sections of the Combustion Institute, Philadelphia, PA, March 2005.
200. "Hydrogen Generation via Combustion of Metal Borohydride/Aluminum/Water Mixtures," ACS National Meeting, Washington, DC, August 2005.
201. "Numerical Modeling of Combustion Stability in Emergency Oxygen Generators," AIChE Annual Meeting, Cincinnati, OH, November 2005.
202. "Studies on Combustion of Single Ni-Coated Al Particles in Normal and Reduced Gravity," AIChE Annual Meeting, Cincinnati, OH, November 2005.
203. "Novel Chemical Mixtures for Hydrogen Generation by Combustion," AIChE Annual Meeting, Cincinnati, OH, November 2005.
204. "Studies on Ignition and Combustion Mechanisms of Single Ni-Coated Al Particles," 44th AIAA Aerospace Sciences Meeting, Reno, NV, January 2006.
205. "Novel Chemical Mixtures for Hydrogen Generation by Combustion," 44th AIAA Aerospace Sciences Meeting, Reno, NV, January 2006.
- * 206. "Combustion-Based Methods to Generate Hydrogen for Fuel Cells," NSF Workshop on *Research Frontiers for Combustion in the Hydrogen Economy*, Arlington, VA, March 2006.
207. "Combustion-Based Methods to Generate Hydrogen for Fuel Cells," First Annual Energy Center Hydrogen Initiative Symposium, West Lafayette, IN, April 2006.
208. "Purdue Hydrogen Technology Program," 2006 DOE Hydrogen Program Merit Review and Peer Evaluation Meeting, Arlington, VA, May 2006.
209. "Ignition and Combustion Mechanisms of Nickel-Coated Aluminum Particles," 2006 Technical Meeting of the Central States Section of the Combustion Institute, Cleveland, OH, May 2006.
210. "Solution Combustion Synthesized Oxygen Carriers for Chemical Looping Combustion," ISCRE-19, Potsdam/Berlin, Germany, September 2006.
211. "Hydrogen Generation by Combustion," ISCRE-19, Potsdam/Berlin, Germany, September 2006.
- * 212. "Hydrogen Generation by Combustion for Portable Fuel Cell Applications," 2006 Hydrogen Production & Storage Forum, Vancouver, BC, Canada, September 2006.
213. "Ignition Mechanisms of Metal-Coated Aluminum Particles," AIChE Annual Meeting, San Francisco, CA, November 2006.
214. "Doped Oxygen Carriers for Inherent CO₂ Capture Using Chemical Looping Combustion," AIChE Annual Meeting, San Francisco, CA, November 2006.

215. "Novel Chemical Mixtures to Generate Hydrogen for Portable Fuel Cells," AIChE Annual Meeting, San Francisco, CA, November 2006.
216. "Combustion-Assisted Hydrolysis of Sodium Borohydride for Hydrogen Generation," MRS Fall Meeting, Boston, MA, November, 2006.
217. "Spinel Supported Oxygen Carriers for Inherent CO₂ Separation during Power Generation," CAMURE-6 and ISMR-5 Symposia, National Chemical Laboratory, Pune, India, January 2007.
- * 218. "Evolving Trends in Chemical Engineering Education and the Energy Challenge," CAMURE-6 and ISMR-5 Symposia, National Chemical Laboratory, Pune, India, January 2007.
219. "Development of Oxygen Carriers for Inherent CO₂ Capture," NASCRE-2, Houston, TX, February 2007.
220. "Novel Chemical Mixtures to Generate Hydrogen for Fuel Cells," NASCRE-2, Houston, TX, February 2007.
221. "Combustion of Single Titanium and Coated Aluminum Particles," 5th US Combustion Meeting, San Diego, CA, March 2007.
222. "Combustion of Borohydride/Metal/Water Mixtures for Hydrogen Generation," 5th US Combustion Meeting, San Diego, CA, March 2007.
223. "Purdue Hydrogen Technology Program," DOE Hydrogen Program Annual Merit Review, Arlington, VA, May 2007.
224. "Metal-CO₂ Propulsion for Mars Missions: Current Status and Opportunities," 43rd AIAA/ASME/SAE/ASEE Joint Propulsion Conference, Cincinnati, OH, July 2007.
225. "Ignition of Aluminum Particles Coated by Nickel or Iron: Studies under Normal and Reduced Gravity Conditions," 43rd AIAA/ASME/SAE/ASEE Joint Propulsion Conference, Cincinnati, OH, July 2007.
- * 226. "Hydrogen Generation for Portable Fuel Cells by Using Novel Chemical Mixtures," 234th ACS National Meeting, Boston, MA, August 2007.
227. "Transition Metal / Alloy Foams By Combustion Technique," AIChE Annual Meeting, Salt Lake City, UT, November 2007.
228. "Modeling of Combustion Wave Propagation in Heterogeneous Mixtures for Hydrogen Generation," AIChE Annual Meeting, Salt Lake City, UT, November 2007.
229. "Heterogeneous Mixtures of Boron Compounds with Metals and Water for Hydrogen Generation," AIChE Annual Meeting, Salt Lake City, UT, November 2007.
230. "Catalytic Conversion of Glycerol to High-Value Chemicals", Biofuels Symposium, Discovery Park Energy Center, Purdue University, West Lafayette, IN, May 2008.
231. "Increasing Productivity of Bioethanol. A Model-Driven Approach to Process Optimization and Strain Improvement" Biofuels Symposium, Discovery Park Energy Center, Purdue University, West Lafayette, IN, May 2008.
232. "Purdue Hydrogen Systems Laboratory," 2008 DOE Hydrogen Program Merit Review and Peer Evaluation Meeting, Arlington, VA, June 2008.
233. "Catalytic Conversion of Glycerol to High-Value Chemicals", ACS Green Chemistry Summer School, Colorado School of Mines, Golden, CO, July 2008.
234. "New Methods for Hydrogen Generation from Boron Compounds and Water," 32nd International Symposium on Combustion, Montreal, Canada, August 2008.
235. "More Ethanol in Recombinant Yeast from Modeling: Towards Pathway Modifications Using Hybrid Cybernetic Models," Metabolic Engineering VII. Health and Sustainability, Puerto Vallarta, Mexico, September 2008.
236. "Hydrogen Generation from Boron Compounds Using Metal/Water Reactions: Experiments and Model," ISCRE-20 Meeting, Kyoto, Japan, September 2008.

237. "Catalytic Oxidation of Glycerol to High-Value Chemicals", AIChE Annual Meeting, Philadelphia, PA, November 2008.
238. "Identification of Potential Target Pathways of Recombinant Yeast for Increasing Bioethanol Productivity: In Silico Analysis Using Cybernetic Models," AIChE Annual Meeting, Philadelphia, PA, November 2008.
239. "Optimization of Batch and Continuous Fermenters for Increasing Bioethanol Productivity Using Hybrid Cybernetic Models," AIChE Annual Meeting, Philadelphia, PA, November 2008.
240. "Hydrothermolysis of Ammonia Borane: A Novel Method to Generate Hydrogen for Fuel Cells," AIChE Annual Meeting, Philadelphia, PA, November 2008.
- * 241. "New Methods for Hydrogen Generation from Boron Compounds and Water," Prof. R. Aris Memorial session, AIChE Annual Meeting, Philadelphia, PA, November 2008.
- * 242. "Experimental and Modeling Studies on Combustion Wave Propagation in Metal/Water Mixtures for Hydrogen Generation," Session in honor of Prof. D. Ramkrishna's 70th birthday, AIChE Annual Meeting, Philadelphia, PA, November 2008.
- * 243. "New Methods for Hydrogen Generation from Boron Compounds and Water," CNR Rao Distinguished Lecture, Chemcon 2008, Chandigarh, India, December 2008.
244. "Purdue Hydrogen Systems Laboratory," 2009 DOE Hydrogen Program, Annual Merit Review and Peer Evaluation Meeting, Arlington, VA, May 2009.
245. "Catalytic Oxidation of Glycerol to High-Value Chemical Dihydroxyacetone," North American Meeting of the Catalysis Society, San Francisco, CA, June 2009.
- * 246. "Evolving Trends in Chemical Engineering Education," 8th World Congress of Chemical Engineering, Montreal, Canada, August 2009.
247. "New Methods for Hydrogen Generation from Boron Compounds and Water," 8th World Congress of Chemical Engineering, Montreal, Canada, August 2009.
- * 248. "New Methods to Generate Hydrogen from Boron Compounds and Water," The 5th Sino-US Conference of Chemical Engineering, Beijing, China, October 2009.
249. "Selective Oxidation of Glycerol to High-Value Chemical Dihydroxyactone Over PtBi/C Catalyst," AIChE Annual Meeting, Nashville, TN, November 2009.
250. "High Hydrogen Yield Ammonia Borane Hydrothermolysis for Fuel Cell Based Vehicles," AIChE Annual Meeting, Nashville, TN, November 2009.
251. "Kinetics of Glycerol Selective Oxidation Over Pt-Bi/C Catalyst," AIChE Annual Meeting, Nashville, TN, November 2009.
252. "Method to Release Hydrogen from Ammonia Borane for Portable Fuel Cell Applications," AIChE Annual Meeting, Nashville, TN, November 2009.
253. "Hydrogen Generation from Noncatalytic Hydrothermolysis of Ammonia Borane for Vehicle Applications," NHA Hydrogen Conference & Expo, Long Beach, CA, May 2010.
254. "Purdue Hydrogen Systems Laboratory," 2010 DOE Hydrogen Program, Annual Merit Review and Peer Evaluation Meeting, Washington, DC, June 2010.
255. "Hydrogen for Vehicle Applications from Ammonia Borane: Hydrogen Yield, Thermal Characteristics, and Ammonia Formation," ISCRE-21 Meeting, Philadelphia, PA, June 2010.
256. "Catalytic Oxidation of Glycerol to Dihydroxyacetone," ISCRE-21 Meeting, Philadelphia, PA, June 2010.
- * 257. "Roger Schmitz: The Quintessential Academic," Session in honor of Prof. R. Schmitz' 75th birthday, AIChE Annual Meeting, Salt Lake City, UT, November 2010.
258. "Hydrogen Generation From Thermolysis of Neat Ammonia Borane for On-Board Vehicle Applications," AIChE Annual Meeting, Salt Lake City, UT, November 2010.

259. "Ammonia Borane Dehydrogenation Always Generates Ammonia, How Much and How to Remove It?" AIChE Annual Meeting, Salt Lake City, UT, November 2010.
260. "Kinetic Study of Glycerol Oxidation over Pt-Bi/C catalyst," AIChE Annual Meeting, Salt Lake City, UT, November 2010.
261. "New Methods to Generate Hydrogen from Boron Compounds and Water for Fuel Cell Applications," 8th Tactical Power Sources Summit, Washington, DC, January 2011.
- * 262. "Neal R. Amundson: His Chief Contributions to the Development of Chemical Reaction Engineering," University of Houston, Houston, TX, March 2011.
263. "Purdue Hydrogen Systems Laboratory," 2011 DOE Hydrogen Program, Annual Merit Review and Peer Evaluation Meeting, Washington, DC, May 2011.
264. "Kinetic Study of Glycerol Oxidation Network over Pt-Bi/C Catalyst," North American Meeting of the Catalysis Society, Detroit, MI, June 2011.
265. "High and Rapid Hydrogen Release from Thermolysis of Ammonia Borane near PEM Fuel Cell Operating Temperatures," AIChE Annual Meeting, Minneapolis, MN, October 2011.
266. "The Attractiveness of Ammonia Borane to Generate Hydrogen for PEM Fuel Cell Vehicles," AIChE Annual Meeting, Minneapolis, MN, October 2011.
267. "Molecular Reaction Pathways of Ammonia Borane Dehydrogenation: Experimental and DFT Elucidations," AIChE Annual Meeting, Minneapolis, MN, October 2011.
- * 268. "Hydrogen Generation from Ammonia Borane for PEM Fuel Cell Applications," AIChE Annual Meeting, Minneapolis, MN, October 2011.
269. "Trickle-Bed Reactor Studies for Selective Oxidation of Glycerol to Dihydroxyacetone Over Pt-Bi/C Catalyst," AIChE Annual Meeting, Minneapolis, MN, October 2011.
270. "Oxidative Coupling of Methane Using Novel Catalytic Materials," AIChE Annual Meeting, Minneapolis, MN, October 2011.
- * 271. "Solution Combustion Synthesis of Advanced Materials: Principles and Applications," Gordon Research Conference on Energetic Materials, West Dover, VT, June 2012.
272. "Solution Combustion Synthesized Catalytic Materials for Oxidative Coupling of Methane," ACS National Meeting, Philadelphia, PA, August 2012.
273. "Hydrogen Generation from Ammonia Borane for Fuel Cell Vehicle Applications," ISCRE-22 Meeting, Maastricht, The Netherlands, September 2012.
274. "Catalytic Hydrodeoxygenation of Guaiacol," AIChE Annual Meeting, Pittsburgh, PA, October 2012.
- * 275. "New Methods to Generate Hydrogen from Boron-Compounds for Vehicle Applications," AIChE Annual Meeting, Pittsburgh, PA, October 2012.
276. "Improved Hydrogen Release from Magnesium Borohydride with Additive," AIChE Annual Meeting, Pittsburgh, PA, October 2012.
277. "Catalytic Effect of Boric Acid On Thermal Dehydrogenation of Ammonia Borane," AIChE Annual Meeting, Pittsburgh, PA, October 2012.
278. "Solution Combustion Synthesized Catalytic Materials for Oxidative Coupling of Methane," AIChE Annual Meeting, Pittsburgh, PA, October 2012.
279. "Pressure Drop and Hydrodynamics of Trickle-Bed Reactors with Particle Size Distributions," AIChE Annual Meeting, Pittsburgh, PA, October 2012.
- * 280. "Glycerol Selective Oxidation: A Reaction Engineering Study," AIChE Annual Meeting, Pittsburgh, PA, October 2012.
281. "Pechmann Condensation of Resorcinol with Ethyl Acetoacetate Over a Novel Highly Superacidic Sulfated Zirconia," AIChE Annual Meeting, Pittsburgh, PA, October 2012.
- * 282. "Solution Combustion Synthesis of Advanced Materials: Principles and Applications," AIChE Annual Meeting, Pittsburgh, PA, October 2012.

283. "The Effect of Particle Size Distribution on Trickle-Bed Reactor Hydrodynamics," NASCRE-3, Houston, TX, March 2013.
284. "Catalytic Hydrodeoxygenation of Guaiacol," NASCRE-3, Houston, TX, March 2013.
285. "Solution Combustion Synthesized Catalytic Materials for Oxidative Coupling of Methane," North American Catalysis Society Meeting, Louisville, KY, June 2013.
- * 286. "New Methods to Generate Hydrogen from Boron-compounds for Vehicle Applications," 9th World Congress of Chemical Engineering (WCCE-9), Seoul, Korea, August 2013.
- * 287. "Solution Combustion Synthesis of Advanced Materials: Principles and Applications," 9th World Congress of Chemical Engineering (WCCE-9), Seoul, Korea, August 2013.
288. "Solution Combustion Synthesized Catalytic Materials for Oxidative Coupling of Methane," ACS Annual Meeting, Indianapolis, IN, September 2013.
289. "Experimental and Simulation Study of Crude Glycerol Purification from Different Feed Stocks in Biodiesel Production," ACS Annual Meeting, Indianapolis, IN, September 2013.
290. "Catalytic Hydrodeoxygenation of Guaiacol," ACS Annual Meeting, Indianapolis, IN, September 2013.
- * 291. "Solution Combustion Synthesis of Advanced Materials: Principles and Applications," AIChE Annual Meeting, San Francisco, CA, November 2013.
292. "Biphasic Aldol Condensation of N-butyraldehyde: Kinetic Study Using Stirred Cell," AIChE Annual Meeting, San Francisco, CA, November 2013.
293. "Hydrodynamics of Trickle-Bed Reactors with Particle Size Distributions," AIChE Annual Meeting, San Francisco, CA, November 2013.
294. "A Universal Procedure for Crude Glycerol Purification from Different Feedstock in Biodiesel Production: Experimental and Simulation Study," AIChE Annual Meeting, San Francisco, CA, November 2013.
- * 295. "Selected Topics Related to Energy and Chemicals," US-India Symposium on Energy, Environment and Sustainability, Chemcon 2013, Mumbai, India, December 2013.
295. "Catalytic Hydrodeoxygenation of Guaiacol," ISCRE-23 Meeting, Bangkok, Thailand, September 2014.
297. "Flow Regime Transition in Trickle Bed Reactors," AIChE Annual Meeting, Atlanta, GA, November 2014.
298. "Conversion of Guaiacol on Noble Metal Catalysts," AIChE Annual Meeting, Atlanta, GA, November 2014.
299. "Biphasic Stirred Tank Reactor for n-Butyraldehyde Aldol Condensation: Experiments and Models", AIChE Annual Meeting, Atlanta, GA, November 2014.
300. "Effect of Flow Regime on Trickle-Bed Reactor Performance", AIChE Annual Meeting, Atlanta, GA, November 2014.
301. "Kinetic Study of Catalytic Hydrogenolysis for Pharmaceutical Applications", AIChE Annual Meeting, Atlanta, GA, November 2014.
302. "Glycerol Selective Oxidation to 1,3-Dihydroxyacetone via Bimetallic Platinum-Bismuth Catalysts: An Experimental and Theoretical Study," AIChE Midwest Regional Conference, Chicago, IL, March 2015.
303. "Kinetic Study of Catalytic Hydrogenolysis for Pharmaceutical Applications," North American Catalysis Society Meeting, Pittsburgh, PA, June 2015.
304. "Multiphase Reaction Studies in Stirred Tank and Trickle-Bed Reactors," ACS Annual Meeting, Boston, MA, August 2015.
305. "Kinetic Study of Pd-Catalyzed Hydrogenation of N-Benzyl-4-Fluoroaniline," ACS Annual Meeting, Boston, MA, August 2015.

306. "Bubbly and Pulsing Flow Regime Transitions in Trickle-Bed Reactors," ESCRE 2015, Fürstfeldbruck, Germany, October 2015.
- * 307. "Selected Topics Related to Energy and Chemicals," Keynote Lecture, The 8th Sino-US Conference of Chemical Engineering, Beijing, China, October 2015.
308. "Acetophenone Hydrogenation on Rh/Al₂O₃ Catalyst: Intrinsic Reaction Kinetics and Effects of Internal Diffusion," AIChE Annual Meeting, Salt Lake City, UT, November 2015.
309. "Acetophenone Hydrogenation on Rh/ Al₂O₃ Catalyst: Flow Regime Effect and Modeling of a Trickle Bed Reactor," AIChE Annual Meeting, Salt Lake City, UT, November 2015.
310. "The Transition to the Bubbly Flow Regime in Trickle Bed Reactors," AIChE Annual Meeting, Salt Lake City, UT, November 2015.
311. "Kinetic Study of Pd-Catalyzed Hydrogenation of N-Benzyl-4-Fluoroaniline," AIChE Annual Meeting, Salt Lake City, UT, November 2015.
312. "An Experimental and Theoretical Study of Glycerol Selective Oxidation to 1,3-Dihydroxyacetone Via Bimetallic Platinum-Bismuth Catalysts," AIChE Annual Meeting, Salt Lake City, UT, November 2015.
313. "Catalytic Deoxygenation of Guaiacol Using Methane," AIChE Annual Meeting, Salt Lake City, UT, November 2015.
- * 314. "Acetophenone Hydrogenation over Rh/Al₂O₃ Catalyst: Intrinsic Kinetics, Pore Diffusion and Trickle-Bed Reactor Studies," AIChE Annual Meeting, Salt Lake City, UT, November 2015.
315. "The Hydrodynamics of Trickle-Bed Reactors," ISCRE-24 Meeting, Minneapolis, MN, June 2016.
316. "Insight into Pt-Bi Bimetallic Catalysts for Tuning Selectivity and Improving Stability," ISCRE-24 Meeting, Minneapolis, MN, June 2016.
317. "Guaiacol Deoxygenation Using Methane over Pt-Bi Catalysts: Reaction Pathways and Kinetics," AIChE Annual Meeting, San Francisco, CA, November 2016.
318. "Glycerol to Hydrocarbon Fuels Via Bifunctional Catalysts," AIChE Annual Meeting, San Francisco, CA, November 2016.
319. "Solution Combustion Synthesis for High Performance ZnCo₂O₄ Anode in Lithium-Ion Batteries," AIChE Annual Meeting, San Francisco, CA, November 2016.
320. "Controllable Solution Combustion Synthesis of Nanoscale α/β -Bi₂O₃ and Its Catalytic Application," AIChE Annual Meeting, San Francisco, CA, November 2016.
321. "Hydrogen Generation from Hydrous Hydrazine over Nickel-Doped Ceria Catalysts Prepared By Solution Combustion Synthesis," AIChE Annual Meeting, San Francisco, CA, November 2016.
322. "Anode Performance and Safety Evaluation of Potassium-Ion Batteries," AIChE Annual Meeting, San Francisco, CA, November 2016.
323. "Ni/CeO₂ Catalysts for Hydrogen Generation from Hydrous Hydrazine Decomposition," 25th North American Catalysis Society Meeting, Denver, CO, June 2017.
324. "Glycerol Conversion to Hydrocarbon Fuels," 25th North American Catalysis Society Meeting, Denver, CO, June 2017.
325. "Kinetics of Guaiacol Deoxygenation Using Methane over Pt-Bi Catalyst," 25th North American Catalysis Society Meeting, Denver, CO, June 2017.
326. "Insight and Applications of Pt-Bi Bimetallic Catalysts: A Combined Experimental and DFT Study," AIChE Annual Meeting, Minneapolis, MN, October 2017.
327. "Kinetics of Glycerol Conversion to Hydrocarbon Fuels over Pd/H-ZSM-5 Catalysts," AIChE Annual Meeting, Minneapolis, MN, October 2017.

328. "Tailored CeO₂ Supported Ni-Based Catalysts Prepared By Solution Combustion Synthesis for Hydrogen Generation from Hydrous Hydrazine," AIChE Annual Meeting, Minneapolis, MN, October 2017.
329. "Solution Combustion Synthesis of Porous CeO₂ Nanopowders: Reaction Mechanism and Physical Properties," AIChE Annual Meeting, Minneapolis, MN, October 2017.
330. "Mechanistic Evaluation of Thermal Runaway in Potassium-Ion Batteries," AIChE Annual Meeting, Minneapolis, MN, October 2017.

* Lecture by special invitation

(Revised 12-17)