

Curriculum Vitae **Klavs F. Jensen**

Warren K Lewis Professor and Department Head Chemical Engineering
Professor Materials Science and Engineering
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Birth date: Aug 5, 1952

Education:

- 1980 Ph.D. (Chemical Engineering), University of Wisconsin - Madison
- 1976 M.Sc. (Chemical Engineering), Technical University of Denmark

Employment:

- 2007 - Warren K. Lewis Professor and Department Head, Chemical Engineering, Massachusetts Institute of Technology
- 1996 - 07 Lamot du Pont Professor of Chemical Engineering
- 1989 - 94 Joseph R. Mares Career Development Chair in Chemical Engineering
- 1989 - Professor of Materials Science and Engineering, Massachusetts Institute of Technology
- 1988-89 Professor, Department of Chemical Engineering and Materials Science, University of Minnesota
- 1986-89 Fellow, Minnesota Supercomputer Institute
- 1984-88 Associate Professor, Department of Chemical Engineering and Materials Science, University of Minnesota
- 1980-84 Assistant Professor, Department of Chemical Engineering and Materials Science, University of Minnesota
- 1976-80 Research and Teaching Assistant, Department of Chemical Engineering, University of Wisconsin - Madison

Honors:

- 2012 First recipient of the International Union of Pure and Applied Chemistry (IUPAC)-ThalesNano Prize in Flow Chemistry
- 2011 William H. Walker Award, American Institute of Chemical Engineers
- 2011 Knight of the order of "Dannebrogordenen"
- 2009 Fellow American Institute of Chemical Engineers
- 2008 Named one of the "One Hundred Chemical Engineers of the Modern Era" as part of the American Institute of Chemical Engineers Centennial
- 2008 Member of American Academy of Arts and Sciences
- 2007 Fellow American Association for the Advancement of Science
- 2006 Honorary Doctorate (*Technices Honoris Causa*) Technical University of Denmark
- 2004 Fellow of the Royal Society of Chemistry, London
- 2002 Member of National Academy of Engineering
- 2000 R. H. Wilhem Award, American Institute of Chemical Engineers
- 1995 Charles M.A. Stine Award of the Materials Engineering and Sciences

Division, American Institute of Chemical Engineers
 1987 Allan P. Colburn Award, American Institute of Chemical Engineers
 1987 John Simon Guggenheim Fellowship
 1985-90 Camille and Henry Dreyfus Teacher - Scholar
 1984-89 Presidential Young Investigator Award, National Science Foundation
 1984 Young Chemical Engineer of the Year, AIChE Twin City Section
 1983 Young Author's Award, Electrochemical Society
 1982 Shell Faculty Career Initiation Award
 1981 Outstanding Junior Faculty Award, ARCO Oil and Gas Company

Lectureships

2012 Richard H. Wilhelm Lectures, Princeton University
 2012 Distinguished McFerrin Lecturer, Texas A&M University
 2011 Robert Pigford Lecture, University of Delaware
 2010 Ashton Cary Lectures, Georgia Institute of Technology
 2010 Basore Distinguished Lecturer, Auburn University
 2007 Inaugural Jeanne and Martin Sussman Lecture in Chemical and Biological Engineering, Tufts University
 2007 Ashland Distinguish Lecturer, University of Kentucky
 2007 Bergveld Lecture, Twente University, The Netherlands
 2005 Adams Distinguished Lecture, Purdue University
 2005 Distinguish Lindsay Lecturer, Texas A&M University
 2003 Julian C. Smith Lectureship, Cornell, Ithaca, NY
 2003 William N. Lacey Lectureship, California Institute of Technology, Pasadena
 2002 Ralph Peck Memorial Lecture, Illinois Institute of Technology, Chicago
 2002 Bird, Stewart and Lightfoot Lecture, University of Wisconsin
 2002 Donald L. Katz Lecture, University of Michigan
 2002 L.K. Doraiswamy Lecture, National Chemical Laboratory, India and Iowa State University
 2000 Berkeley Lecturer, Department of Chemical Engineering, UC Berkeley

Recent Professional Activities:

2011 Member of the Graduate Program Review Committee, North Carolina State University
 2010 Member External Review Committee, Department of Chemical Engineering, Stanford University
 2010 Member External Advisory Council, Department of Chemical and Biomolecular Engineering, Korean Advanced Institute of Science and Technology
 2009- Member Advisory Council for the Department of Chemical Engineering, Princeton University
 2009- Member of the Board of Governors of the Technical University of Denmark
 2007 Chair of the international evaluation committee Chemical Engn., Technical University of Denmark
 2007- Visiting Committee, Chemical Engineering, University of Wisconsin
 2006-09 Advisory panel– Danish Ministry of Science, Technology and Innovation

- 2005 Founding member of Chemical and Biological Microsystems Society (sponsors the International conferences on Miniaturized Systems for Chemistry and Life Sciences, μ TAS)
- 2005 Conference Chair for the Ninth International conference on Miniaturized Systems for Chemistry and Life Sciences
- 2005 International Evaluation Committee for the Danish National Laboratory Risø
- 2004 Member of evaluation committee of research profile of Technical University Eindhoven
- 2004- Scientific Advisory Board for the A*STAR Institute for Bioengineering and Nanotechnology, Singapore

Selected MIT Service:

- 2011- Chair, School of Engineering Committee on Diversity
- 2009 -10 Co-chair MIT Institute-Wide Planning Task Force: Revenue Enhancement Working Group
- 2008-10 Committees on education, engineering - life science interface, and materials science infrastructure
- 2007- Department Head Chemical Engineering
- 2007- School of Engineering Council
- 2005-07 Faculty Policy Committee
- 2000-07 DuPont/MIT Alliance Internal Advisory Board
- 1998-01 Chair Long Range Planning Committee, Department of Chemical Engineering
- 1996- Member of the Faculty Search Committee
- 1990-06 Graduate Admissions Committee, Department of Chemical Engineering
- 1991-95 Chair Graduate Admissions Committee, Department of Chemical Engineering

Memberships in Professional Societies:

- American Association for the Advancement of Science (Fellow)
- American Institute of Chemical Engineers
- American Chemical Society
- Electrochemical Society
- Materials Research Society
- Royal Society of Chemistry (Fellow)
- Society of Industrial Applied Mathematics

Teaching and Research Interests:

Research interests revolve around microfabrication, testing, integration and scale-up of microfluidic systems for chemical and biochemical discovery, synthesis and processing. Chemical kinetics and transport phenomena related to processing of organic and inorganic materials for electronic and optical applications are also topics of interest along with development of simulation approaches for reactive systems, specifically simulation across multiple length and time scales.

Teaching interests include chemical reaction engineering, transport phenomena, fundamentals of microfluidics, and materials and processes relevant to micro and nano fabrication.

Current Students and Postdocs

PhD Students: Patrick Heider, Lee Wen-Hsuan, Jason Moore, María José Nieves, Everett O'Neal, Brandon Reizman, Tatyana Shatova, Armon Sharei, Nopphon Weeranoppanant, Lu Yang, Lisi Xie

Postdocs: Andrea Adamo, Patrick Bazinet, Mohsen Behnam, Stephen Born, Anand Kumar, Seung-Kon Lee, Jean Christophe Monbaliu, Sidy Ndao, Ulrich Neuenschwander, Yanxiang Shi, Baris Unal

Past Students, Postdocs, and Visitors

PhD Students: Jinyoung Baek, EthelMae Victoria Dydek, Kevin Nagy, Jaroslav Keybl, Chris Marton, Jonathan McMullen, Mahmooda Sultana, Nikolay Zaborenko, Ling Chao, Hemantkumar Sahoo, Linlin Ye, Jane Rempel, Jacob Albrecht, Brandon Blackwell, Saif Khan, Jason Kralj, Ole M. Nielsen, Edward R. Murphy, Brian K. Yen, Zhiyu "Ben" Zhang, Thomas Gervais, Andrea Zanzotto, Nuria de Mas, Leonel Arana, Hang Lu, Sameer K. Ajmera, Gwang-Soo Kim, Jinwook Lee, Maria A. Nemirovskaya, Samara L. Firebaugh, Chris Vineis, Tamara M. Floyd, Jason R. Heine, Matthew W. Losey, Seth Thomas Rodgers, Rajesh Venkataramani, Theodoros Mihopoulos, Kathleen M. Vaeth, Brian G. Willis, Suman K. Banerjee, I-Ming Hsing, Harsano S. Simka, Ravi Srinivasan, Jeffrey P. Hebb, Brian H. Cumpston, Shih-Tung Ngiam, Michal Danek, Jeung-Soo Huh, Sateria Salim, Tushar P. Merchant, Daniel G. Coronell, Jaesung Han, Kwok-Lun Ho, (Univ. Minnesota) Erik Oddmund Einset, Jihperng Leu, Rajesh R. Melkote, Sadavisan Shankar, Donald R. McKenna, James B. Planeaux, Harry K. Moffat, Peter E. Price Jr., Mark F. Ellis, Dimitrios I. Fotiadis, Manoj Dalvie, Konstantinos P. Giapis, Thomas R. Omstead, David C. Skouby, Peter Wai-Man Lee, Victor Gonzalez, Karl F. Roenigk, Mark D. Foster, David B. Graves, Sebastian Reyes, Henry Kwok Kin Lau, Jesus Alvarez-Calderon,

M.Sc. Students: Ylva Olsson, Jacqueline T. Underberg, Samuel B. Schaevitz, Douglas S. Fong, Michael Z. Gu, Kim-Marie Levis, , Lawrence J. Foley, Brad Houston, (Univ. Minnesota) , Dimitious Vlachos, Simon Brandon, Anthony M. Kremer, Carl Allen Houtman, Thomas P. Kempf, Devesh Kapur, Harald C. Lyche, Charles W. Plumb,

Postdocs: Simon Kuhn, Xiaoying Liu, Lei Gu, Victor Sebastian Cabeza, Woo Young Sim, Chris Smith, Soubir Basak, Ketan Pimparkar, Ryan Hartman, Jian Wen, Bernard Yen, Samuel Marre, Kishori Deshpande, Jamil El-Ali, Axel Günther, Hyun Goo Choi, Nuria De Mas, Yongbae Joen, Benjamin Wilhite, Nicolas Szita, Chelsey Baertsch, Carlo Cavalotti, Rebecca Jackman, Constance Bauer, Aleksander Franz, Ratna Shekhar, Istvan Lengyl, Javier Rodriguez-Viejo, Ajit Balakrishna, Charles Musgrave, XiaYong, Peter Futerko, Vernon Cole, Narasimha Acharya, Ming Xi, Karson Knutson, Chris Kleijn, Jiong-Ping Lu, Maurizio Masi, Kun-Ho Lie, Sanjay Patnaik, Ananth Annapragada, Lakis Mounziaris

Visitors:

Students: : Gerrit Schatte (Munich), Alexander Woitalka (Munich), Alessandro Arione (EPFL), Flurin Hänseler (ETH), Norbert Heublein (Munich), Francesco Venturini (Milan), Lars Johansen (DTU), Ruud Brand (Delft), Nora Langhorst (Hannover), Maurizio Rondanini (Milan), Gian Caviezel (ETH), Veronique Gondoin (ETH), Ruben Kolfshoten (ETH), Nicolas Imlinger (Austria), Gerardo Perozziello (DTU), Franz Trachsel (ETH), Martina Thalmann (ETH), Tobias Kraus (Munich), Jamil El-Ali (DTU), Uwe Hansen (Munich), Joost Driessen (Eindhoven), Ester Hurtos (Barcelona), Søren Eriksen (DTU), Tim Lund (Berlin)

Scientists: Thomas Gendrineau (Bordeaux), Amol Kulkarni (Indian Chemical Laboratory), Masay Hamano (Ono Pharmaceuticals), Kenichiro Hashimoto (Tokyo), Michiel Kreutzer (Delft), Elizabeth Podlaha-Murphy (Louisiana), Kunio Watanabe (Asahi Glass), Tomoya Inoue (Asahi Chemicals), Yasuhiro Wada (Misubishi), Shinji Isogai (Misubishi), Masanobu Ichida (Misubishi), Shige Kieda (Hitachi)

Bibliography

Edited Volumes

1. *Supercomputer Research in Chemistry and Chemical Engineering*, K.F. Jensen and D.G. Truhlar (Eds.), ACS Symposium Series **353** (1987).
2. *Microelectronics Processing: Chemical Engineering Aspects*, D.W. Hess and K.F. Jensen (Eds.), Advances in Chemistry Series **221** (1989).
3. *Chemical Perspectives of Microelectronic Materials II*, L.V. Interrante, K.F. Jensen, L.H. Dubois, and M.E. Gross (Eds.), *Mater. Res. Soc. Symp.* **204** (1991).
4. *Chemical Vapor Deposition—Principles and Application*, M.L. Hitchman and K.F. Jensen, (Eds.) Academic Press, (1993)
5. *Electronic Packaging Materials Science VII*. P. Børgesen, K.F. Jensen, R.A. Pollack (Eds.) *Mater. Res. Soc. Symp.* **323** (1994)
6. *μTAS 2003 – Seventh International Conference on Miniaturized Systems for Chemistry and Life Sciences*, M.A. Northrup, K.F. Jensen, and D.J. Harrison (Eds.), Transducers Research Foundation (2003)
7. *μTAS 2004 -Eight International Conference on Miniaturized Systems for Chemistry and Life Sciences*, T. Laurell, J. Nielson, J. Kutter, K.F. Jensen, and D.J. Harrison (Eds.) Royal Society of Chemistry (2004)
8. *μTAS 2005 -Ninth International Conference on Miniaturized Systems for Chemistry and Life Sciences*, K.F. Jensen, J. Han, D.J. Harrison, and J. Voldman, Transducers Research Foundation (2005).

Refereed Journals and Book Chapters

1. T.S. Sørensen and K.F. Jensen, "Formation of electric triple layers by interdiffusion of two electrolytes," *Faraday Trans.* **71**, 1805-1811 (1975).
2. H. Livbjerg, K.F. Jensen, and J. Villadsen, "Sulfur-dioxide oxidation on supported molten V₂O₅-K₂S₂O₇ catalyst - influence of liquid diffusion resistance," *Journal of Catalysis* **45**, 216-230 (1976).
3. K.F. Jensen and W.H. Ray, "A new view of ignition, extinction, and oscillations on supported metal catalyst surfaces," *Chem. Eng. Sci.* **35**, 241-248 (1980).
4. K.F. Jensen and W.H. Ray, "A microscopic model for catalytic surfaces. I. Catalytic wires and gauzes," *Chem. Eng. Sci.* **35**, 2439-2457 (1980).
5. K.F. Jensen and W.H. Ray, "The bifurcation behavior of tubular reactors," *Chem. Eng. Sci.* **37**, 199-222 (1982).

6. K.F. Jensen and W.H. Ray, "A microscopic model for catalytic surfaces. II. Supported catalysts," *Chem. Eng. Sci.* **37**, 1387-1410 (1982).
7. K.F. Jensen, "The role of surface inhomogeneities in pattern formation on catalytic surfaces," *Chem. Eng. Sci.* **38** (6), 855-864 (1983).
8. K.F. Jensen and D.B. Graves, "Modelling and analysis of low pressure CVD reactors," *J. Electrochem. Soc.* **130** (9), 1950-1957 (1983).
9. S. Reyes and K.F. Jensen, "Modeling of catalytic coal gasification," *Ind. Eng. Chem. Fund.* **23** (2), 223-229 (1984).
10. K.F. Jensen and W.H. Ray, "The role of surface structures in the dynamic behavior of heterogeneous catalytic systems," in *Dynamics of Nonlinear Systems*, V. Hlavacek (Ed.), *Concepts in Chemical Engineering* Gordon and Breach, 112 (1985).
11. H. Lau, J. Alvarez and K.F. Jensen, "Synthesis of control structures by singular value analysis. Dynamic measures of sensitivity and interaction," *AIChE J.* **31**(13), 427-439 (1985).
12. H. Lau and K.F. Jensen, "Evaluation of changeover control policies by singular value analysis—Effects of scaling," *AIChE J.* **31**(1), 135-146 (1985).
13. K.F. Roenigk and K.F. Jensen, "Analysis of multicomponent LPCVD processes," *J. Electrochem. Soc.* **132** (2), 448-454 (1985).
14. S. Reyes and K.F. Jensen, "Estimation of effective transport coefficients in porous solids based on percolation concepts," *Chem. Eng. Sci.* **40**(9), 1723-1734 (1985).
15. S. Reyes and K.F. Jensen, "Percolation concepts in modelling of gas-solid reactions. I. Application to char gasification in the kinetic regime," *Chem. Eng. Sci.* **41**(2), 333-343 (1986).
16. S. Reyes and K.F. Jensen, "Percolation concepts in modelling of gas-solid reactions. II. Application to char gasification in the diffusion regime," *Chem. Eng. Sci.* **41**(2), 345-354 (1986).
17. D.B. Graves and K.F. Jensen, "A continuum model of DC and RF discharges," *IEEE Trans. Plasma Sci.* **14**(2), 78-91 (1986).
18. J.B. Planeaux and K.F. Jensen, "Bifurcation phenomena in CSTR dynamics I. A system with extraneous thermal capacitance," *Chem. Eng. Sci.* **41**(6), 1497-1523 (1986).
19. D.W. Hess, K.F. Jensen and T. Anderson, "Chemical vapor deposition—A chemical engineering perspective," *Reviews in Chemical Engineering* **3**, 97-186 (1985).
20. C. Houtman, D.B. Graves and K.F. Jensen, "CVD in stagnation point flow—An evaluation of the classical 1D treatment," *J. Electrochem. Soc.* **133**(5), 961-970 (1986).
21. K.F. Jensen, "Micro-reaction engineering: Applications of reaction engineering to processing of electronic and photonic materials," *Chem. Eng. Sci.* **42**(5), 923-958 (1987).
22. M. Dalvie, K.F. Jensen and D.B. Graves, "Modeling of reactors for plasma processing I. Silicon etching by CF₄ in a radial flow reactor," *Chem. Eng. Sci.* **41**(4), 653-660 (1986).
23. H.K. Moffat and K.F. Jensen, "Complex flow phenomena in MOCVD reactors. I. Horizontal reactors," *J. Crystal Growth* **77**(1-3), 108-119 (1986).

24. P.W. Lee, D.R. McKenna, D. Kapur and K.F. Jensen, "MOCVD in inverted stagnation point flow: I. Deposition of GaAs from TMGa and TMAs," *J. Crystal Growth* **77**, 120-127 (1986).
25. J.B. Planeaux, K.F. Jensen and W.W. Farr, "Dynamic behavior of continuous stirred-tank reactors with extraneous thermal capacitance," *Lect. Appl. Math.* **24**, 101-128 (1986).
26. K.F. Jensen, H.K. Moffat and K.F. Roenigk, "Chemical vapor deposition of silicon—Transport phenomena and growth models," in *Processing of Electronic Materials*, C.G. Law and R. Pollard (Eds.), American Institute of Chemical Engineers, New York, 41-61 (1987).
27. S. Reyes and K.F. Jensen, "Percolation concepts in modelling of gas-solid reactions III—Application to sulfation of calcined limestone," *Chem. Eng. Sci.* **42**(3), 565-574 (1987).
28. T.W. Taylor, V. Gonzalez and K.F. Jensen, "Modelling and control of the molecular weight distribution in methyl methacrylate polymerization," in *Polymer Reaction Engineering, High Conversion Polymerization and Polycondensation*, K.H. Reichert and W. Geisler (Eds.), Huthig and Wepf, Verlag, New York, pp. 261-273 (1986).
29. K.F. Roenigk and K.F. Jensen, "Low pressure CVD of silicon nitride," *J. Electrochem. Soc.* **134**(7), 1777-1785 (1987).
30. K.F. Roenigk, K.F. Jensen and R.W. Carr, "Rice-Ramsperger-Kassel-Marcus theoretical prediction of high-pressure Arrhenius parameters by nonlinear regression, I," *J. Phys. Chem.* **91**(22), 5726-5732 (1987).
31. K.F. Roenigk, K.F. Jensen and R.W. Carr, "Rice-Ramsperger-Kassel-Marcus theoretical prediction of high-pressure Arrhenius parameters by nonlinear regression: Application to silane and disilane decomposition," *J. Phys. Chem.* **91**(22), 5732-5739 (1987).
32. P.W. Lee, T.R. Omstead, D.R. McKenna and K.F. Jensen, "In situ mass spectroscopy and thermogravimetric studies of GaAs MOCVD gas phase and surface reactions," *J. Crystal Growth* **85**(1-2), 165-174 (1987).
33. D.I. Fotiadis, A.M. Kremer, D.R. McKenna and K.F. Jensen, "Complex flow phenomena in vertical MOCVD reactors. Effects on deposition uniformity and interface abruptness," *J. Crystal Growth* **85**(1-2), 154-164 (1987).
34. D.C. Skouby and K.F. Jensen, "Modeling of pyrolytic laser-assisted chemical vapor deposition: Mass transfer and kinetic effects influencing the shape of the deposit," *J. Appl. Phys.* **63**(1), 198-206 (1988).
35. H.K. Moffat and K.F. Jensen, "Three-dimensional flow effects in silicon CVD in horizontal reactors," *J. Electrochem. Soc.* **135**(2), 459-471 (1988).
36. D.C. Skouby and K.F. Jensen, "Modelling of pyrolytic laser-assisted chemical vapor deposition: Effects of kinetics and choice of substrate," *Mat. Res. Soc. Symp.* **101**, 107-112 (1988).
37. M.F. Ellis, T.W. Taylor, K.F. Jensen and V. Gonzalez, "Estimation of the molecular weight distribution in batch polymerization," *Am. Inst. Chem. Eng. J.* **34**(8), 1341-1353 (1988).
38. D.W. Kisker, D.R. McKenna and K.F. Jensen, "Limitations to the OMVPE growth of Hg compounds due to hydrodynamic effects," *Materials Lett.* **6**(4), 123-128 (1988).

39. R.R. Melkote and K.F. Jensen, "Models for catalytic pore plugging, application to hydrodemetallation," *Chem. Eng. Sci.* **44**(13), 649-663 (1989).
40. R. Lückcrath, P. Tommack, A. Hertling, H.J. Koss, P. Balk, K.F. Jensen and W. Richter, "Coherent anti-Stokes Raman Scattering *in situ* diagnostics in MOVPE. The thermal decomposition of AsH₃ and PH₃," *J. Crystal Growth* **93**(1-4), 151-158 (1988).
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42. T.R. Omstead, P.M. Van Sickle, P.W. Lee and K.F. Jensen, "Gas phase and surface reactions in MOCVD of GaAs from triethylgallium, trimethylgallium and tertiarybutylarsine," *J. Crystal Growth* **93**(1-4), 20-28 (1988).
43. P.W. Lee, T.R. Omstead, D.R. McKenna and K.F. Jensen, "*In situ* mass spectroscopy studies of the decomposition of organometallic arsenic compounds in the presence of Ga(CH₃)₃ and Ga(C₂H₅)₃," *J. Crystal Growth* **93**(1-4), 134-142 (1988).
44. J. Almlöf, D.G. Truhlar, H.T. Davis, K.F. Jensen, M. Tirrell and T. Lybrand, "Supercomputer chemistry at the University of Minnesota," *Int. J. Supercomp. Applic.* **2**(2), 5-15 (1988).
45. K.P. Giapis, D.C. Lu and K.F. Jensen, "High-quality epitaxial ZnSe and the relationship between electron mobility and photoluminescence characteristics," *Appl. Phys. Lett.* **54**(4), 353-355 (1989).
46. R. Lückcrath, W. Richter and K.F. Jensen, "Gas-phase and surface effects in the thermal decomposition of AsH₃ and PH₃ studied by CARS," NATO Adv. Study Inst. (D. Cole-Hamilton and J.O. Williams, Eds). Series B: Physics **198** 157-167 (1989).
47. D.W. Hess and K.F. Jensen, "Microelectronics processing," in *Microelectronics Processing: Chemical Engineering Aspects*, D.W. Hess and K.F. Jensen (Eds.), Advances in Chemistry Series **221**, 1-33 (1989).
48. K.F. Jensen, "Chemical vapor deposition," in *Microelectronics Processing: Chemical Engineering Aspects*, D.W. Hess and K.F. Jensen (Eds.), Advances in Chemistry Series **221**, 199-264 (1989).
49. D.A. Bohling, G.T. Muhr, K.F. Jensen, T.R. Omstead and S. Brandon, "Recent advances in arsine substitutes," *Chemtronics* **4**, 26-30 (1989).
50. W.L. Gladfelter, D.C. Boyd and K.F. Jensen, "Trimethylamine complexes of alane as precursors for the low pressure chemical vapor deposition (LPCVD) of aluminum," *Chemistry of Materials* **1**(3), 339-343 (1989).
51. K.P. Giapis, K.F. Jensen, J.E. Potts and S.J. Pachuta, "Carbon incorporation in ZnSe grown by MOCVD," *Appl. Phys. Lett.* **55**(5), 463-465 (1989).
52. M.D. Foster and K.F. Jensen, "Interpreting scattering from random porous solids: A model of fully penetrable spherical voids," *J. Int. Coll. Sci.* **135**(1), 132-146 (1990).
53. M.D. Foster and K.F. Jensen, "Small angle X-ray scattering investigations of pore structure changes during coal gasification," *Fuel* **69**(1), 88-96 (1990).
54. P.E. Price, Jr. and K.F. Jensen, "Multiplicities and periodic behavior in laser direct-write metallization," *Chem. Eng. Sci.* **44**(9), 1879-1891 (1989).

55. K.F. Jensen, "Transport phenomena and chemical reaction issues in OMVPE of compound semiconductors," *J. Crystal Growth* **98**(1-2), 148-166 (1989).
56. D.I. Fotiadis, M. Boekholt, K.F. Jensen and W. Richter, "Flow and heat transfer in CVD reactors under a variety of operating conditions: Comparison of Raman temperature measurements and finite element predictions," *J. Crystal Growth* **100**(3), 577-599 (1990).
57. R. R. Melkote and K.F. Jensen, Gas diffusion in random-fiber substrates," *AIChE J.* **35**(12), 1942-1952 (1989).
58. S. Reyes, E. Iglesia and K.F. Jensen, "Application of percolation theory concepts to the analysis of gas-solid reactions," *Solid State Ionics* **32-33**, 833-842 (1989).
59. M. Dalvie and K.F. Jensen, "Combined experimental and modeling study of spatial effects in plasma etching," *J. Electrochem. Soc.* **137**(4), 1062-1078 (1990).
60. M.D. Foster and K.F. Jensen, "SAXS investigation of model carbon pore structure and its change with gasification," *Carbon* **29**(2), 271-282 (1991).
61. D.I. Fotiadis and K.F. Jensen, "Thermophoresis of solid particles in horizontal chemical vapor deposition reactors," *J. Crystal Growth* **102**(4), 743-761 (1990).
62. D.I. Fotiadis, S. Kieda and K.F. Jensen, "Transport phenomena in vertical reactors for metalorganic vapor phase epitaxy: I. Effects of heat transfer characteristics, reactor geometry, and operating conditions," *J. Crystal Growth* **102**(3), 441-470 (1990).
63. T.R. Omstead and K.F. Jensen, "Kinetic model for MOCVD of GaAs with organometallic-arsenic precursors," *J. Chem. of Materials.* **2**(1), 39-49 (1990).
64. K.P. Giapis and K.F. Jensen, "Effect of operating conditions and precursors on optoelectronic properties of OMVPE grown ZnSe," *J. Crystal Growth* **101**(1-4), 111-117 (1990).
65. M. Dalvie and K.F. Jensen, "The importance of free radical recombination reactions in CF₄/O₂ plasma etching of silicon," *J. Vac. Sci. Technol. B* **3**, 1648-1653 (1990).
66. K.P. Giapis, K.F. Jensen, J.E. Potts and S.J. Pachuta, "Investigation of carbon incorporation in ZnSe: effects on morphology, electrical, and photoluminescence properties," *J. Electron. Mat.* **19**(5), 453-462 (1990).
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76. K.F. Jensen, E.O. Einset, and D.I. Fotiadis, "Flow phenomena in chemical vapor deposition of thin films," *Annual Reviews of Fluid Mechanics* **23** 199-232 (1991).
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19. US Patent 7,264,527 M.G. Bawendi, J. Heine, K.F. Jensen, J.N. Miller, R.L Moon, "Quantum dot white and colored light emitting diodes," (cont.) (September 4, 2007)
20. US Patent 7,267,779 L.R. Arana, A.J. Franz, K.F. Jensen; S.B. Schaevitz, and M.A. Schmidt, "Thermally efficient micromachined device," (September 11, 2007)
21. US Patent 7,282,240 R.J. Jackman, D.C. Duffy, G.M. Whitesides, K. Vaeth, and K.F. Jensen, "Elastomeric mask and use in fabrication of devices," (October 16, 2007)
22. US Patent 7,316,967, B.K. Yen, A. Günther, K.F. Jensen, M.G. Bawendi, and M.A. Schmidt, "Flow method and reactor for manufacturing nanocrystals," (January 8, 2008)
23. US Patent 7,507,579, P. Boccazzi; A.Y. Chen, K.F. Jensen, N. Szita, A. Zanzotto; Z. Zhang, "Apparatus and methods for simultaneous operation of miniaturized reactors," (March 24, 2009)
24. US Patent 7,566,476 M. G. Bawendi, K. F Jensen, B.O. Dabbousi, J.Rodriguez-Viejo, and F.V. Mikulec, "Highly luminescent color-selective nanocrystalline materials " (July 28, 2009)
25. US Patent 7,692,373 M.G. Bawendi, J. Heine, K.F. Jensen, J.N. Miller, R.L Moon, "Quantum dot white and colored light emitting diodes," (cont.) (April 6, 2010)
26. US Patent 7,943,552 M.G. Bawendi, K.F. Jensen, "Inventory Control," (cont.) (May 17, 2011)
27. US Patent 8,053,972 M.G. Bawendi, J. Heine, K.F. Jensen, J.N. Miller, R.L Moon, "Quantum dot white and colored light emitting diodes," (cont.) (Nov 8, 2011)
28. US Patent 8,075,778 A. Guenther, K. F. Jensen, M. Jhunjhunwala, M.A. Schmidt, "Fluid Separation" Dec 13, 2011
29. US Patent 8,101,021, B. Yen, A. Guenther, K. F Jensen, M.G Bawendi, M. A Schmidt, "Flow method and reactor for manufacturing nanocrystals," Jan 24, 2012
30. US Patent 8,158,193 M.G. Bawendi, K.F. Jensen, B.O. Dabbousi; X. Rodriguez-Viejo, F.V. Mikulec, "highly luminescent color-selective nanocrystalline materials," (Apr. 17, 2012).

Invited Plenary and Keynote Lectures (past 10 years)

Conferences

1. First International Conference on Microreaction Technology, DECHEMA, Frankfurt, February 1997
2. Eight European Workshop on Metalorganic Vapor Phase Epitaxy, Berlin, June 1997
3. International Conference on Computational Physics, Santa Cruz, CA, August 1997
4. Materials Research Society, Fall Meeting, Boston, MA, December 1997
5. Micro Total Analysis Systems, Banff, October 1998
6. Annual Meeting of the American Institute of Chemical Engineers (AIChE), Miami Beach, November 1998
7. Materials Engineering and Science Division of the AIChE, Dallas, TX, November 1999
8. 2020 Workshop on the future of reaction engineering,” Dallas, TX, November 1999.
9. Fall Meeting of the Materials Research Society, Boston, MA, December 1999
10. Materials Research Society Meeting on Thin Films, San Jose, CA, June 1999
11. Fifth International Conference on Foundations of Computer Aided process Design (FOCAPD’99), Beckenridge, Colorado, July 1999
12. Royal Society of Chemistry Symposium on Automated Synthetic Methods for Specialty Chemicals, Manchester, UK, September 1999
13. Materials Research Society Spring Meeting, San Francisco, CA, April 2000
14. 2000 Solid-State Sensor and Actuator Workshop, Hilton Head, SC, June 2000
15. Royal Society of Chemistry Symposium on Chemistry on a Chip, London, UK, June 2000
16. Foundations of Molecular Modeling and Simulation, Colorado, July 2000
17. Plenary Lecture, 16th International Symposium on Chemical Reaction Engineering. Krakow, Poland, September 2000
18. First SIAM Conference on Computational Science and Engineering, Washington DC, September 2000
19. Annual Meeting of the American Institute of Chemical Engineers (AIChE), Los Angeles, CA, November 2000
20. Green Chemistry Conference, Royal Society of Chemistry, Wales (UK), April 2001
21. Japan Chemical Society, Tokyo, Japan, May 2001
22. Wilhelm Award Lecture, AIChE 2001 Annual Meeting, Reno, NV, November 2001
23. International Semiconductor Device Research Symposium, Washington DC, December 2001
24. Annual Meeting of Council for Chemical Research, Cincinnati, OH, April 2002
25. Faraday Workshop, Manchester, UK, May 2002
26. 10th Nordic Symposium on Catalysis, Elsinore, Denmark, June 2002

27. Fourth International Tokyo Conference on Advanced Catalytic Science and Technology, Tokyo, July 2002
28. SmallTalk 2002 – the Microfluidics, MicroArrays and BioMEMS Conference, San Diego, CA, July
29. Seventh International Conference on Miniaturized Systems for Chemistry and Life Science, Nara, Japan, November 2002
30. Materials Research Society, Fall Meeting, Boston, MA, December 2002
31. Microfluidics Gordon Conference, Montana, MT, August 2003
32. Biomedical Engineering Society, Nashville, TN, October 2003
33. 4th International Forum on Chemistry of Functional Organic Chemicals, Tokyo, Japan, November 2003
34. Symposium on Microchemistry and Microsystem, Tokyo, Japan, November 2003
35. LabAutomation, San Jose, CA, February 2004
36. Frontiers of Technology Forum, Industrial Research Institute, San Ramon, CA, March 2004
37. Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy (PITTCON) Chicago, IL, March 2004
38. Dansk Kemiingeniør Konference (Danish Chemical Engineering Society), Lyngby, Denmark, May, 2004
39. Thermal Management for Micro Power Sources Workshop, Chicago, IL, May 2004
40. Labfusion, Boston, MA, June, 2004
41. Technische Universiteit Eindhoven, Eindhoven, The Netherlands, June 2004
42. 13th Annual Meeting of the Association of Crystallization Technology (ACT), North Chicago, October 2004
43. 4th Netherlands Process Technology Symposium (NPS4), Veldhoven, The Netherlands, October 2004
44. Annual Meeting of the American Institute of Chemical Engineers (AIChE), Austin, TX, November 2004
45. International Symposium on Micro/Nano Thermal and Fluids Systems, Tokyo, Japan, December 2004
46. 18th International Symposium on Microscale Separations and Analysis, New Orleans, February 2005
47. 19th North American Catalysis Society Meeting, Philadelphia, PA, May 2005
48. Biochemical Engineering XIV, Engineering Foundation Conference, Harrison Hot Springs, BC, Canada, July 2005
49. Third European Conference on Combinatorial Chemistry (EuroCombi 3), Winchester, UK, July 2005
50. Catalysis and Biocatalysis in Green Chemistry, Cambridge, UK, December 2005

51. MSB'2006 - 20th International Symposium on Micro-Scale BioSeparations, Amsterdam, January 2006
52. NanoBioSymposium at Nano Tech 2006 in Tokyo, Japan, February 2006
53. Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy (PITTCON) Orlando, FL, March 2006
54. Symposium on Commercializing Academic Innovation, Chemical Heritage Foundation, Philadelphia, PA, March 2006
55. ACHEMA, Frankfurt, Germany, May 2006
56. International Symposium on Microchemistry and Microsystem, Hakone, Japan, June 2006
57. 17th International Congress of Chemical and Process Engineering ,” Prague - Czech Republic, August 2006
58. New Avenues to Efficient Chemical Synthesis - Emerging Technologies, Schering Foundation, Berlin, August 2006
59. Microfluidics: A New Opportunity for Chemistry? l'Ecole Supérieure de Physique et de Chimie Industrielles, CNRS, Paris, France, November 2006
60. Microsystems for Flow Synthesis: Status and Opportunities, Center for Chemical Methodology and Library Development, 8th Annual Symposium, Boston June 2007
61. Manipulation of Colloids and Cells in Microfluidic Systems, Gordon Conference on Physics and Chemistry of Microfluidics, Waterville Valley, NH July 2007
62. Microsystems for Accelerating Chemical Synthesis and Biological Studies, 3rd International Conference on Bioengineering and Nanotechnology, Singapore August 2007
63. Chemical and Biological Microsystems for Discovery and Scaling to Production, First European Process Intensification Conference, Copenhagen, Denmark
64. Microfluidic Systems for Organic Chemical Reaction Engineering Synthesis, Invited lecture in Honor of 50 Years of Contributions of L.K. Doraiswamy, AIChE Annual Meeting, Utah, Nov 2007
65. Microfluidics Accelerating Chemical Synthesis, Microfluidics & Nanofluidics 2008, Cancun, Mexico, February 2008
66. Cell Signaling Studies Enabled by Microfluidic Systems, 22nd International Symposium on Micro-Scale BioSeparations, Berlin March, 2008
67. Microfluidic Synthesis of Nanostructures, 34th International Conference on Micro & Nano Engineering, Athens, Greece, September 2008.
68. Understanding Microreaction Systems through Rutherford Aris' Contributions to Reaction Engineering, AIChE Annual Meeting, Philadelphia, November 2008
69. Chemical And Biological Microsystems, Ichthyologists of Boston (local AIChE Section), December 2008
70. Accelerating Chemical and Biological R&D with Continuous Flow Microsystems, Opening Plenary Address, LabAutomation 2009, Palm Springs, January 2009

71. "Accelerating Chemical and Biological Studies with Continuous Flow Microsystems", Ontario a Chip Symposium, Toronto, Canada May 26, 2009
72. "Flow Chemistry in Green Chemistry", invited talk at the National American Chemical Society in special session on Green Chemistry: Research Advances and Funding Opportunities, Washington DC, September
73. "Microreactors in Discovery and Development: Status and Opportunities," Council for Chemical Research, 2009 New Industrial Chemistry and Engineering (NICHE) Conference, National Institute of Standards and Technology (NIST), Gaithersburg, MD, September
74. ACS ProSpectives: Process Chemistry in the Pharmaceutical Industry, Durham NC, November 2009
75. "Microfluidic Synthesis of Nano Materials at High Pressures and Temperatures," invited talk in honor of Professor James Wei at the Annual AIChE meeting, Nashville, TN, November 2009
76. "From Fuzzy Wires to Microsystems," invited talk in honor of the 70th Birthday of Professor W.H. Ray at the Annual AIChE meeting, Nashville, TN, November 2009
77. "Integrated Mini- and Micro-flow Systems for Chemical Synthesis and Separations," 16th International Process Development Conference (IPDC), Baltimore May 2010
78. "Molecular Engineering: Foundation for Chemical Engineering in the 21st Century," Danish Chemical Engineering Conference, Lyngby, June 2010
79. "Advances in Pharmaceutical Engineering as Applied to Continuous API Manufacturing – An Academic Perspective," AAPS Workshop: Advances and Opportunities in Drug Product Manufacturing - A Look at Continuous Manufacturing Process September 20 - 21, 2010 Baltimore, MD, September 2010
80. "Multistep flow chemistry in micro and meso scale reactors," RSC Symposium on Continuous Processing and Flow Chemistry, November 3-4, 2010, GlaxoSmithKline Stevenage, Herts, UK
81. "Multiphase Flow in Micro and Mini Reactors: Synthesis of Fine Chemicals and Nanoparticles," GSL10, 10th International Conf. Gas-Liquid-Solid Flows, Braga, Portugal June 2011
82. K.F. Jensen, "Process intensification and greening with flow reactors", NSF Workshop on Sustainable Chemistry, Engineering, and Materials (SusChEM), Arlington, VA, Jan 2012
83. K.F. Jensen, "Fundamental concepts in and applications of flow reactors", **Plenary** - 12th International Conference on Microreaction Technology, Lyon, France, Feb 2012
84. K.F. Jensen, "Flow chemistry: optimization, scaling, and applications, **IUPAC Award Plenary**", 2nd International Conference of the Flow Chemistry Society, Munich, Germany, March 2012
85. K.F. Jensen, "Optimization and scale-up of flow chemistry processes", **Plenary** - Flow Chemistry Society Congress, Boston, April 2012
86. K.F. Jensen, "Advances in Pharmaceutical Engineering as Applied to Continuous API Manufacturing- An Academic Perspective", International Association for Pharmaceutical Technology, Graz, Austria, September 2012

Universities:

1. Microtechnology Center, Danish Technical University, Lyngby, July 1999
2. Technical University of Eindhoven, The Netherlands, October 1999
3. University of Akron Polymer Lectures Group, Akron, OH, February 2000
4. Department of Chemical Engineering, University of Arizona, Tucson, AZ, January 2000.
5. Berkeley Lectures, Department of Chemical Engineering, University of California, Berkeley April 2000
6. Department of Chemical Engineering, Stanford University, Palo Alto, CA April, 2000
7. Symposium Solid State Physics, Technical University of Berlin, 60th birthday celebration for Prof. Richter, June 200
8. Department of Chemistry, Technical University of Basel, Basel, Switzerland, September 2000.
9. Department of Chemical Engineering, Carnegie Mellon University, Pittsburgh, October 2000
10. Department of Chemical Engineering, Danish Technical University, Lyngby, Denmark, October 2000
11. Department of Chemical Engineering, University of Pennsylvania, Philadelphia, PA, November 2000
12. Merck Collaboratus Speaker, Department of Chemical Engineering, Rutgers, New Brunswick, NJ, April 2001
13. Kyoto University, Kyoto, Japan, May 2001
14. Department of Chemical Engineering, University of Virginia, Charlottesville, VA, November 2001
15. MESA+, University of Twente, The Netherlands, December 2002
16. L.K. Doraiswamy Lecture, Department of Chemical Engineering, Iowa State University, Ames, Iowa, January 2002
17. Katz Lectures, Department of Chemical Engineering, University of Michigan, April 2002
18. Ralph Peck Memorial Lecture, Illinois Institute of Technology, Chicago, October 2002
19. Bird, Stewart and Lightfoot Lecture, Department of Chemical Engineering, University of Wisconsin, Madison, WI, September 2002
20. Danish Technical University, Lyngby, Denmark, October 2002
21. Department of Chemical Technology, University of Bombay (Part of Indian portion of L.K. Doraiswamy Lecture), Bombay India, March 2002
22. Lacey Lectures, Department of Chemical Engineering, Caltech, Pasadena, CA, March 2003
23. Julian P. Smith Lectures, Department of Chemical Engineering, Cornell University, Ithaca, NY, March 2003
24. Department of Chemical Engineering, University of Illinois, Urbana, IL, October 2003
25. Institute for Biotechnology and Nanotechnology, Singapore, November 2003.
26. Department of Chemical Engineering, University of Toronto, Canada, February 2004.

27. Department of Electrical Engineering, Lund Technical University, Lund, Sweden, April 2004
28. Applied Physics and Chemical Engineering, Delft University, Delft, The Netherlands, October 2004
29. Department of Chemical Engineering, Princeton University, NJ, November 2004
30. Distinguished Lindsay Lecturer, Department of Chemical Engineering, Texas A&M, College Station, April 2005
31. Adams Distinguished Lecture, Department of Mechanical Engineering, Purdue University, Lafayette, IN, September 2005
32. Department of Chemistry, Nagoya University, Japan, Feb.2006
33. Department of Chemical Engineering, UC Riverside, CA, March 2006
34. University of Texas, Austin, TX , April 2006
35. Department of Chemical Engineering, Danish Technical University, Lyngby, April 2006
36. Leermakers Symposium, Wesleyan University, Middleton, CN, May 2006
37. Symposium for John Villadsen, Danish Technical University, Lyngby, Denmark, June 2006
38. Department of Chemical Engineering, Rensselaer Polytechnic Institute, September 2006
39. Department of Chemical Engineering, National University of Singapore, August 2007
40. BIOS-MESA+, Twente University, The Netherlands (Bergveld Lecture), September 2007
41. Department of Chemical Engineering, University of Kentucky, Lexington KY, October 2007
42. Department of Chemical Engineering, Tufts University, Medford, December 2007
43. Department of Process Technology, ETH, Zurich, March 2008
44. Department of Chemical Engineering, UC Berkeley, May 2008
45. Department of Chemical Engineering, University of Minnesota, March 2009
46. Center for Engineering in Medicine and Surgical Services at Massachusetts General Hospital
47. UCLA California NanoSystems Institute, January 2010
48. Department of Chemical Engineering, Auburn University, March 2010
49. Department of Chemical Engineering, UC Santa Barbara, March 2010
50. Department of Chemical Engineering, Gary Lectures, Georgia Tech, April 2010
51. Department of Chemical Engineering, Imperial College, February 2011
52. Department of Chemical Engineering, University of Delaware, Pigford Lecture, September 2011
53. Department of Chemistry and Chemical Engineering, ETH Zurich, November 2011
54. Department of Chemical Engineering, Columbia University, December 2011
55. Department of Chemical Engineering, Texas A&M University, McFerrin Lecture, September 2012
56. Department of Chemical Engineering, Princeton University, R.H. Wilhelm Lectures, October 2012.

Companies and Government Laboratories:

1. Mitsubishi Chemical, Yokohama Research Center, Japan, August 1997
2. Novellus, Santa Clara, November 1997
3. Xerox Palo Alto Research Center, Palo Alto, CA, January 1997
4. Hewlett Packard Research Laboratory, Palo Alto, CA, January 1997
5. Mitsubishi Chemical Corporation, Yokohama Research Center, August 1997
6. Hercules Research Center, Delaware, September 1997
7. Motorola, APRDL, Austin Texas, March, 1998
8. Hewlett Packard OED, San Jose, May 1998
9. British Petroleum Catalyst Colloquium, London UK, June 1998
10. Mitsubishi Chemical Corporation, Yokohama Research Center, Japan, August 1998
11. Catalytica, Santa Clara, California, December 1998
12. Hercules Research Center, Delaware, January 1999
13. Boehringer Ingelheim Pharmaceuticals, New York, March 1999
14. Department of Chemical Technology, ETH Zurich, Switzerland, May 1999
15. Novartis, Basel, Switzerland, May 1999
16. Center for Pharmaceutical Manufacturing, King of Prussia, PA, June 1999.
17. Hewlett Packard Research Laboratories, Palo Alto, CA, June 1999
18. Haldor Topsoe Research Laboratories, Lyngby, Denmark, July 1999
19. Mitsubishi Chemical Corporation," Yokohama Research Center, Japan, September 1999
20. DuPont Experimental Station, Delaware, February 2000
21. Novartis, Basel, Switzerland, September 2000
22. Hercules Research Center, Wilmington, DE, January 2001
23. Dupont, Experimental Station, Wilmington, DE, January 2001
24. Rohm and Hass, Research Center, Philadelphia, PA, January 2001
25. GalaxoSmithKline, Harrow (London), April 2001
26. Syngeta, Jealots Hill (London), April 2001
27. Mitsubishi Chemical Corporation, May 2001
28. Mitsui Chemicals, May 2001
29. Kodak - Weissberger - Williams Lecture Series, Rochester, NY, June 2001
30. Johnson-and-Johnson, MEMS, BioMEMS, Nanotech Company wide symposium, New Brunswick, NJ, June 2001
31. Air Products and Chemicals, Allentown, PA, June 2001

32. Dow Chemical, Midland, MI, October 2001
33. National Chemical Laboratory (Indian portion of L.K. Doraiswamy Lecture), Pune India, March 2002
34. Pfizer Research, New London, CT, June 2002
35. Applied Biosystems, Framingham MA June 2002
36. Asahi Kasei, Kurashiki, Japan, June 2002
37. Daikin, Osaka, Japan, June 2002
38. DuPont Experimental Station, Wilmington, DE, May and August 2002
39. National Institute of Standards and Technology, Gaithersburg, MD, May 2003
40. DuPont, TechCon, Hersey, PA, May 2003
41. UOP/Honeywell, Chicago, IL, June 2003
42. Novartis, Basel, Switzerland, September 2003
43. Merck, Rahway, NJ, June 2004
44. Schering, Berlin, Germany, August 2004
45. Wacker, Munich, Germany, August 2004
46. Merck, Darmstadt, Germany, September 2004
47. National Institute of Standards and Technology, Gaithersburg, MD, October 2005
48. Pfizer, Research Technology Center, Cambridge, MA, December 2005
49. Ebara Corporation, Tokyo, Japan, February 2006
50. NIH-NHLBI & NIMH, Bethesda, Maryland, March 2006
51. Dow Corning, Midland, Michigan, January 2008
52. Arkema, King of Prussia, Pennsylvania, April 2008
53. Eli Lilly, Indianapolis, Indiana, September 2008
54. Merck, Rahway, December, 2009
55. Novartis, Basel, January 2010
56. BP, Sunbury London, January 2010
57. FDA, Internal Workshop on Continuous Manufacturing, March 2010
58. ENI, Milan, June 2010
59. Xerox Distinguished Lecture Series, Missisauga, Ontario, October 2010
60. Eli Lilly, Indianapolis, Indiana, February 2011
61. Novartis, Basel, Switzerland, October 2011
62. Bristol-Myers Squibb, Green Chemistry Symposium, New Brunswick, New Jersey, August 2012