

**Jerry Y. S. Lin**

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**EMPLOYMENT**

Academic Appointment

2011-Pres **Regents' Professor**, Arizona State University  
2009-Pres Professor of Chemical Engineering, and Affiliated Professor of Materials Science and Engineering, School for Engineering of Matter, Transport and Energy, Arizona State University, Tempe, Arizona  
2006-2009 Professor and Department Chair, Department of Chemical Engineering, Arizona State University, Tempe, Arizona  
2005-2006 Professor, Department of Chemical and Materials Engineering, Arizona State University, Tempe, Arizona  
1991-2004 Assistant Professor (1991-1995), Associate Professor (1996-1997), Professor (1998-2004), Dept. of Chemical Engineering, University of Cincinnati, Ohio  
1988-1991 Post-Doctoral Staff Member, Materials Science Group, Chemical Technology Dept., University of Twente, The Netherlands

Other Appointments

2008-Pres. **Editor**, Journal of Membrane Science (Elsevier)  
2012-Pres. Visiting Senior Scientist (Special Expert), State Grid Cooperation of China  
2012-Pres. Science Advisor, Compression Air Energy, Inc  
2006-2011 Director of Board (06-09) and Chairman, Technology Committee, ECotality Inc.  
2005-2010 Adjunct Professor, Dept. of Chemical and Materials Eng., University of Cincinnati, Ohio  
2003-2004 Co-Director, NSF IU/CRC Center for Membrane Applied Science and Technology, University of Cincinnati  
2003-2004 Director, Chemical Engineering Program, University of Cincinnati  
Associate Head, Dept. of Chemical and Materials Engineering, University of Cincinnati  
1998-2003 Director of Graduate Studies, Dept. of Chemical Engineering, University of Cincinnati

Visiting Professorships

2013-Present Distinguished visiting scientist, State Grid Corporation of China (SGCC)  
Spring, 2012 Piercy Distinguished Visiting Professor, Dept. of Chem. Eng. & Mater. Sci., University of Minnesota  
2001-Pres. Cheung Kong Scholar Distinguished Guest Professor, Tianjin University  
1998-2011 Guangbiao Distinguished Guest Professor, Hengyi Distinguished Guest Professor, Zhejiang University, Hangzhou, China  
2006-2009 Bairen Distinguished Guest Professor, South China University of Technology, Guangzhou, China  
2003-2006 Distinguished Visiting Professor, Dalian Institute of Chemical Physics, Dalian, China  
1999-2001 JSPS Fellow Visiting Professor, Dept. Chemical Systems Engineering, University of Tokyo

**EDUCATION**

1992 **Sc.D.** Materials Science, University of Twente, Enschede, The Netherlands  
1988 **Ph.D.** Chemical Engineering, Worcester Polytechnic Inst., Massachusetts  
1985 **M.S.** Chemical Engineering, Worcester Polytechnic Inst., Massachusetts  
1982 **B.S.** Chemical Engineering (Petroleum Eng), Zhejiang University, Hangzhou, China

## **HONORS/RECOGNITION**

- Y.H. Ma Lectureship, Worcester Polytechnic Institute (2016)
- Fellow, American Institute of Chemical Engineers (AIChE) (2013)
- George T. Piercy Distinguished Visiting Professor, University of Minnesota (2012)
- Regents' Professor, Arizona State University (2011)
- Fellow, American Association for the Advancement of Science (AAAS) (2009)
- AIChE Institute Award for Excellence in Industrial Gases Technology (2009)
- Chinese National Science Foundation Researcher Collaboration Award (2003)
- BP Faculty Excellence Award (2002)
- University of Cincinnati College of Engineering Research Award (2002)
- Cheung Kong Scholar (2001)
- Japan Society for Promotion of Science (JSPS) Fellow (1999)
- Sigma Xi Young Investigator Award (1998)
- Exxon Education Foundation Award (1997)
- University of Cincinnati Faculty Achievement Award (1995)
- National Science Foundation CAREER Award (1995)
- University of Cincinnati Outstanding Chemical Engineering Professor (1993)
- National Science Foundation Research Initiation Award (1992)

## **EDITOR OR EDITORIAL BOARD MEMBER**

Editor: Journal of Membrane Science (2008-), Chemical Engineering Series, Imperial College Publishing (2014-). Editorial Board: Journal of Membrane Science (2006-2008); Science Bulletin (2002-2009); Natural Science Progress (2005-2009); Journal of Chemical Engineering of Chinese Universities (1999-2008); Chinese Journal of Applied Chemistry (2001-); Frontiers of Chemical Engineering (Springer) (2006-)

## **TEACHING INTEREST**

Transport Phenomena (Mass, Heat and Moment Transfer)  
Chemical Engineering Thermodynamics  
Chemical Reaction Engineering  
Novel Material Processing Techniques (Sol-Gel Science, CVD Processing. Membrane Science)

## **RESEARCH AREAS/INTEREST**

- **Inorganic Membrane Science**  
(Mesoporous membranes, Microporous membranes, Zeolite membranes, Metal membranes, Dense ceramic membranes)
- **Membrane Catalysis**  
(Membrane reactors for controlling selectivity, Membrane reactor for hydrogen production, Nanostructured membrane reactors)
- **Adsorption**  
(New high temperaturesorbents, Self-assembled synthesis of nanoporous materials, Transport in nanoporous and microporous materials)
- **Ionic Conducting Ceramics and Solid Oxide Fuel Cells**  
(Proton-conducting ceramics, Oxygen ionic conducting ceramics, Proton-conducting solid oxide fuel cells)
- **Energy storage**  
(Batteries, adsorption enhanced energy storage)

SUMMARY OF SCIENTIFIC PUBLICATIONS AND RESEARCH ACTIVITIES:

- Lin has published
  - 275 referred papers in chemical engineering and materials science journals
  - 10 referred book chapters
  - 9 US patents and European patents
  - 54 conference proceeding papers
- Lin's journal papers have been cited over 10108 times (SCI), with SCI h-index of 56 and average citations per article of 35.8, according to ISI Web of Science (Google Scholar Citation 20929 times, h-index 68) (March 15, 2017)
- Lin has given 38 plenary and keynote lectures in conferences, 186 invited seminars, and presented ~195 papers in conferences.
- Lin's fundamental research has been supported by over 85 research grants and contracts totaling over \$18,000,000. Since 1991, his work has been continuously supported by the National Science Foundation.
- Lin supervised over 100 Ph.D., M.S and post-doc [37 Ph.D. dissertations, 33 post-doctoral/visiting scholars; 24 M.S. students; 10 of his Ph.D. students and 3 of his post-doctoral students were placed in academia (2 in the U.S., 2 in Japan, 1 in Australia, and 8 in the rest of the world)].
- Lin is Editor of the Journal of Membrane Science; has organized 9 international conferences or symposia on membranes, including as conference chair (or co-chair) of 1998 North American Membrane Society (NAMS) Annual Meeting, 2004 International Conference on Inorganic Membranes, 2010 Gordon Research Conference on Membranes, and 2013 NAMS Annual Meeting; he is a reviewer for over 50 journals and 20 research funding agencies.

## PUBLICATIONS

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### Refereed Journal Articles (264)

-1989-1993-

1. Y.S. Lin and Y.H. Ma, "A comparative chromatographic study of liquid adsorption and diffusion in microporous and macroporous adsorbents," *Ind. Eng. Chem. Res.*, 28(5), 622-630 (1989)
2. Y.S. Lin and Y.H. Ma, "Analysis of liquid chromatography with nonuniform crystallite particles," *AIChE J.*, 36, 1569-1576 (1990)
3. Y.S. Lin, L.G.J. de Haart, K.J. de Vries and A.J. Burggraaf, "A kinetic study on the electrochemical vapor deposition of solid oxide electrolyte films on porous substrates," *J. Electrochem. Soc.*, 137, 3960-3966 (1990)
4. Y.S. Lin, K.J. de Vries and A.J. Burggraaf, "Thermal stability and its improvement of alumina membranes prepared by sol-gel method," *J. Materials Sci.*, 26, 715-720 (1991)
5. Y.S. Lin, and A.J. Burggraaf, "Preparation and characterization of high-temperature thermally stable alumina membrane composites," *J. Am. Ceram. Soc.*, 74, 219-224 (1991)
6. L.G.J. de Haart, Y.S. Lin, K.J. de Vries and A.J. Burggraaf, "Modified-CVD of nanoscale structure in and EVD of thin layers on porous ceramic membranes," *J. European Ceram. Soc.*, 8, 59-70 (1991)
7. L.G.J. de Haart, Y.S. Lin, K.J. de Vries and A.J. Burggraaf, "On the kinetic study of electrochemical vapour deposition," *Solid State Ionics*, 47, 331-336 (1991)
8. Y.S. Lin and A.J. Burggraaf, "Modelling and analysis of CVD processes in porous media," *Chemical Engineering Sci.*, 46, 3067-3080 (1991)
9. Y.S. Lin, K.J. de Vries, H.W. Brinkman and A.J. Burggraaf, "Oxygen semipermeable solid oxide membrane composites prepared by electrochemical vapor deposition," *J. Membrane Sci.*, 66, 211-226(1992)
10. Y.S. Lin and A.J. Burggraaf, "CVD of solid oxides in porous substrates for membrane modifications," *AIChE J.*, 38, 445-454 (1992)
11. Y.S. Lin, "A theoretical analysis on pore size change of ceramic membranes after modification", *J. Membrane Sci.*, 79, 55-64 (1993)
12. Y.S. Lin and A.J. Burggraaf, "Experimental studies on pore size change of ceramic membranes after modification", *J. Membrane Sci.*, 79, 65-82 (1993)

-1994-

13. Y.S. Lin, W. Wang and J. Han, "Oxygen permeation through dense mixed-conducting oxide membranes", *AIChE J.*, 40, 786-798 (1994)
14. Y.S. Lin, C.H. Chang and R. Gopalan, "Improvement of thermal stability of porous nanostructured ceramic membranes", *Ind. Eng. Chem. Res.*, 33, 860-870 (1994)
15. C.H. Chang, R. Gopalan, Y.S. Lin, "A Comparative study on thermal and hydrothermal stability of alumina, titania and zirconia membranes", *J. Membrane Sci.*, 91, 27-45 (1994)
16. G. Xomeritakis and Y.S. Lin, "CVD of solid oxides in porous media for ceramic membrane preparation or modification. Comparison of Experimental Results with Semi-analytical Solutions", *Ind. Eng. Chem. Res.*, 33, 2607-2617 (1994)
17. G. Xomeritakis and Y.S. Lin, "CVD of solid oxides in porous media for ceramic membrane preparation or modification. Explicit solutions for deposition characteristics", *Chemical Engineering Sci.*, 49, 3909-3922 (1994)

18. J. Han and Y.S. Lin, "An improved analysis on kinetics of electrochemical vapor deposition", *Solid State Ionics*, 73, 255-263 (1994)  
-1995-
19. V. Jayaraman, Y.S. Lin, M. Pakala and R.Y. Lin, "Fabrication of ultrathin metallic membranes on ceramic supports by sputter deposition", *J. Membrane Sci.*, 99, 89-100 (1995)
20. S.G. Deng and Y.S. Lin, "Sol-gel preparation and properties of alumina adsorbents for gas separations", *AIChE J.*, 41, 559-570 (1995)
21. R. Gopalan and Y.S. Lin, "Evolution of pore and phase structure of sol-gel derived lanthana doped titania at high temperatures", *Ind. Eng. Chem. Res.*, 34, 1189-1195 (1995)
22. G.P. Fotou, Y.S. Lin and S.E. Pratsinis, "Hydrothermal stability of pure and modified microporous silica membranes", *J. Materials Sci.*, 30, 2803-2808 (1995)
23. R.Gopalan, C.-H. Chang and Y.S. Lin, "Thermal stability improvement on pore and phase structure of sol-gel derived zirconia", *J. Materials Sci.*, 30, 3075-3081 (1995)
24. W. Wang and Y.S. Lin, "Analysis on oxidative coupling of methane in dense ceramic membrane reactor", *J. Membrane Sci.*, 103, 219-234 (1995)
25. V. Jayaraman and Y.S. Lin, "Synthesis and hydrogen permeation properties of ultrathin palladium-silver alloy membranes", *J. Membrane Sci.*, 104, 251-262 (1995)
26. S.G. Deng and Y.S. Lin, "Sulfur dioxide sorption properties and thermal stability of hydrophobic zeolites", *Ind. Eng. Chem. Res.*, 34, 4063-4070 (1995)  
-1996-
27. G. Xomeritakis, S.E. Pratsinis and Y.S. Lin, "Analysis of ceramic membrane modification by CVD", *Journal of Chemical Vapor Deposition*, 4, 173-196 (1996)
28. P. Huang, N. Xu, J. Shi and Y.S. Lin, "Characterization of asymmetric ceramic membranes by permoporometry", *J. Membrane Sci.*, 116, 301-305 (1996)
29. G. Xomeritakis and Y.S. Lin, "Fabrication of thin palladium membranes supported in porous ceramic substrate by chemical vapor deposition", *J. Membrane Sci.*, 120, 261-272 (1996)
30. Y.S. Lin and Y. Zeng, "Catalytic properties of oxygen semipermeable perovskite type ceramic membrane materials for oxidative coupling of methane", *Journal of Catalysis*, 164, 220-231 (1996)
31. S.G. Deng and Y.S. Lin, "Synthesis, stability and sulphation properties of sol-gel derived regenerative sorbents for flue gas desulfurization", *Ind. Eng. Chem. Res.*, 35, 1429-1437 (1996)  
-1997-
32. S.G. Deng and Y.S. Lin "Granulation of sol-gel derived nanostructured alumina", *AIChE J.*, 43, 505-514 (1997)
33. G. Xomeritakis, J. Han and Y.S. Lin, "Evolution of pore size distribution and average pore size of porous ceramic membrane during modification", *J. Membrane Sci.*, 124, 27-42 (1997)
34. Y. Zeng and Y.S. Lin, "Oxidative coupling of methane on oxygen semipermeable yttria doped bismuth oxide ceramics in reducing atmosphere", *Ind. Eng. Chem. Res.*, 36, 277-283 (1997)
35. S.G. Deng and Y.S. Lin "Microwave heating synthesis of supported sorbents", *Chemical Engineering Sci.*, 52, 1563-1575 (1997)
36. J. Han, G. Xomeritakis and Y.S. Lin, "Oxygen permeation through thin zirconia/yttria membranes prepared by EVD", *Solid State Ionics*, 93, 263-272 (1997)
37. J. Han, Y. Zeng, G. Xomeritakis and Y.S. Lin, "EVD synthesis and oxygen permeation properties of dense zirconia-yttria-ceria membranes", *Solid State Ionics*, 98, 63-72 (1997)
38. S.G. Deng and Y.S. Lin, "Microwave synthesis of mesoporous and microporous alumina powders", *J. Materials Sci. Lett.*, 16, 1291-1294 (1997)
39. Y. Zeng and Y.S. Lin, "Catalytic properties of yttria doped bismuth oxide ceramics for oxidative coupling of methane", *Applied Catalysis A*, 159, 101-117 (1997)

40. Y. K. Kao, L. Lei and Y.S. Lin, "A comparative simulation study on oxidative coupling of methane in fixed-bed and membrane reactors", *Ind. Eng. Chem. Res.*, 36, 3583-3593 (1997)
41. P. Huang, N. Xu, and Y.S. Lin, "Recovery of organic solvents from air by ceramic membranes", *Ind. Eng. Chem. Res.*, 36, 3815-3820 (1997)
42. J. Han, Y. Zeng and Y.S. Lin, "Oxygen permeation through fluorite type bismuth-yttrium-copper oxide membranes", *J. Membrane Sci.*, 132, 235-243 (1997)
43. G. Xomeritakis and Y.S. Lin, "Fabrication of thin metallic membranes by MOCVD and sputtering", *J. Membrane Sci.*, 133, 217-230 (1997)
44. M.V. Chandak, Y.S. Lin, W. Ji and R.J. Higgins, "Sorption and diffusion of VOCs in DAY zeolite and silicalite-filled PDMS membranes", *J. Membrane Sci.*, 133, 231-243(1997)  
-1998-
45. G. Xomeritakis and Y.S. Lin, "CVD synthesis and gas permeation properties of nanostructured palladium-alumina membranes", *AIChE J.*, 44, 174-183 (1998)
46. J. Kim and Y.S. Lin, "Sol-gel synthesis and characterization of yttria stabilized zirconia membranes", *J. Membrane Sci.*, 139, 75-83 (1998)
47. V. Chandak, Y.S. Lin, W. Ji and R.J. Higgins, "Sorption and diffusion of VOCs in poly (dimethylsiloxane) membranes", *J. Appl. Polymer Sci.*, 67, 165-175 (1998)
48. Z-M. Wang and Y.S. Lin, "Sol-gel synthesis of pure and copper oxide coated mesoporous alumina granular particles", *Journal of Catalysis*, 174, 43-51(1998)
49. Y.S. Lin and S.G. Deng, "Removal of trace sulfur dioxide from gas stream by regenerative sorption processes", *Separation and Purification Technology*, 13, 65-77 (1998)
50. Y. Wang and Y.S. Lin, "Sol-gel synthesis and gas adsorption properties of CuCl modified mesoporous alumina", *J. Sol-Gel Sci. Tech.*, 1, 185-195 (1998)
51. M. Pan, G.Y. Meng, C.S. Chen, D.K. Peng, Y.S. Lin\*, "MOCVD synthesis of yttria doped perovskite type SrCeO<sub>3</sub> thin films", *Materials Letters*, 36, 44-47, (1998)
52. J. Dong and Y.S. Lin, "In-situ synthesis of P-type zeolite membrane on porous  $\alpha$ -alumina supports", *Ind. Eng. Chem. Res.*, 37, 2404-2409 (1998)
53. M. Pan, G.Y. Meng, H.W. Xin, C.S. Chen, D.K. Peng, Y.S. Lin, "Pure and doped CeO<sub>2</sub> thin films prepared by MOCVD process", *Thin Solid Films*, 324, 89-93, (1998)
54. Y. Zeng and Y.S. Lin, "A transient TGA study on oxygen permeation properties of perovskite type ceramic membrane", *Solid State Ionics*, 110, 209-221 (1998)
55. M.V. Chandak and Y.S. Lin, "Hydrophobic zeolites as adsorbents for VOC removal", *Environmental Technology*, 19, 941-948 (1998)
56. J. Dong, K. Wegner and Y. S. Lin, "Synthesis of Submicron Polycrystalline Silicalite Films on Porous Ceramic Supports", *J. Membrane Sci.*, 148, 233-241 (1998)
57. Y. Zeng, Y.S. Lin and S.L. Swartz, "Perovskite type ceramic membranes: synthesis, oxygen permeation and membrane reactor performance for oxidative coupling of methane", *J. Membrane Sci.*, 150, 87-98 (1998)
58. Z-M. Wang and Y.S. Lin, "Sol-gel derived alumina supported copper oxide sorbent for flue gas desulfurization", *Ind. Eng. Chem. Res.*, 37, 4675-4681 (1998)
59. J.H. Dong, P. Wang, N.P. Xu, J. Shi, (J)Y.S. Lin, "Modeling of the relationship between pore size distribution and thickness of ceramic MF membranes", *Chinese J. Chem. Eng. (English)*, 6, 222-232 (1998)
60. Y.S. Lin, X. Qi, M. Pan, G. Meng, "Hydrogen energy and solid state fuel cells", *Ionics*, 4, 444-450 (1998)  
-1999-
61. Y. Zeng and Y.S. Lin, "Stability and surface catalytic properties of fluorite-structured yttria doped bismuth oxide under reducing atmosphere", *Journal of Catalysis*, 182, 30-36 (1999)

62. X. Qi and Y.S. Lin, "Electric conducting properties of terbium doped strontium cerate", *Solid State Ionics*, 120, 85-93 (1999)
63. P. Wang, P. Huang, N.P. Xu, J. Shi, Y.S. Lin, "Effects of sintering on properties of alumina microfiltration membranes", *J. Membrane Sci.*, 155, 309-314 (1999)
64. D. Dionysiou, X. Qi, Y. S. Lin, G.Y. Meng, D.K. Peng, "Preparation and characterization of terbium doped SrCeO<sub>3</sub> membranes for proton conduction", *J. Membrane Sci.*, 154, 143-153 (1999)
65. K. Wegner, J. Dong, Y.S. Lin, "Polycrystalline MFI zeolite membranes: xylene pervaporation and its implication on membrane microstructure", *J. Membrane Sci.*, 158, 17-27 (1999)
66. G. Buelna and Y.S. Lin, "Sol-gel derived nano-porous  $\gamma$ -alumina granules", *Microporous and Mesoporous Materials*, 30, 359-369 (1999)
67. Y.S. Lin, W. Ji, Y. Wang, and R.J. Higgins, "Cuprous chloride modified nanoporous alumina membranes for ethylene-ethane separation", *Ind. Eng. Chem. Res.*, 38, 2292-2298 (1999)
68. M. Pan, C. Cooper, Y.S. Lin and G. Y. Meng, "CVD modification and vapor/gas separation properties of nanoporous alumina membranes", *J. Membrane Sci.*, 158, 235-241 (1999)
69. B. McCool, G. Xomeritakis and Y.S. Lin, "Composition control and permeation properties of sputter deposited palladium silver membranes", *J. Membrane Sci.*, 161, 67-76 (1999)
70. S. Li, W. Jin, P. Huang, N. Xu, J. Shi, Y.S. Lin, "Comparison of oxygen permeability and stability of perovskite type La<sub>0.2</sub>A<sub>0.8</sub>Co<sub>0.2</sub>Fe<sub>0.8</sub>O<sub>3- $\delta$</sub>  (A=Sr, Ba, Ca) membranes", *Ind. Chem. Eng. Res.*, 38, 2963-2972 (1999)
71. J. Kim and Y.S. Lin, "Synthesis and preparation of suspension derived porous ionic conducting ceramic membranes", *J. Am. Ceram. Soc.*, 82, 2641-2646 (1999)
72. S. Li, W. Jin, P. Huang, N. Xu, J. Shi, Y.S. Lin, "Experimental and modeling study on tubular perovskite type membranes for oxygen permeation", *AIChE J.*, 45, 2519-2526 (1999)  
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73. J. Kim and Y.S. Lin, "Synthesis and oxygen permeation properties of ceramic-metal dual-phase membranes", *J. Membrane Sci.*, 167, 123-133 (2000)
74. S. Li, W. Jin, P. Huang, N. Xu, J. Shi, Y.S. Lin, "Tubular lanthanum cobaltite perovskite type membranes for oxygen separation", *J. Membrane Sci.*, 166, 51-61 (2000)
75. W. Jin, S. Li, P. Huang, N. Xu, J. Shi, Y.S. Lin, "Tubular lanthanum cobaltite perovskite-type membrane reactors for partial oxidation of methane to syngas", *J. Membrane Sci.*, 166, 13-22 (2000)
76. X. Qi, Y.S. Lin and S.L Swartz, "Electrical transport and oxygen permeation properties of lanthanum cobaltite membranes synthesized by different methods", *Ind. Eng. Chem. Res.*, 39, 646-653 (2000)
77. J. Dong, Y.S. Lin, M.Z. Hu, R.A. Peascoe and E.A. Payzant, "Template removal associated microstructural development of ceramic supported MFI zeolite membranes", *Microporous and Mesoporous Materials*, 34, 241-253 (2000)
78. X. Qi and Y.S. Lin, "Electrical conduction and hydrogen permeation through mixed proton-electron conducting strontium cerate membranes", *Solid State Ionics*, 130 (1-2), 149-156 (2000)
79. J. Kim and Y.S. Lin, "Palladium modified macroporous and mesoporous yttria stabilized zirconia membrane", *Ind. Eng. Chem. Res.*, 39, 2124-2126 (2000)
80. R. Sondhi, Y.S. Lin, W. Zhu, F. Alvarez, " Crossflow filtration of synthetic electroplating wastewater by ceramic membranes using high frequency backpulsing", *Environ. Technol.*, 21, 699-712 (2000)
81. Y.S. Lin, N. Yamamoto, Y. Choi, T. Yamaguchi, T. Okubo, and S.-I. Nakao, "A microscope FTIR mapping study on diffusion of hydrocarbons in single silicalite crystal particles", *Microporous and Mesoporous Materials*, 38, 207-220 (2000)

82. J. Kim and Y.S. Lin, "Synthesis and oxygen permeation properties of thin YSZ/Pd composite membranes", *AIChE J.*, 46, 1521-1539(2000)
  83. R. Sondhi, Y.S. Lin and F. Alvarez, "Crossflow filtration of chromium hydroxide suspension by ceramic membranes: fouling and its minimization by backpulsing", *J. Membrane Sci.*, 174, 111-122 (2000)
  84. Y. Zeng and Y.S. Lin, "Oxygen permeation and oxidative coupling of methane in yttria doped bismuth oxide membrane reactor", *Journal of Catalysis*, 193, 58-64 (2000)
  85. J. Dong, W. Liu and Y.S. Lin, "Multicomponent hydrogen/hydrocarbon separation by MFI-type zeolite membranes", *AIChE J.*, 46, 1957-1966 (2000)
  86. Z. Yang and Y.S. Lin, "Sol-gel synthesis of silicalite/ $\gamma$ -alumina granules", *Ind. Eng. Chem. Res.*, 39, 4944-4948 (2000)
- 2001-
87. G. Buelna and Y.S. Lin, "Preparation of spherical alumina and copper oxide coated alumina sorbents by improved sol-gel granulation process", *Microporous and Mesoporous Materials*, 42, 67-76 (2001)
  88. J. Garcia-Martinez, D. Cazorla-Amoros, A. Linares-Solano, Y.S. Lin, "Synthesis and characterization of zeolites type MFI supported on carbon materials", *Microporous and Mesoporous Materials*, 42, 255-268 (2001)
  89. Y. Zeng and Y.S. Lin, "Oxidative coupling of methane on improved fluorite-structured bismuth oxide membrane reactors", *AIChE J.*, 47, 436-4444 (2001)
  90. Y. Zeng and Y.S. Lin, "Synthesis and properties of copper and samarium doped yttria-bismuth oxide powders and membranes", *J. Materials Sci.*, 36,1271-1276 (2001)
  91. M. Pan and Y.S. Lin, "Template-free secondary growth synthesis of MFI type zeolite membranes", *Micropor. Mesopor. Mater.*, 43, 319-327 (2001)
  92. Y. Zeng, F.T. Akin and Y.S. Lin, "Oxidative coupling of methane on fluorite-structured samarium-yttrium-bismuth oxide", *Appl. Catal. A*, 213, 33-45 (2001)
  93. B.A. McCool and Y.S. Lin, "Nanostructured thin palladium-silver membranes: effects of grain size on gas permeation properties", *J. Materials Sci.*, 36, 3221-3227 (2001)
  94. X. Qi., F.T. Akin, Y.S. Lin, "Ceramic-glass based high temperature seals for dense ionic conducting ceramic membranes", *J. Membrane Sci.*, 193, 185-193 (2001)
  95. Y.S. Lin, "Microporous and dense inorganic membranes: Current status and prospective", *Separation and Purification Technology*, 25, 39-55(2001)
  96. F.T. Akin, Y.S. Lin, Y. Zeng, "A comparative study on oxygen permeation and oxidative coupling of methane in disk-shaped and tubular dense membrane reactors", *Ind. Eng. Chem. Res.*, 40, 5908-5916 (2001)
- 2002-
97. C.A. Cooper and Y.S. Lin, "Microstructural and gas separation properties of CVD modified mesoporous  $\gamma$ -alumina membranes", *J. Membrane Sci.*, 195, 35-50 (2002)
  98. J.C. Diniz Da Costa, G.Q. Lu, V. Rudolph and Y.S. Lin, "Novel molecular sieve silica (MSS) membranes: characterization and permeation of single-step and two-step sol-gel membranes", *J. Membrane Sci.*, 198, 9-21 (2002)
  99. F.T. Akin and Y.S. Lin, "Controlled oxidative coupling of methane on ionic conducting ceramic membrane reactors", *Catalysis Letters*, 78 (1-4), 239-243 (2002)
  100. Z. Yang, Y.S. Lin and Y. Zeng, "High-temperature sorption process for air separation and oxygen removal", *Ind. Eng. Chem. Res.*, 41, 2775-2784 (2002)
  101. L.Y. Piao, Y.D. Li, J.L. Chen, L. Chang, J.Y.S. Lin, "Methane decomposition to carbon nanotubes and hydrogen on an alumina supported nickel aerogel catalyst", *Catalysis Today*, 74(1-2), 145-155, (2002)



102. F.T. Akin and Y.S. Lin, "Oxidative coupling of methane in a dense tubular membrane with high yields", *AIChE J.*, 48 (10), 2298-2307 (2002)
103. F.T. Akin and Y.S. Lin, "Selective oxidation of ethane to ethylene in a dense tubular membrane reactor", *J. Membrane Sci.*, 209, 457-467 (2002)
104. Z. Yang and Y. S. Lin, "A semi-empirical equation for oxygen non-stoichiometry of perovskite-type ceramics", *Solid State Ionics*, 150, 245-254 (2002)
105. Y.S. Lin, I. Kumakiri, B.N. Nair, H. Alsyouri, "Microporous Inorganic Membranes", *Separation and Purification Methods*, 32(2), 229-379 (2002)  
-2003-
106. Z. Ye, H. Alsyouri, S. Zhu, Y.S. Lin, "Catalyst impregnation and ethylene polymerization with mesoporous particle supported nickel-diimine catalyst", *Polymer*, 44, 969-980, (2003)
107. G. Buelna, Y. S. Lin, L. Liu and J.D. Litster, "Structural and mechanical properties of nanostructured granular alumina catalysts", *Ind. Eng. Chem. Res.*, 42, 442-447 (2003)
108. Z. Yang and Y.S. Lin, "Equilibrium of oxygen sorption on perovskite type ceramic sorbents", *AIChE J.*, 49, 793-798 (2003)
109. X. Qi, Y.S. Lin, C.T. Holt, S.L. Swartz, "Electric conductivity and oxygen permeability of modified cerium oxides", *J. Materials Sci.*, 38, 1073-1079 (2003)
110. J. Dong, E. A. Pyzant, M. Z.C. Hu, D. W. DePaoli, and Y.S. Lin, "Synthesis of MFI-type zeolite membranes on porous  $\gamma$ -alumina supports by wet gel crystallization in vapor phase", *J. Materials Sci.*, 38, 979-985 (2003)
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241. H.B. Wang, X.L. Dong and Y.S. Lin, "Highly stable bilayer MFI zeolite membranes for high temperature hydrogen separaton", *J. Membr. Sci.*, 450, 425-432 (2014)

242. S. Seshadri and Y.S. Lin, "Defect-sealing synthesis of vertically oriented ordered mesoporous silica membranes", *J. Mater. Sci.*, 49, 905-914 (2014)
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244. C. Ji, Y. Tian, Yongdan Li and Y.S. Lin, "Thin oriented AFI zeolite membranes for molecular sieving separation", *Micropor. Mesopor. Mater.*, 186, 80-83 (2014)
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246. H. Yin, J. Wang, Z. Xie, J. Yang, J. Bai, J. Lu, Y. Zhang, D. Yin, J.Y. S. Lin, "Highly permeable and selective amino-functionalized [Al(OH)(OCH)<sub>3</sub>](H<sub>2</sub>N-BDC)<sub>2</sub>·xH<sub>2</sub>O CAU-1 membrane for CO<sub>2</sub>/N<sub>2</sub> separation", *Chem. Commun.*, 50, 3599-3701 (2014)
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248. T.T. Norton and Y.S. Lin, "Ceramic-carbonate dual-phase membrane with improved chemical stability for carbon dioxide separation at high temperature", *Solid State Ionics*, 263, 172-179 (2014)
249. B. Lu, Y.S. Lin, "Asymmetric thin samarium doped cerium oxide-carbonate dual-phase membrane for carbon dioxide separation", *Ind. Eng. Chem. Res.*, 53, 13459-13466 (2014)
250. Y. Liu, A. Kasik, N. Linneen, J. Liu, Y.S. Lin, "Adsorption and diffusion of carbon dioxide on ZIF-68", *Chem. Eng. Sci.*, 118, 32-40 (2014)
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252. A. Kasik, X. Dong, Y.S. Lin, "Synthesis and Stability of Zeolitic Imidazolate Framework-68 Membranes", *Micropor. Mesopor. Mater.*, 204, 99-105 (2015)
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254. Y.S. Lin, "Metal organic framework membranes for industrial separation applications", *Curr. Opin. Chem. Eng.*, 8, 21-28 (2015)
255. X. L. Dong, H.B. Wang, Z. Rui, Y.S. Lin, "Tubular dual-layer MFI zeolite membrane reactor for hydrogen production from water-gas shift reaction: Experimental and modeling studies", *Chem. Eng. J.* 268, 219-229 (2015)
256. H. Zhang, D. Liu, Y. Yao, B. Zhang, Y.S. Lin, Stability of ZIF-8 Membranes and Crystalline Powders in Water at Room Temperature, *J. Membr. Sci.*, 485, 103-111 (2015)
257. Y. Liu, J. Liu, Y.S. Lin, Strong binding site molarity of MOFs and its effect on CO<sub>2</sub> adsorption, *Micropor. Mesopor. Mater.*, 8, 21-28 (2015)
258. C.L. Eggen, P.M. McAfee, Y. Jin, Y.S. Lin, "Surface Roughness and Chemical Properties of Porous Inorganic Films", *Thin Solid Films*, 591, 111-118 (2015)
259. X. Ma, S. Williams, X. Wei, J. Kniep, Y.S. Lin, "Propylene/Propane Mixture Separation Characteristics and Stability of Carbon Molecular Sieve Membranes", *Ind. Eng. Chem. Res.* 54, 9824-9831 (2015)
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261. X. Ma, Y.S. Lin, X. Wei, J. Kniep, "Ultra-thin Carbon Molecular Sieve Membrane for Propylene/Propane Separation", *AIChE J.*, 62, 491-499 (2015)



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262. Y. Jin, Z. Rui, T. Ye, Y.S. Lin, Y.D. Li, "Autothermal Reforming of Ethanol in Dense Oxygen Permeation Membrane Reactor", *Catal. Today*, 264, 214-220 (2016)
263. X.L. Dong, W. Mi, Y. Jin and Y.S. Lin, "Zeolite coated polypropylene separators with tunable surface properties for lithium-ion batteries", *Mesopor. Micropor. Mater.*, 226, 406-414 (2016) (2015)
264. A. Kasik, J. B. James, Y.S. Lin, "Synthesis of ZIF-68 Membrane on a ZnO Modified  $\alpha$ -Alumina Support by a Modified Reactive Seeding Method", *Ind. Eng. Chem. Res.*, 55, 2831-2839 (2016)
265. L. Yu, Y. Jin, Y.S. Lin, Ceramic Coated Polypropylene Separators for Lithium-Ion Batteries with Improved Safety: Effects of High Melting Point Organic Binder", *RSC Advances*. 6, 40002-40009 (2016)
266. Y. Liu, J. Hu, X.L. Ma, J. Liu, Y. S. Lin, "The Mechanism of CO<sub>2</sub> Adsorption in Mg/DOBDC at High CO<sub>2</sub> Loading", *Fuel*, 181, 340-346 (2016)
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268. J.B. James, Y.S. Lin, "Kinetics of ZIF-8 Thermal Decomposition in Inert, Oxidizing and Reducing Environments", *J. Phys. Chem. C*, 120, 14015-14026 (2016)
269. J.Y.S. Lin, "Molecular sieves for gas separation", *Science*, 353, 121-122 (2016)
270. A. Ibrahim, Y.S. Lin, Pervaporation separation of organic mixtures by MOF-5 membranes", *Ind. Eng. Chem. Res.*, 55, 8652-8659 (2016)
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273. H. Zhang, J.B. James, M. Zhao, Y. Yao, Y. Zhang, B. Zhang, Y.S. Lin, "Improving Hydrostability of ZIF-8 Membranes via Surface Ligand Exchange", *J. Membr. Sci.*, 532, 1-8 (2017)
274. J.B. James, Y.S. Lin, "Thermal Stability of ZIF-8 Membranes for Gas Separations", *J. Membr. Sci.*, 532, 9-10 (2017)
275. L. Yu, J. Miao, Y. Jin and Y.S. Lin, "A Comparative Study on Coating Polypropylene Separator with Different Inorganic Materials for Lithium-Ion Batteries", *Frontier Chem. Sci. & Eng.*, 11, 346-352 (2017)
276. G. Sharma, Y. Jin, Y.S. Lin, "Lithium Ion Batteries with Alumina Separator for Improved Safety", *J. Electrochem. Soc.*, 164, A1184-A1191 (2017)
277. H.-C. Wu, Y.S. Lin, "Air Separation by Perovskite Sorbents with Oxygen Vacancy Order-Disorder Phase Transition", *Ind. Eng. Chem. Res.*, 56, 6057-6064 (2017)
278. T. Chen, B. Yu, Y. Zhao, Y.Li, Y.S. Lin, "Carbon Dioxide Permeation through Ceramic-carbonate Dual-Phase Membrane-Effects of Sulfur Dioxide", *J. Membr. Sci.*, 254, 477-484 (2017)
279. J. James, J. Wang, L. Meng, Y.S. Lin, "ZIF-8 Membrane Ethylene/Ethane Transport Characteristics in Single and Binary Gas Mixture", *Ind. Eng. Chem. Res.*, 56, 7567-7575 (2017)

280. S. Liu, L.-C. Ma, C.-H. Chen, C. Chen, Y.S. Lin, "Highly gas permeable, ultrathin Teflon AF2400/ $\gamma$ -alumina composite hollow fiber membranes for dissolved gas analysis", *J. Membr. Sci.*, 540, 243-250 (2017)

#### Book Chapters (10)

1. Y.S. Lin and S.G. Deng, "Sol-gel preparation of nanostructured adsorbents", in "Adsorption and its application in industry and environmental protection", Ed. A. Dabrowski, Elsevier, *Stud. Surf. Sci. Catal.*, 120: 653-686 Part A (1999)
2. Y.S. Lin and R Buxbaum, "Metal membranes", Encyclopedia of Separation Science, Eds I.D. Wilson, D.R. Adlard, M. Cooke and C.F. Poole, Academic Press, London, pp.3365-3372 (2000)
3. Y.S. Lin, "Sol-gel thin film synthesis and properties of sorbents and catalysts", in "Functional Thin Films and Functional Materials", D. Shi (Ed.), TUP Press and Springer, Berlin, Chap.2, pp53-85 (2003)
4. V. K. Gupta, and Y.S. Lin, "Proton-conducting ceramic membranes", in "Dense ceramic membranes", Eds, A. Sammauls and M.V. Mundscha, Wiley-VCH, pp.49-76 (2006)
5. J. O'Brien-Abraham and Y.S. Lin "Zeolite membrane separations", in "Zeolites in Industrial Separation and Catalysis", S. Kulprathipanja (Ed), Wiley-VCH, pp.307-327 (2010)
6. Y.S. Lin and S. Seshadri, "Preparation chemistry of inorganic membranes", in "Modern Inorganic Synthetic Chemistry", Eds. R. Xu, W. Yan, W. Pang, Q. Huo, Elsevier, Chapter 22, pp.507-524 (2011)
7. J. Kniep and Y.S. Lin, "Oxygen- and hydrogen-permeable dense ceramic membranes", in "Solid State Electrochemistry I, Fundamentals, Materials and Their Applications", Ed V.V. Kharton, Springer, Chapter 10, pp.467-500 (2011)
8. B. Zhu, M. Duke, B.P. Ladewig, J. C. D. da Costa, Y.S. Lin, "Ceramic membranes for molecular level separations in gas and liquid processing", Encyclopedia of chemical Processing, Taylor & Francis, pp.1-16, (2010).
9. J. O'Brien-Abraham, M. Duke and Y.S. Lin, "Xylene separation performance of composition-gradient MFI zeolite membranes", in "Inorganic, Polymeric and Composite Membranes – Structure, Function and Other Correlations", Eds. S.T. Oyama and S.M. Stagg-Williams, Elsevier, pp.195-212 (2011)
10. H.B. Wang, X.L. Dong, Y.S. Lin, "Membrane reactors for hydrogen production from coal" in "Membrane Reactors for Energy Applications and Basic Chemical Production", Elsevier, pp.143-186 (2015)

#### Patents (9)

1. A.J. Burggraaf and Y.S. Lin, "Method for Manufacturing Ultrathin Inorganic Membranes", *U.S. Patent* 5,160,618 (Issued Nov.3, 1992)
2. M.B.J. Huis in't Veld, R.J.R. Uhlhorn, Y.S. Lin, K. Keizer, A.J. Burggraaf, "Porous inorganic composite semipermeable membrane and a method of preparation", *US Patent* 5,160,617 (Issued Nov.3, 1992)
3. A.J. Burggraaf, M.B.J. Huis in't Veld, K. Keizer Y.S. Lin, R.J.R. Uhlhorn, "Composite inorganic porous semipermeable membranes and process for its preparation", *European Patent* 0451755 (Oct.16., 1991)
4. A.J. Burggraaf and Y.S. Lin, "Method for Manufacturing Ultrathin Inorganic Membranes", *European Patent* 050049 (July7, 1993)
5. Y.S. Lin, D.L. MacLean and Y. Zeng, "High Temperature Adsorption Process", *US Patent* 6,059,858 (Issued May 9, 2000).

6. D.R. Acharya, F.R. Fitch, R.H. Clarke, Y.S. Lin, D.L. MacLean, R. Ramachandran, N. Ramprasad, S.S. Tamhankar, Y. Zeng, "Oxy-fuel Combustion Processes", *European Patent* 1327823 (Aug., 10, 2003)
7. Y.S. Lin, D.L. MacLean and Y. Zeng, "Elevated Temperature Adsorption Process", *European Patent* 0913184 (April 12, 2006)
8. Y. Zeng, D.R. Acharya, S.S. Tamhankar, N. Ramprasad, R. Ramachandran, F.R. Fitch, D.L. MacLean, J.Y.S. Lin, R.H. Clarke, "Oxy-fuel Combustion Processes", *US Patent*, 7,303,606 (Issued Dec.4, 2007)
9. J.Y.S. Lin, J. Ortiz-Landeros, X.L. Dong, "Tubular ceramic-carbonate dual-phase membranes and methods of manufacture thereof", *US Patent* 9327231 (May 3, 2016)

## SELECTED SCIENTIFIC PRESENTATIONS

### Plenary, Keynote or Invited Lectures in Conferences

1. Y.S. Lin, "Fabrication of ceramic supported ultrathin metallic membranes by sputtering and chemical "Pore size change of ceramic membranes after modification", Invited Lecture, 1992 *Spring Meeting of Materials Research Society, San Francisco, April 27-May 1, 1992*
2. Y.S. Lin, "Oxygen permeable dense ceramic membranes: synthesis, oxygen permeation and surface catalytic properties", Invited Lecture, *North American Membrane Society Meeting, Portland, Oregon, May 20-24, 1995*
3. Y.S. Lin, "Fabrication of ceramic supported ultrathin metallic membranes by sputtering and chemical vapor deposition", Keynote Lecture, *1996 International Congress on Membranes, Yokohama, Japan, Aug.19, 1996*
4. Y.S. Lin, "Microporous and dense inorganic membranes: current status and prospective", **Plenary Lecture**, *6<sup>th</sup> Internl. Conference on Inorganic Membranes, Montpellier, France, June 27, 2000*
5. Y.S. Lin "Mesoporous and microporous inorganic membranes: current status and prospective", Keynote Lecture, *Chemeca 2000, Workshops on Nanomaterials, Perth, Australia, July 9-12, 2000*
6. Y.S. Lin (co-authored F.T. Akin), "Oxidative coupling of methane and oxygen permeation on fluorite structured dense ceramic membranes", Keynote Lecture, *7<sup>th</sup> International Conf. on Inorganic Membranes, Dalian, China, June 23-26, 2002*
7. Y.S. Lin, "High temperature adsorption processes with perovskite-type oxide sorbents", Keynote Lecture, *4<sup>th</sup> Pacific Basin Conference on Adsorption Science and Technology, Tianjin, China, May 22-25, 2006*
8. Y.S. Lin, "Synthesis of vertically oriented ordered mesoporous inorganic membranes: progress and challenges", Invited Lecture, *Gordon Research Conference, Membranes: Materials & Processes, New London, NH, August 6-11, 2006*
9. Y.S. Lin, "Microporous and dense inorganic membranes", Invited Lecture, *AICHE Annual Meeting, paper 83b, San Francisco, CA, Sept. 12-18, 2006*
10. Y.S. Lin (co-authored M. Kanezashi), "Gas permeation and diffusion in small and intermediate pore zeolite membranes", Keynote Lecture, *15<sup>th</sup> International Zeolite Conference, Beijing, China, Aug.12-17, 2007*
11. Y.S. Lin, "Microporous membranes for gas separation", Keynote Lecture, *8<sup>th</sup> International Conference on Catalysis and Membrane Reactors, Calcutta, India, Dec. 17-27, 2007*
12. Y.S. Lin (co-authored M. Kanezashi, J.L. O'Brien-Abraham), "High temperature gas permeation characteristics of MFI and DDR type zeolite membranes", Keynote Lecture, *2008 International Conference on Membranes and Membrane Process (ICOM2008), Waikiki, Hawaii, July 12-18, 2008*
13. Y.S. Lin, "High temperature inorganic membranes for uses in energy production and carbon dioxide capture", **Plenary Lecture**, *Symp. Advanced Chemical and Membrane Technology –*

- Growth Opportunities in Pharmaceuticals & Life Sciences, Water Reuse, Desalination, and Energy Applications*, National University of Singapore, Singapore, May 5-6, 2009
14. Y.S. Lin, “Zeolite membranes for gas separation - relationship between structure and gas permeation properties”, Keynote Lecture, *ACS National Meeting*, San Francisco, Ca, March 18-24, 2010
  15. Y.S. Lin, “Gas and liquid permeation through zeolite membranes”, **Plenary Lecture**, *Sino-German Conference on Inorganic Membranes with Nano-Design*, Guangzhou, China, March 22-25 (2010)
  16. Y.S. Lin (co-authored Z.X. Zhao, T. Rosa, Z. Li), “Secondary growth synthesis and gas permeation properties of metal organic framework membranes”, Keynote Lecture, *2010 International Zeolite Membrane Meeting*, Loutraki, Greece, May 23-27, 2010
  17. Y.S. Lin, “Zeolite membranes for high temperature gas separations”, **Plenary Lecture**, *2010 Chemical Engineering Conference*, Amman, Jordan, Oct.10-13, 2010
  18. Y.S. Lin, “Inorganic membranes for power generation and carbon dioxide capture”, **Plenary Lecture**, *6<sup>th</sup> Conference of Aseanian Membrane Society/7<sup>th</sup> International Membrane Science and Technology Conference*, Sydney, Australia, Nov.22-26, 2010
  19. Y.S. Lin, “Inorganic membranes for carbon dioxide capture”, Keynote lecture, *2011 International Symposium on Inorganic Membranes*, Hiroshima, Japan, Jan.7, 2011
  20. Y.S. Lin, “Microporous crystalline inorganic membranes for gas separation”, **Plenary Lecture**, *2011 Taiwan International Conference on Membranes*, Chungyi, Taiwan, May 26, 2011
  21. Y.S. Lin, “High Temperature Proton-Conducting Ceramic Membranes for Process Intensification” **Plenary Lecture**, *International Conference on Process Intensification*, Beijing, China, June 26-29, 2011
  22. Y.S. Lin, “Ceramic-carbonate dual-phase membrane for high temperature carbon dioxide separation”, Keynote lecture, *International Conference on Membrane Materials and Processes (ICOM2011)*, Amsterdam, Netherland, July 24-29, 2011
  23. Y.S. Lin, “Zeolite membranes for separation and reaction: from dream to reality”, **Plenary lecture**, *16<sup>th</sup> National Zeolite Conference*, Beijing, China, Oct.9-13, 2011
  24. Y.S. Lin, “Adsorption on Silica Aerogels and Metal Organic Frameworks”, Keynote lecture, *6<sup>th</sup> Pacific Basin Conference on Adsorption Science and Technology (PBAST6)*, Taipei, Taiwan, 20-23 May, 2012
  25. Y.S. Lin (with A. Kasik, F. Zhao and R. Pfeffer) “Pervaporation and gas separation properties of thin metal organic framework membranes”, **Keynote Lecture**, *2012 International. Conf. on Inorganic Membranes*, Enschede, Netherlands, July 10-14, 2012
  26. Y.S. Lin (with H.B. Wang) “Highly stable MFI zeolite membranes for membrane reactor applications”, **Keynote Lecture**, *2012 Internat. Conf. on Inorganic Membranes*, Enschede, Netherlands, July 10-14, 2012
  27. Y.S. Lin, (with N. Tyler, J. Ortiz-Landers, B. Lu), “High Temperature Membranes for Carbon Dioxide Separation”, **Invited Lecture**, *ECI Conference : Advanced Membrane Technology*, Singapore, Oct.14-19, 2012
  28. Y.S. Lin, “Energy Storage”, **Dinner Speaker**, Chinese American Chemical Society Banquet, *AIChE Annual Meeting*, Pittsburgh, Penn, Oct.29, 2012
  29. Y.S. Lin, “Inorganic membranes for carbon dioxide capture”, **Plenary Lecture**, *International Conf. New Separation Technology and Materials Development*, Zibo, China, Dec.7-9, 2012
  30. Y.S. Lin, “Microporous carbon and ZIF-8 membranes for propylene/propane separation”, **Plenary Lecture**, *International Zeolite Membrane Meeting*, Jeju, South Korea, June 16-20, 2013
  31. Y.S. Lin, Carbon Dioxide Perm-Selective Ceramic-Carbonate Dual-Phase Membranes, **Plenary Lecture**, *13<sup>th</sup> International Conference on Inorganic Membranes (ICIM2014)*, Brisbane, Australia, July 6-9, 2014

32. Y.S. Lin, Ceramic-Carbonate Membrane Reactors for Chemical Reactions with Carbon Dioxide Separation, **Keynote Lecture**, 10<sup>th</sup> International Congress on Membranes and Membrane Processes (ICOM2014), Suzhou, China, July 20-25, 2014
33. Y.S. Lin, "Membranes for energy and environmental uses", **Plenary Lecture**, Frontier in Chemical Engineering – the 7<sup>th</sup> Global Chinese Chemical Engineers Symposium, Tianjin, China, July 14, 2015
34. Y.S. Lin, "Mesoporous Inorganic Membranes for Conventional and Non-Conventional Applications", **Keynote Lecture**, 9<sup>th</sup> International Mesoporous Materials Symposium (IMMS9), Brisbane, Australia, Aug.17-20, 2015
35. Y.S. Lin, "Perovskite Structured Metal Oxide Sorbents with Oxygen Vacancy Order-Disorder Transition for High Temperature Air Separation", **Keynote Lecture**, 8<sup>th</sup> Sino-US Chemical Engineering Conference, Shanghai, China, Oct.11-15, 2015
36. Y.S. Lin, "Carbon Dioxide Permeation Properties of Samarium-Doped-Ceria Carbonate Dual-Phase Membranes", **Keynote Lecture**, 8<sup>th</sup> Sino-US Chemical Engineering Conference Shanghai, China, Oct.11-15, 2015
37. Y.S. Lin, "Mixed-Conducting Ceramic Membranes for Separation and Chemical Reaction Applications", **Plenary Lecture**, 2016 International Conference on Inorganic Membranes, Atlanta, GA, July 10-13, 2016
38. Y.S. Lin, "Stability of ZIF-8 Membranes in Aqueous Solution and Gas Phase", **Keynote Lecture**, 2016 International Zeolite Membranes Meeting, Dalian, China, Aug.20-23, 2016

### **Invited Seminars**

1. "Ceramic membranes and their preparation and modification by CVD", Air Products & Chemicals Co., Research Center, Allentown, Penn., USA, Aug.29, 1990
2. "Preparation and modification of ceramic membranes by CVD", Texaco Research Center, Beacon, NY, USA, Aug.31, 1990
3. "Applications of membranes in gas separation and food industries", Nestlè Westreco, Inc., Marysville, Ohio, USA, Oct.15, 1990
4. "Ceramic membrane research for methane conversion applications", Amoco Research Center, Naperville, Illinois, February 9, 1993
5. "Ceramic membrane for gas separations", Westinghouse Science and Technology Center, Pittsburgh, Pennsylvania, March 4, 1993
6. "Preparation of porous and dense ceramic membranes", Department of Materials Science, University of Cincinnati, April 2, 1993
7. "Porous and dense ceramic membranes", Department of Materials Science, University of Science and Technology of China, Hefei, China, September 3, 1993
8. "Ceramic membranes and their R and D", Department of Chemical Technology, South China University of Technology, Guangzhou, China, September 13, 1993
9. "Ceramic membranes for gas separation", Department of Materials Science, Zhejiang University, Hangzhou, September 15, 1993
10. "Ceramic membranes: a grain surface coating method for property improvement", Department of Chemical and Nuclear Engineering, University of New Mexico, Albuquerque, NM, Oct., 26, 1993
11. "Chemical vapor deposition in porous media for inorganic membrane fabrication", Department of Chemical Engineering, Purdue University, West Lafayette, Indiana February 24, 1994,

12. "Ceramic membranes and their uses in environmental processes", Water and Hazardous Waste Treatment Research Division, US EPA, Cincinnati, Ohio, Sept.20, 1994
13. "Sol-Gel synthesis and properties of ceramic membranes and adsorbents", Department of Chemical Engineering, Ohio University, Athens, Ohio, Nov.9, 1994
14. "Sol-gel synthesis of porous adsorbents for gas separation", The BOC Technical Center, Murray Hill, NJ, Feb.2, 1995
15. "Synthesis and properties of ceramic supported ultrathin metallic membranes", Dept. of Chem. Eng., University of Houston, March 10, 1995
16. "Advanced on ceramic membrane research", Department of Materials Science, University of Science and Technology of China, Hefei, Sept., 9, 1995
17. "Synthesis, surface properties and gas permeation of dense inorganic metallic membranes", Department of Chemical Engineering, Nanjing University of Chemical Technology, Nanjing, Sept. 15, 1995
18. "Synthesis and hydrogen permeation through ceramic supported ultrathin metallic membranes", Department of Chemical Engineering, Hong Kong University of Science and Technology, Hong Kong, Sept. 18, 1995
19. "Tailor-designed inorganic materials for separation", Air Products and Chemicals Inc., Allentown, Penn, June 25, 1996
20. "Fabrication of ultrathin metallic membranes by sputter deposition and chemical vapor deposition", The BOC Technical Center, Murray Hill, NJ, July 10, 1996
21. "Ceramic membranes and their applications in food industries", Nestle Research Center, Maryville, Ohio, Aug.9, 1996
22. "CVD fabrication of ceramic-supported metallic membranes", Nanjing University of Chemical Technology, Nanjing, China, Sept., 1, 1996
23. "Mixed-conducting ceramics: catalytic properties and membrane reactor applications for oxidative coupling of methane", Exxon Corporate Research, Annandale, NJ, Oct., 23, 1996
24. "Mixed-conducting perovskite type ceramic membranes: surface catalytic properties for oxidative coupling of methane", Department of Chemical Engineering, University of Massachusetts, Amherst, Feb. 6, 1997
25. "High temperature oxygen separation by sorption process", The BOC Technical Center, Murray Hill, NJ, April 18, 1997
26. "Mixed-conducting ceramics: oxygen permeation and surface catalytic properties", Department of Chemical Engineering, The Ohio State University, Columbus, Ohio, May 1, 1997
27. "Inorganic Membrane Synthesis", North American Membrane Society Workshop, Baltimore, MD, June 1, 1997
28. "Ultrathin metallic membranes by chemical vapor deposition", Chemical Technology Division, Oak Ridge National Laboratory, Oak Ridge, TENN, Sept., 16, 1997
29. "Nanostructured materials for membrane applications", Dept. of Materials Science, University of Cincinnati, Cincinnati, Ohio, Oct. 17, 1997
30. "Inorganic membranes", United Technologies Co. Research Center, Hartford, Conn., Oct.27, 1997
31. "Mixed-Conducting Ceramic Membranes", BCC Membrane Conference on Technology/Planning, Boston, Mass., Oct.28, 1997
32. "CVD Preparation of ultrathin metallic membranes", Dept. of Chem. Eng., Hong Kong University of Science and Technology, Hong Kong, Dec.12, 1997
33. "Inorganic membranes, recent development and future challenges", Dept. of Materials Science, University of Science and Technology of China, Hefei, China, Dec.17, 1997
34. "Recent development and future challenges of inorganic membranes", The BOC Technical Center, Murray Hill, NJ, Jan.29, 1998

35. "Synthesis of ultrathin metallic membranes for hydrogen separation", Dept. Chem. Eng., University of Toledo, OH, March 6, 1998
36. "Nanostructured ceramic adsorbents", Dept. Chem. Eng., University of Tokyo, Tokyo, June 22, 1998
37. "Inorganic membrane research", University of Science and Technology of China, Hefei, China, July 1, 1998
38. "Metallic membranes for hydrogen separation", Dalian Institute of Chemical Physics, Dalian, China, July 3, 1998
39. "Dense ceramic membranes for oxidative coupling of methane", Dalian Institute of Chemical Physics, Dalian, China, July 3, 1998
40. "Dense inorganic membranes for methane conversion", CANMET Natural Gas Consortium Workshop on Methane Conversion, Milan, Italy, Sept. 28, 1998
41. "Tailor-designed nanostructured inorganic membranes for gas separation applications", Sigma Xi Young Investigator Award Lecture, University of Cincinnati, Nov.12, 1998
42. "Synthesis of ultrathin metallic membranes for hydrogen separation", Institute of Membrane Science and Technology, Nanjing Univ. Chemical Technology, Nanjing, China, Nov.18, 1998
43. "Zeolite membranes", Dept. of Materials Science, Univ. of Science and Technology of China, Hefei, Dec.29, 1998
44. "Ceramic supported zeolite membranes", Nanjing Univ. Chemical Technology, Nanjing, China, Dec.30, 1998
45. "Nanostructured materials for separation", Dept. of Chemical Engineering, Tsinghua University, Beijing, Jan.5, 1999
46. "Recent Development in inorganic membranes", Dept. of Chemical Engineering, Tianjin University, Tianjin, China, Jan.6, 1999
47. "Recent development in inorganic membranes: metallic and zeolite membranes", Dept. of Chemical Engineering, Zhejiang University, Hangzhou, China, Jan. 14, 1999
48. "Hydrophobic zeolite membranes", BOC Technical Center, Murray Hill, New Jersey, Feb.16, 1999
49. "Synthesis and properties of ultrathin metallic membranes", Department of Industrial Chemistry, Seikei University, Tokyo, Japan, April 15, 1999
50. "Hydrophobic MFI zeolite membranes: template removal associated microstructure development", Dept. of Chemical and Environmental Engineering, National University of Singapore, Singapore, April 29, 1999
51. "Microstructure of zeolite membrane", Japan Fine Ceramic Center, Nagoya, Japan, May 11, 1999
52. "Template removal associated microstructural development of MFI membranes", Dept. of Chemistry, Chiba University, Chiba, Japan, May 19, 1999
53. "Inorganic membrane synthesis", Workshops in 1999 International Congress on Membranes, Toronto, Canada, June 12, 1999
54. "Synthesis and microstructural properties of thin metallic membranes", Dept. of Chemical Engineering, Hiroshima University, Hiroshima, Japan, June 28, 1999
55. "Thin dense metallic membranes", Dept. of Applied Chemistry (Morooka's lab), Kyushu University, Fukuoka, Japan, June 29, 1999
56. "Hydrophobic zeolites and effects of template removal on their microstructure", Japan Society of Catalysis, Microporous Materials Synthesis Seminar Series, Tokyo, Japan, July 6, 1999
57. "Synthesis and oxygen permeation properties of thin dual phase mixed-conducting inorganic membranes", Dept. Chemical and System Engineering, University of Tokyo, Tokyo, Japan, July 23, 1999
58. "Thin dual-phase inorganic membranes for oxygen separation", Dept. of Chemical Engineering, New Jersey Institute of Technology, Newark, NJ, Nov.22, 1999

59. "Proton-conducting ceramic membranes", Dept. of Chemical Engineering, Case Western Reserve University, Cleveland, Oh, April 25, 2000
60. "Proton-conducting dense ceramic membranes: synthesis and properties", Department of Chemical Processes Engineering, Swiss Federal Institute of Technology (ETH), Zurich, Switzerland, June 30, 2000
61. "Microporous inorganic membranes", Dept. of Chemical Engineering, University of Queensland, Brisbane, Australia, July 20, 2000 (two more other lectures in the same university)
62. "Anisotropic diffusion in zeolite particles by microscope FTIR", Dept. of Chemical Engineering, South China University of Technology, Guangzhou, China, Aug.5, 2000
63. "Anisotropic diffusion in zeolite particles", Dept. of Chemical Engineering, Xiamen University, Xiamen, China, Aug.6, 2000
64. "Zeolite membrane and diffusion in zeolite particles ", Dept. of Chemical Engineering, Tianjin University, Tianjin, China, Aug.14, 2000
65. "CVD modification of nanoporous alumina membranes", Dept. of Chemical Engineering, University of Colorado, Boulder, Colorado, Nov.30, 2000
66. "Nanoporous ceramic membranes", Brockhouse Institute for Materials Research, McMaster University, Hamilton, Ontario, Canada, December 11, 2000
67. "Current Status of Microporous and Dense Inorganic Membranes", The BOC Gases Research Center, Murray Hill, NJ, December 21, 2000
68. "Microporous and dense inorganic membranes", Chemical and Biological Defense Sorbent and Filtration Workshop, Nashville, TN, April 18, 2001
69. "Inorganic membrane synthesis", North American Membrane Society Workshops, Lexington, Ky, May 19-20, 2001
70. "Microstructure of polycrystalline zeolite membranes", Dalian Institute of Chemical Physics, Dalian, China, July 27, 2001
71. "Zeolite membranes", Chemistry Dept., Jilin University, Changchun, China, July 28, 2001
72. "Zeolite membrane for gas separation", Chemical Engineering Dept., South China University of Science and Technology, Guangzhou, China, Aug.6, 2001
73. "Membrane reactor for methane conversion", Chemical Engineering Dept., Tianjin University, Tianjin, China, Aug.7, 2001
74. "Polycrystalline zeolite membranes: synthesis, microstructure and gas separation properties", Dept. of Chemical Engineering, Georgia Institute of Technology, Atlanta, GA, Jan.16, 2002
75. "Proton-electronic conducting ceramic membranes", The BOC Research Center, Murray Hill, NJ, Jan.25, (2002)
76. "Membrane materials and membrane formation", North American Membrane Society Workshop, Long Beach, CA, May 11-12 (2002)
77. "Modified atomic CVD modification of nanoporous alumina membranes", Dalian Institute of Chemical Physics, Dalian, China, August 1, 2002
78. "Anisotropic diffusion in zeolite" Dalian Institute of Chemical Physics, Dalian, China, August 2, 2002
79. "Zeolite membranes", Dept. of Chemical Engineering, Tsinghua University, Beijing, China, Aug. 14, 2002
80. "Zeolite membranes: microstructure and separation properties", Dept. of Chemical Engineering, Zhejiang University, Hangzhou, China, Aug. 15, 2002
81. "Zeolite membranes: microstructure and separation properties", Dept. of Chemical Engineering, Nanjing University of Science and Technology, Nanjing, China, Aug. 20, 2002
82. "Polycrystalline zeolite membranes for gas and liquid separation", Invited Lectures (AA2.1), MRS Symposium, Membranes – Preparation, Properties and Applications, Boston, December 2-5 (2002)



83. “Zeolite membranes”, Dept. of Chemical Engineering, Chang Gung University, Tao-Yuan, Taiwan, Dec. 12, 2002
84. “Ionic transport membrane technology for hydrogen production and air separation”, Taiwan Economic Institute, Taipei, Taiwan, Dec. 13, 2002
85. “Proton-conducting ceramic membranes with enhanced hydrogen permeation flux”, Dept. of Chemical Engineering, Cheng Kung University, Tainan, Taiwan, Dec. 16, 2002
86. “Proton-conducting ceramic membranes with enhanced hydrogen permeation flux”, Dept. of Chemical Engineering, National Tsinghua University, Hsingchu, Taiwan, Dec. 17, 2002
87. “CVD modification of nanoporous alumina membranes”, Dept. of Chemical Engineering, University of Akron, Akron, Ohio, April 3, 2003
88. “Inorganic Membranes”, North American Membrane Society Workshops, Jackson Hole, Wyoming, May 18, 2003
89. “Proton-conducting ceramic membranes”, Dalian Institute of Chemical Physics, Dalian, China, July 18, 2003
90. “Catalysis, Separation and Future Trends in Chemical Engineering”, Henan Academy of Science, Zhengzhou, Henan, August 1, 2003
91. “Proton-conducting ceramic membranes”, Japan Fine Ceramic Center, Nagoya, Japan, Oct. 14, 2003
92. “Dense ceramic membranes with enhanced hydrogen permeation flux”, Naritake Research Center, Nagoya, Japan, Oct.14, 2003
93. “Ionic transport and other membrane technologies for hydrogen production”, Gas Technology Institute, Chicago, IL, Dec.5, 2003
94. “Zeolite membranes for gas separation”, Dept. of Chem. and Petroleum Eng., University of Wyoming, Laramie, March 9, 2004
95. “Polycrystalline zeolite membranes: microstructure and gas separation properties”, Dept. of Chem. and Materials. Sci., Arizona State Univ., Tempe, AZ, April 29, 2004
96. “Inorganic membranes”, North American Membrane Society Workshops, Honolulu, Hawaii, June 26, 2004
97. “Oxidative coupling of methane on catalytically active dense ceramic membranes”, UOP Research Center, Chicago, IL, Sept.22, 2004
98. “Lithium zirconate sorbents for carbon dioxide separation”, Dept. of Chem. Eng., New Mexico State Univ., Las Cruces, April 22, 2005
99. “Inorganic membranes”, North American Membrane Society Workshop, Providence, RI, June 11-15, 2005
100. “Inorganic membranes”, Workshops Organized by 2005 Intern. Conf. on Membranes and Membrane Processes (ICOM2005), Seoul, Korea, Aug.20, 2005
101. “Synthesis of catalysis and membranes”, Workshops on Catalysis Design and Reaction Engineering, Tianjin Univ. (sponsored by Chinese Ministry of Education), Tianjin, China, Aug.24-25, 2005
102. “Carbon dioxide sorption on lithium zirconate”, Dept. of Chemical Engineering, South China University of Technology, Guangzhou, China, Dec. 13, 2005
103. “Novle sorbents for carbon dioxide separation”, Gas Technology Institute, Chicago, IL, Jan. 26, 2006
104. “Fundamentals of carbon dioxide sorption on lithium zirconate”, The BOC Group, Murray Hill, NJ, Jan. 27, 2006
105. “Synthesis and structural properties of ordered mesoporous silica fibers”, Dept. of Chemical Eng., Colorado School of Mines, Golden, Co, Feb.10, 2006
106. “Inorganic Membranes”, North American Membrane Society Workshop, Chicago, IL, May 12-17, 2006

107. “High temperature sorption processes with perovskite ceramic sorbents”, College of Chemical and Energy Engineering, South China University of Technology, May 24, 2006
108. “Ordered mesoporous silica fibers and membranes”, Dept. of Chemical and Environmental Engineering, University of California, Riverside, Oct., 27, 2006
109. “Zeolite membranes for gas and liquid separation”, Institute of Materials Research, University National Autonomous University of Mexico (UNAM), Mexico City, Mexico, May 25, 2007
110. “Inorganic membranes”, North American Membrane Society Workshop, Orlando, FL, May 13, 2007
111. “Zeolite membranes: applications and challenges”, Corning Inc, Corning, NY, June 19, 2007
112. “Sol-gel synthesis and characterization of nanostructured granular sorbents”, Cabot Research Center, Billerica, MA, Oct. 19, 2007
113. “Vertically oriented carbon nanotube membranes”, College of Engineering, South China Univ. of Technology, Guangzhou, China, Dec.10, 2007
114. “Gas diffusion in zeolite membranes”, Dept. of Chemical Engineering, Indian Institute of Technology, Kharagpur, India, Dec.18, 2007
115. “Microporous inorganic membranes for gas separation”, UOP International Lecture Series, UOP, Chicago, Feb., 28, 2008
116. “Carbon nanotube membranes”, Dept. of Chemical and Biomolecular Engineering, National University of Singapore, Singapore, March 25, 2008
117. “Gas permeation through carbon nanotube membranes”, College of Chemical Engineering, Tianjin University, Tianjin, China, March 28, 2008
118. “Inorganic membranes”, International Congress on Membranes and Membrane Processes Workshop, Waikiki, HI, July 12, 2008
119. “Energy and new separation problems”, Westlake Forum, (Zhejiang University), Hangzhou, China, July 26, 2008.
120. “Carbon nanotube membranes”, Nanomaterials workshop, Zhuhai, China, Jan. 16, 2009
121. “Dual phase membranes for high temperature carbon dioxide separation”, Europe Nanomembrane Workshop, Lillestrom, Norway, March 16, 2009
122. “Carbon nanotube membranes”, Department of Mechanical Engineering, Ukraine National University-Kharkov Polytechnic Institute, Karkiv, Ukraine, March 20, 2009
123. “High temperature inorganic membranes for uses in energy production and carbon dioxide capture”, Dalian Institute of Chemical Physics, Dalian, China, July 13, 2009
124. “High temperature gas separation characteristics of zeolite membranes”, Dept. of Polymer Science, Zhejiang Univ., Hangzhou, China, July 15, 2009
125. “Mixed-conducting ceramics: from membranes to adsorptions”, College of Chemistry and Chemical Engineering, South China Univ of Tech., Guangzhou, China, July 17, 2009.
126. “Carbon nanotube membranes”, Nanjing University of Technology, Nanjing, China, July 30, 2009
127. “Perovskite materials from membrane and adsorption applications”, School of Chemical Engineering, Tianjin University, Tianjin, China, Sept. 17, 2009
128. “Can high temperature membranes address the energy and environment global challenges”, Zhejiang University, Hangzhou, China, June 9, 2010
129. “Inorganic membranes”, Workshops on Materials, National Autonomous University of Mexico (UNAM), June 28-July 2, 2010
130. “High temperature membranes for uses in electrical power generation and carbon dioxide capture”, School of Electrical and Energy Engineering, Arizona State University, Sept.24, 2010
131. “Zeolite membrane for high temperature gas separation applications: gas diffusion and permeation properties”, Chem. Eng. Dept., Israel Institute of Technology (Tachnion), Haifa, Israel, Oct. 12, 2010

132. “Zeolite membranes for gas and liquid separation”, Inorganic Membrane Workshop, Victoria University, Melbourne, Australia, Nov.26, 2010-12-21
133. “Inorganic membrane based fiber optical sensors for high temperature gas sensing”, National University of Singapore, Singapore. Dec.3, 2010
134. “Fiber optical sensors for high temperature hydrogen sensing”, South China University of Technology, Guangzhou, China, Dec. 10, 2010
135. “Optical sensors for high temperature hydrogen detection”, Hiroshima University, Hiroshima, Japan, Jan.8, 2011
136. “Inorganic membranes workshop”, Dept. of Chemical Engineering, Hiroshima University, Hiroshima, Japan, Jan.7-9, 2011
137. “Mixed-conducting metal oxides for air separation: from membranes to adsorption”, Dept. of Chemical and Biological Engineering, University of Houston, Houston, Feb. 11, 2011
138. “Inorganic membranes for carbon dioxide capture”, King Abdulla University of Science and technology, Saudi Arabia, March 19, 2011
139. “Proton-conducting ceramic membranes”, Sichuan University, Chengdu, China, July 4, 2011
140. “Zeolite membranes for separation and reaction”, General Engineering Co., Chengdu, China, July 5, 2011
141. “Proton-conducting ceramic membranes and thin films for chemical reactions and hydrogen sensing”, Tianjin Univ., Tianjin, China, July 14, 2011
142. “Microporous crystalline inorganic membranes for gas separation”, Dept. of Chemical and Biological Engineering, University of Washington, Seattle, WA, Oct.31, 2011
143. “Microporous zeolite and metal-organic-framework membranes for gas separation”, Dept. of Chem. Eng., New Mexico State Univ., Las Cruises, NM, Nov.18, 2011
144. “Adsorption of organic compounds in vapor, liquid and aqueous solution phase on hydrophobic aerogels”, Dept. of Chem. Mol. Eng., National University of Singapore, Singapore, Dec. 14, 2011
145. “Zeolite membranes for gas separation: from dream to reality”, Dept. of Chem. Biomol. Eng., National University of Singapore, Singapore, Dec. 26, 2011
146. “Metal organic framework membranes”, International Workshops on Nanostructured Porous Materials, Zhuhai, China, Jan.19, 2012.
147. “Adsorption of organic compounds on hydrophobic silica aerogel”, Dept. of Chemical and Environ. Eng., University of Arizona, Tucson, AZ, Feb.6, 2012
148. “Progress on zeolite membranes for gas and liquid separation”, King Abdullah University of Science and Technology, Jeddah, Saudi Arabia, March 6, 2012
149. “High temperature inorganic membranes for carbon dioxide capture” (**Piercy Lecture**), Dept. of Chem. Engn. Mater. Sci., University of Minnesota, Minneapolis, MN, April 10, 2012
150. “High temperature inorganic membranes for hydrogen or carbon dioxide separation”, Euromembrane Seminar Series, University of Montpellier, Montpellier, France, April 27, 2012
151. “Zeolite membranes for hydrogen or separation”, Chemical Engineering Laboratory, University of Paul Sabatier, Toulouse, France, May 4, 2012
152. “Metal organic framework membrane for gas separation”, Chem. Eng. Dept., Dalian University of Technology, Dalian, China, Aug.10, 2012
153. “Gas Separation and Pervaporation Properties of Thin Metal Organic Framework Membranes”, Dept. of Chemical and Biomolecular Eng., National University of Singapore, Singapore. Oct.10, 2012
154. “High Temperature Inorganic Membranes for Hydrogen or Carbon Dioxide Separation”, Dept. Earth and Environmental Engineering, Columbia University, New York, NY, October 26, 2012
155. “Zeolite membranes”, General Engineering Inc, Chengdu, China, Dec. 28, 2012

156. “Dense inorganic membranes”, Preconference Workshop, International Zeolite Membrane Meeting, Jeju, South Korea, June 16-20, 2013
157. “Vapor adsorption on hydrophobic aerogel”, Chemical Engineering Dept., Tianjin University, China, July 15, 2013
158. “Liquid adsorption on hydrophobic aerogel”, Desalination Research Institute of Tianjin, Tianjin, China, July 15, 2013
159. “Synthesis of dual-phase membranes for carbon dioxide capture”, China Electrical Power Research Institute, Beijing, Aug.14, 2013
160. “Dual-phase membranes for carbon dioxide capture”, Dept. of Chemical and Biological Engineering, University of South Carolina, Columbia, SC, Oct.23, 2013
161. “Energy Storage”, School of Chem. Eng. and Chemistry, South China Univ. of Techn., Guangzhou, China, Dec.23, 2013
162. “High temperature membranes for carbon dioxide capture”, Nanoscale Science Seminar, Dept. of Phys., Arizona State University, Tempe, AZ, Feb.10, 2014
163. “Adsorption of gases and liquids on light adsorbents”, Dept. of Chemical and Biological Engineering, Illinois Institute of Technology, Chicago, IL, April 2, 2014
164. “Dual-phase ceramic-carbonate membranes for CO<sub>2</sub> separation”, Dept. of Chemical and Biological Engineering, Colorado School of Mines, Golden, CO, April 25, 2014
165. “Zeolite membranes for gas and liquid separation”, Membrane Workshop, Nanyang Technological University, Singapore, July 28-30, 2014
166. “Inorganic membranes: from air separation to lithium ion batteries”, China Electrical Power Research Institute, Beijing, China, Aug.18, 2014
167. “Zeolite separation membranes”, Department of Chemical Engineering, Missouri University of Science and Technology, Rolla, MO, Oct.1, 2014
168. “Inorganic membrane research”, ExxonMobil Research Center, Clinton, NJ, Oct.10, 2014
169. “Inorganic membranes for gas separations”, MTR Inc, Fremont, CA, January 16, 2015
170. “Membranes for gas separation”, Department of Chemistry and Chemical Engineering, Beijing University of Technology, July 8, 2015
171. “Inorganic membranes”, Fushun Petroleum Research Institute, Fushun, China, July 9, 2015
172. “Membranes for energy and environmental uses”, Chemical Engineering Dept., Tianjin University, July 15, 2015
173. “Inorganic membranes”, State Smart Grid Research Institute, Beijing, July 23, 2015
174. “Inorganic membranes for carbon dioxide capture”, School of Chemical Engineering, University of Queensland, Brisbane, Australia, Aug.18, 2015
175. “Hydrogen permeable zeolite membranes for carbon dioxide capture”, South China University of Technology, Guangzhou, China, Oct. 16, 2015
176. “Hydrogen permeable zeolite membrane for carbon dioxide capture”, Department of Chemical Engineering, Imperial College, London, UK, Nov.26, 2015
177. “Hydrogen permeable zeolite membrane for carbon dioxide capture”, Department of Chemical Engineering, University College London, London, UK, Nov.27, 2015
178. “Inorganic membranes for energy applications”, Beijing University of Science and Technology, Beijing, China, May 30, 2016
179. “Zeolite membrane for carbon dioxide capture”, Tianjin University, Tianjin, China, June 8, 2016
180. “Key challenges to industrial gas separation applications of inorganic membranes”, DICP Symposium, Dalian Institute of Chemical Physics, Dalian, China, Aug.23, 2016
181. “Zeolite membranes for hydrogen separation and carbon dioxide capture”, Oak Ridge National Lab, Oak Ridge, Tenn, Sept.9, 2016
182. “Dual-phase membranes for carbon dioxide capture”, Dept. Chemical Engineering, Worcester Polytechnic Institute, Worcester, Mass, Sept. 28, 2016

183. “Mixed-conducting ceramic membrane reactors for chemical reactions involving methane”, ExxonMobil Research and Engineering, Clinton, NJ, Oct.21, 2016
184. “Highly stable zeolite membranes for carbon dioxide capture”, Dept. of Chemical and Biomolecular Engineering, Univ. Maryland, College Park, MD, Oct.25. 2016
185. “High Temperature Zeolite Membrane Reactors for Water Gas Shift Reaction”, College of Chemical Engineering, San Yet-Sun University, Guangzhou, China, Jan.5, 2017
186. “Zeolite Membranes for Carbon Dioxide Capture”, College of Chemical Engineering, Zhejiang University, Hangzhou, China, Jan.9, 2017
187. “Dual-Phase Ceramic-Carbonate Membranes for Carbon Dioxide Capture”, Nanjing Tech University, Nanjing, China, June 26, 2017
188. “Recent Progress in Inorganic Membranes for Gas Separation”, China National Ocean Oil Company (CNOOC) Research Center, Tianjin, China July 7, 2017

#### Conference Chairman/Committee Member

1. **Symposium Organizer**, MRS Symposium on Materials for Separation Technology, April 4-8, 1994, San Francisco, CA
2. International Scientific Committee Member, Third International Conference on Inorganic Membranes, July 10-14, 1994, Worcester, Mass
3. Co-chairman, First Globe Conference of Young Chinese Scientists on Catalysis Science and Technology, Sept., 12-15, 1995, Tianjin, China
4. International Scientific Committee Member, Fourth International Conference on Inorganic Membranes, July 14-18, 1996, Gatlinburg, Tenn
5. Organizing Committee Member, 1997 International Conference on Environmental Engineering and Chemical Engineering, Oct. 8-11, 1997, Guangzhou, China
6. **Conference Co-Chairman**, North American Membrane Society Tenth Annual Meeting, May 16-20, 1988, Cleveland, Ohio
7. International Scientific Committee Member, Fifth International Conference on Inorganic Membranes, June 22-26, 1998, Nagoya, Japan
8. Co-Chairman, 2001 ACS National Meeting, Advanced Membrane Materials Symposium, August 26-30, 2001, Chicago, Illinois,
9. International Scientific Committee Member, 7th International Conference on Inorganic Membranes, June 22-25, 2002, Dalian, China
10. Co-Organizer, International Union of Materials Research Society International Congress on Advanced Materials, Symposium on Materials for Membrane Separations, Oct.12-13, 2002, Yokohama, Japan
11. **Conference Chair**, 8th International Conference on Inorganic Membranes, July 18-24, 2004, Cincinnati, Ohio
12. **Symposium Chair**: Advances in Fuel Cell Research: Inorganic, Polymeric and BioFuel Cells, 230th ACS Annual Meeting, Washington, DC, Aug., 28-Sept.1, 2005 (Co-Chaired with J.G. Darab, P.N. Pintauro, E. Katz, G. P. Huffman)
13. International Scientific Committee Member, The 4th Pacific Basin Conference on Adsorption Science and Technology, May 22-26, 2006, Tianjin, China
14. International Scientific Committee Member, 9th International Conference on Inorganic Membranes, Lillehammer, Norway, June 25-29, 2006

15. International Scientific Committee Member, 2008 International Conference on Membranes and Membrane Processes, July 12-18, 2008. Waikiki, HI
16. Vice-Chair, Gordon Research Conference on Membrane Materials and Processes, Aug., 11-15, 2008, New London, NH
17. International Scientific Committee Member, 10th International Conference on Inorganic Membranes, Aug.18-21, 2008, Tokyo, Japan
18. International Scientific Committee Member, 9th International Conference on Catalysis and Membrane Reactors, June 29-July 2, 2009, Lyon, France
19. International Scientific Committee Member, 11th International Conference on Inorganic Membranes, July 17 - 22, 2010 in Washington DC, USA
20. **Chair**, Gordon Research Conference on Membrane Materials and Processes, July 25-30, 2010, Colby-Sawyer College, New London, NH
21. International Scientific Committee Member, International Conference on Process Intensification for Sustainable Chemical Industries (ICPI2011), June 26-29, 2011, Beijing, China
22. International Scientific Committee Member, 2011 International Conference on Membranes and Membrane Processes, July 23-29, 2011, Amsterdam, Netherlands
23. Symposium Co-Chair, 6th Sino-US Joint Conference of Chemical Engineering, Symposium Separation and Environmental Technologies, Nov.7-10, 2011, Beijing, China
24. International Scientific Committee Member, 12th International Conference on Inorganic Membranes, July 9 -13, 2012, Enschede, Netherlands
25. International Scientific Committee Members, Inorganic membranes for carbon dioxide capture”, *International Conf. New Separation Technology and Materials Development*, Zibo, China, Dec.7-9, 2012
26. **Chair**, 2013 North American Membrane Society Annual Meeting, Boise, Idaho, June 7-13 2013
27. International Scientific Committee Member: 6<sup>th</sup> International Zeolite Membrane Meeting, June 15-19, 2013, Jeju Island, Korea
28. International Scientific Committee Member: 11<sup>th</sup> International Conf. Catalysis in Membrane Reactors, June 23-27, 2013, Porto, Portugal
29. International Scientific Committee Member:, 13<sup>th</sup> International Conference on Inorganic Membranes (ICIM2014), July 6-9, 2014, Brisbane, Australia,
30. International Scientific Committee Member: 10<sup>th</sup> International Congress on Membranes and Membrane Processes (ICOM2014), July 20-25, 2014, Suzhou, China
31. International Scientific Committee Member, Engineering with Membranes, May 6-10, 2015, Beijing, China
32. International Scientific Committee Member, International Conference on Catalysis in Membrane Reactor, June 22-25, 2015, Szczecin, Poland
33. International Scientific Committee Member, International Mesoporous Materials Symposium (IMMS9), August 17-20, 2015, Brisbane, Australia
34. International Conference on Inorganic Membranes, Atlanta, GA, July 10-13, 2016
35. International Zeolite Membranes Meeting, Dalian, China, Aug.20-23, 2016
36. Gordon Research Conferences on Membrane Materials and Processes, New London, NH, July 31-Aug.5, 2016 (discussion leader)

## **DISSERTATION/THESIS ADVISED**

### **Ph.D.**

**Degree from University of Cincinnati**

1. **Shuguang Deng** (Sept. 1992 - March, 1996) *Ph.D. Dissertation: Synthesis and Properties of Nanostructured Adsorbents for Gas, Separation and Environmental Applications* (**Prof. of ChE, NM State Univ.**)
2. **Jonghee Han** ( Sept. 1991 - Dec., 1996), *Ph.D. Dissertation: Dense Oxygen Semipermeable Ceramic Membranes: Synthesis and Properties* (**Prof. of ChE, KIST, Korea**)
3. **George Xomeritakis** (April., 1993 - June, 1997), *Ph.D Dissertation: Synthesis of Inorganic Membranes by Vapor Deposition Processes: Theory and Experiments* (**UOP**)
4. **Yongxian Frank Zeng** (Sept. 1993 - March, 1998), *Ph.D Dissertation: Mixed-Conducting Ceramic Materials for Oxidative Coupling Of Methane* (**Baxter Co**)
5. **Jinsoo Kim** (Sept., 1995- Sept., 1999), *Ph.D. Dissertation: Inorganic Dual-phase Membranes for Oxygen Separation: Synthesis and Properties* (**Prof. of ChE and Env., Kyunghee Univ., Korea**)
6. **Xiwang Qi** (Dec., 1996-Aug., 2000), *Ph.D. Dissertation: Fast Ionic Conducting Ceramic Membranes: Electrical and Mass Transport properties* (**GE Fuel Cells, CA**)
7. **Genoveva Buelna** (Sept., 1996- Dec., 2001), *Ph.D. Dissertation: Sol-gel Derived Alumina Supported CuO Sorbents for SO<sub>x</sub> and NO<sub>x</sub> Removal* (**ACS TechCatalyst Inc**)
8. **F. Tulin Akin** (Sept, 1997- June 2002), *Ph.D. Dissertation: Oxidative Coupling of Methane in Tubular Dense Ceramic Membrane Reactor* (**Bloom Energy, CA**)
9. **Zhaohui Yang** (Sept., 1997- June, 2002), *Ph.D. Dissertation: High Temperature Adsorption Process for Air Separation* (**GE Global Research**)
10. **Charlie Cooper** (Sept., 1999- March, 2003), *Ph.D. Dissertation: Synthesis and Characterization of Mixed Matrix Systems for the Removal and Recovery of Divalent Metals from Waste Streams* (**Fermi Lab**)
11. **Hatem Alsyouri** (Sept., 1999- Nov., 2004), *Ph.D. Dissertation: Synthesis of Ordered Mesoporous Silica and Alumina with Controlled Macroscopic Morphologies* (**Prof., University of Jordan**)

#### Degree from Arizona State University

12. **Qing Yang** (Sept.2001-Dec., 2005), *Ph.D. Dissertation: Carbon Dioxide Interaction with Perovskite-type Oxides and Their Applications in Oxygen Separation*, (**Betachem Inc.**)
13. **Qinhua Yin** (Sept., 2002- Dec. 2006), *Ph.D. Dissertation: High temperature oxygen sorption on metal oxides with defects as sorbents for air separation* (**SC Materials Inc.**)
14. **Xiaotong Wei** (Sep., 2005-Dec.,2008) *Ph.D. Dissertation: Metal and Ceramic Enabled Long Period Fiber Gratings Optical Sensors for High Temperature Monitoring of Hydrogen and Carbon Dioxide* (**MTR Inc**)
15. **Jessica O'Brien** (Sept., 2005-Feb., 2009) *Ph.D. Dissertation: A Study of Microstructure-Property Relationship for MFI-Type Zeolite Membranes for Xylene Separation* (**GE**)
16. **Jay Kniep** (March, 2006- May, 2010), *Ph.D. Dissertation: Synthesis of Mixed-Conducting Membranes with Improved Properties for Membrane Reactor Applications* (**MTR Inc**)
17. **Matt Anderson** (Dec., 2005- April 2011), *Ph.D. Dissertation: Carbonate-Ceramic Dual-phase Membranes for high temperature carbon dioxide separation* (**Intel**).
18. **Shriya Seshadri** (Sept., 2005- April 2011) *Ph.D. Dissertation: Synthesis and Characterization of Ordered Mesoporous Silica with Controlled Macroscopic Morphology for Membrane Applications.*(**Intel**)
19. **Carrie Eggen** (Sept., 2005-April 2011) *Ph.D Dissertation: Formation of Biomimetic Membranes on Inorganic Supports of Different Surface Morphology and Macroscopic Geometry* (**Metronics**)

20. **Ding Wang** (Sept, 2007-Dec.2011) *Ph.D. Dissertation: Separation of Oil and Other Organics from Water Using Inverse Fluidization of Hydrophobic Aerogels* (R. Pfeffer as co-advisor)(**Rhodia**)
21. **Tyler Norton** (Sept, 2009-Oct.,2013) *Ph.D., Dual phase membrane reactor for hydrogen production* (**Intel**)
22. **Bo Lu** (Sept., 2008-May, 2014 ) *Ph.D, Dissertation: Synthesis and Characterization of Thin Ceramic-Carbonate Dual-Phase Membranes for Carbon Dioxide* (**Bettergy Inc.**)
23. **Nick Linneen** (Aug, 2010-July, 2014) *Ph.D, Dissertation; Synthesis and Carbon Dioxide Adsorption Properties of Amine Modified Particulate Silica Aerogel Sorbents* (co-advised with R. Pfeffer) (**Oak Ridge National Labs**)
24. **Xiaoli Ma** (Sept.2010-May 2015), **Ph.D.**, Dissertation: Synthesis and Characterization of Microporous Inorganic Membranes for Propylene/Propane Separation (**University of Minesota**)
25. **Alexandra Kasik** (Sept. 2011-Dec2015) *Ph.D., Dissertation: Synthesis and Permeation of Large Pore Metal-Organic Framework Membranes* (**Honeywell**)

#### Degree from Tianjin Universities

26. **H.Y. Gao** (Sept., 2002- Nov., 2004), *Ph.D. Dissertation: Preparation of Pd-Cu Alloy Composite Membranes and Study on Membrane Reactor for Hydrogeneration of Furfural to Furfuryl Alcohol*, (now **Prof. of ChE, Hebei University of Technology**) (Y.D. Li as co-advisor)
27. **H.Y, Jiang** (Sept., 2002- Dec., 2004) *Ph.D. Dissertation: Synthesis, Characterization and Membrane Reactor Application of MFI Type Zeolite Membrane*, (**Jilin Petroleum Co**)(B.Q. Zhang as co-advisor)
28. **W.L. Mi** (Sept., 2003- Dec., 2005) *Ph.D. Dissertation: Synthesis and Gas Permeation Properties of Porous Ceramic Supported Carbon nanotube Membranes*, (**Prof. of Thermal Eng., Beijing Univ. of Science and Technology**) (Y.D. Li as co-advisor)
29. **X.F. Liu** (Sept., 2004- April, 2007) *Ph.D. Dissertation: Synthesis of MFI Type Zeolite Membranes and Applications in Selective Ethanol Permeation* (**Prof. of Chem., Tianjin University**) (B.Q. Zhang as co-advisor)
30. **K. Zhang** (Sept., 2003- Sept., 2008) *Ph.D. Dissertation: Application of Dense Palladium and MFI Zeolite Membranes in Hydrogen Separation Process* (**Post-Dr., Georgia Tech**) (Y.D. Li as co-advisor)
31. **Z.B. Rui** (Sept., 2005, Dec., 2009), *Ph.D Dissertation: Application of Ceramic Membrane and Sorbent in High Temperature Gases Separation and CO<sub>2</sub> Capture* (**Prof. of ChE, Zhongshan Univ.**) (Y.D. Li as co-advisor)
32. **Z.X. Zhao** (Sept., 2005-Dec.2009) (**from South China University of Technology**), *Ph.D Dissertation: MOF membranes for gas separation* (South China University of Technology) (**Prof. of ChE, Guangxi University**) (co-advised with Zhong Li)
33. **Y. Jin** (Aug., 2008-May, 2011), *Ph.D. Dissertation: Application of dense oxygen-permeable membrane reactor in oxidative steam reforming of ethanol to produce hydrogen*, (**Sinopec, Shandong**) (Y.D. Li as co-advisor)
34. **C. Ji** (Aug.2008-Sept., 2011), *Ph.D. Dissertation: Synthesis of Oriented SAPO-5 Membranes* (**China National Offshore Oil Co**) (Y.D. Li as co-advisor)
35. **Y.C. Zhao** (Aug2007-Dec.2012), *Ph.D. Dissertation: The Ionic Conduction In Doped Ceria-Carbonate Composite Electrolytes And The Performance Of Related Fuel Cells* (**Assist Prof. of ChE, Tianjin University**) (co-advised with Y.D. Li)



36. **D.F. Liu** (Aug.2011-Dec.2013) (from **South China University of Technology**), Ph.D Dissertation: “The ionic conduction in doped ceria-carbonate composite electrolytes and the performance of related fuel cells” (Industrial Position) (co-advised with F.X. Xi)
37. **Y. Liu** (Aug.2012,-Oct.,2014) (from Hua Zhong University of Science and Technology), Ph.D. Dissertation, “*Post-combustion CO<sub>2</sub> Capture using Metal Organic Frameworks (MOFs): Experiments and Simulations*” (Post-dr at **KAUST**) (co-advised with J. Liu)

#### M.S. with Thesis

1. **C.-H. Chang** (Jan. 1992- Nov. 1993), *Thesis: Thermal and Hydrothermal Stability & Its Improvement of Nanostructured Ceramic Membranes*
2. **W. Wang** (Sept. 1991 - April, 1994), *Thesis: Analysis of Dense Ceramic Membrane Reactors for Oxidative Coupling Of Methane*
3. **R. Gopalan** (Sept. 1992 - July, 1994), *Thesis: Role of Dopants on the Thermal Stability Improvement of Porous Titania and Zirconia Membranes*
4. **V. Jayaraman** (Sept. 1992 - March, 1995), *Thesis: Synthesis and Gas Transport Properties of Ultrathin Metallic Membranes*
5. **L. Luo** (Sept. 1994 - June, 1996), *Thesis: Simulation and Optimization of Membrane Reactors for Oxidative Coupling of Methane*(Co-advised with Y.K. Kao)
6. **F. Alvarez** (1993-1996) (part-time M.S.), *Project: Membranes for Environmental Applications*
7. **M. Chandak** (Sept. 1994 - Oct.1996), *Thesis: Sorption and Diffusion of Volatile Organic Compounds in Zeolite and Zeolite Filled Polymer Membranes*
8. **Y. Wang** (Sept. 1994 - Oct., 1996), *Thesis: Synthesis and Modification of Ceramic Membranes for Gas Separation*
9. **Ben McCool** (Dec., 1996- Oct. 1998), *Thesis: Synthesis and hydrogen permeation properties of sputter deposited palladium-silver membranes*
10. **Rishi Sondhi** (Sept., 1997- Sept., 1999), *Thesis: Fouling minimization and regeneration of ceramic membranes by backpulsing*
11. **Charlie Cooper** (April, 1998- Sept., 1999), *Thesis: Atomic layer CVD modification of nanoporous ceramic membranes*
12. **Neelesh Rane** (Sept., 2000- June, 2002), *Thesis: Cerium oxide thin film and membranes*
13. **S. G. Cheng** (Sept. 2000-June, 2003), *Thesis: Proton-conducting ceramic membranes for hydrogen separation*
14. **Rentian Xiong** (Sept., 2001- June, 2003), *Thesis: Novel inorganic sorbent for high temperature carbon dioxide separation*
15. **S. Kim** (Sept. 2001- Nov., 2003), *Modified ordered mesoporous silica for carbon dioxide separation (co-advised with V. Guliants)*
16. **S. Sanjay** (Sept., 2001-June, 2004), *Methacrylate and Ca-Alginate polymers as barrier coatings for protection and controlled release of vitamin C (co-advised with V. Guliants)*
17. **S.J. Chung** (Sept.,2002-Aug, 2004 ), *Dual-phase inorganic membrane for high temperature carbon dioxide separation*
18. **Sarah Gladding** (Dec., 2003-Dec., 2004), *Porous inorganic supported biological membranes for use in ion channeling*
19. **Deepak Singh** (Jan, 2005-May, 2007), *Bilayer lipid membrane structure supported on inorganic materials*
20. **Duo Li** (July., 2005- Dec., 2009), *Ordered 3D mesoporous materials.*
21. **Teresa Rosa** (Sept., 2008- Oct., 2010) *Synthesis of Amine-Modified Aerogel Sorbents and Metal-Organic Framework-5 (MOF-5) Membranes for Carbon Dioxide Separation (co-advised with R. Pfeffer)*

22. **J.Y. Cai** (Sept. 2007-Aug. 2010) *Advanced Materials for Electrochemical Reactors* (co-advised with Don Gervasio)
23. **Ting Pang** (Sept 2011-Aug., 2012) Design of IGCC Process with zeolite membrane reactor for water gas shift reaction and carbon dioxide capture.
24. **Amit Yadav** (Sept.2010-Aug., 2012) *Pervaporation of Ethanol/Water mixtures using PDMS Mixed Matrix Membranes* (co-advised with Mary Laura Lind)
25. **Stewart Mann** (Sept., 2012-July, 2014) *Modeling and Analysis on Pervaporation Separation of Composite Zeolite Membranes*
26. **Christopher Bremer** (Sept., 2014-May, 2015) *Dual-Phase Samarium-Doped Ceria and Molten-Carbonate Membrane Reactor Applications to the Water-Gas Shift Reaction: Accurate Reactor Sizing and Cost Benefit Analysis*
26. **Gaurav Sharma** (Sept., 2014-May, 2016) Improved Synthesis and Thermal Stability of Electrode-supported  $\alpha$ -alumina Separator for Lithium Ion Batteries
27. **Suzanne Williams** (Sept, 2014- July, 2016) Experimental and Modeling Study on Pervaporation Separation of Ethanol and Water Mixture by Polycrystalline MFI Zeolite Membranes

### Post-Doctors and Visiting Scholars

1. **Dion Dionysiou** (Sept., 1995 - Aug., 1996), *Proton-conducting ceramic membranes* (Prof. University of Cincinnati)
2. **Dr. Zhongmin Wang** (March, 1996 – June, 1997), *Sol-Gel Derived Alumina Supported Copper Oxide Sorbents for Flue Gas Treatment*
3. **W. Zhu** (May, 1996 - Dec., 1997), *Inorganic Membrane System for Metal Ion Removal*
4. **Javier Garcia-Martinez** (Aug., 1997-Dec., 1997), *Zeolites on carbon, conversion of fly ash to zeolites* (Prof. University of Alicante)
5. **Dr. Junghan Dong** (March, 1997- Dec., 1998), *Development of Molecular Sieve Zeolite Membranes* (Prof. University of Cincinnati)
6. **Kestern Wegner** (Aug., 1997- March, 1998), *Gas and Liquid Permeation in Zeolite Membranes*
7. **Dr. Ming Pan** (Jan, 1999- Dec., 1999), *Zeolite membrane synthesis*
8. **Christian Langheinrich** (Oct., 2000 – June, 2001), *Atomic layer CVD modification of nano-straight pore membranes*
9. **Dr. Wenhui Yuan** (Sept., 2001 – Aug., 2002), *Zeolite membranes for xylene separation* (Prof. South China University of Technology)
10. **Michael Skrobaneck** ( Sept., 2001 – March, 2002), *Nanostructured thin metal membranes*
11. **Anja Däumichen** (Sept., 2002 – March, 2003), *Sulfur dioxide transport in mesoporous membranes*
12. **Dr. Jun-Ichi Ida** (Sept., 2000- Dec., 2003) *Membranes for CO<sub>2</sub> separation* (Prof. Soka University)
13. **Dr. Hu Zou** (Sept., 2001 – Oct., 2003), *Nanostructured ceria oxide thin films*
14. **W. Zheng** (Oct., 2003 - Dec., 2003), *Inorganic-biological membrane for selective transport of ions*
15. **Dr. I. Kumakiri** (Oct, 2004-Dec., 2004), *Membranes for CO<sub>2</sub> separation* (Prof. University of Hiroshima)
16. **Dr. Jung Hoon Park** (March, 2004-) *Dual phase membranes for CO<sub>2</sub> Separation* (KAIST)
17. **X.H. Huang** (Oct., 2005-April 2006) *Perovskite ceramic membranes*
18. **Vineet Gupta** (Oct., 2003-2006 ), *Proton-Conducting Solid Oxide Fuel Cells*
19. **Dr. Masakoto Kanezashi** (Oct., 2005-Jan 2008) *Zeolite membranes for hydrogen separation* (Prof. University of Hiroshima)

20. **Dr. J.S. Li** (Oct., 2006-Sept.2007) *Ordered mesoporous membranes*
21. **Dr. Mikel Duke** (March, 2007-April 2008) *Desalination by zeolite membranes (Prof. Victoria University)*
22. **Dr. X.F. Zhu** (March 2008-Feb 2009) *Zeolite membranes (Prof. Dalian Institute of Chemical Physics)*
23. **Dr. Xiaoping Liang** (Nov. 2010-April, 2011) *Synthesis of tubular mixed-conducting dual-phase membranes(Prof. Tianjin Polytechnic University)*
24. **Dr. Huiyuan Gao** (Jan., 2011-Jan.2012) *Hydrogen permeation through metal membranes (Prof., Heibei Polytechnic University)*
25. **Dr. Haibing Wang** (March, 2009-Aug., 2012) *Zeolite membrane reactor for WGS reaction*
26. **Jose Ortiz-Landeros** (June, 2010-Nov., 2012) *Dual-phase membranes for CO2 Separation (Mexico Polytechnic Institute)*
27. **Dr. Xueliang Dong** (March, 2012-) *MOF membranes, zeolite membranes and dual-phase membranes (Bettery Inc)*
28. **Dr. Huifeng Zhang** (Dec, 2012-Dec.2013) *Zeolite membranes for desalination (Tianjin Desalination Research Institute)*
29. **Dr. Wangliang Mi** (Oct.2013-Nov.2014) *Lithium ion batteries with inorganic separators(Beijing University of Technology)*
30. **Dr. Linghui Yu** (April 2014-Pres) *Inorganic separators for lithium ion batteries*
31. **Dr. Lie Meng** (Jan.,2016-Pres) *Zeolite membrane reactor for water gas shift reaction*
32. **Dr. Zebao Rui** (July, 2015-Pres) *Metal organic framework membranes for gas separation*
33. **Dr. Judith Ramirez Moreno** (Jan.,2016-Pre) *Oxygen adsorption on ceramic-carbon dual phase materials*