

## **CURRICULUM VITAE**

**MUHAMMAD SAHIMI**

**Mork Family Department of Chemical Engineering and Materials Science  
University of Southern California  
Los Angeles, California 90089-1211**

**Phone: (213) 740-2064**

**Fax: (213) 740-8053**

**Email: moe@usc.edu**

**DATE OF BIRTH:** January 22, 1954

### **EDUCATION**

1977: B.S., Chemical Engineering, the University of Tehran (Summa Cum Laude)

1984: Ph.D., Chemical Engineering, the University of Minnesota, Minneapolis

### **POSITIONS HELD**

1977 - 1978: National Iranian Oil Company, Tehran, Iran

1978 - 1984: Research Assistant, Department of Chemical Engineering, University of  
Minnesota, Minneapolis

1984 - 1989: Assistant Professor, Department of Chemical Engineering, University of  
Southern California

1989 - 1996: Associate Professor, Department of Chemical Engineering, University  
of Southern California

1996 - : Professor, Department of Chemical Engineering, University of Southern  
California

1999 - 2005: Chairman, Department of Chemical Engineering, University of Southern  
California

### **AWARDS, HONORS, AND APPOINTMENTS**

2015 Honorary Member Prize, International Society for Porous Media

2009 Senior Faculty Research Award, Viterbi School of Engineering

2008 Outstanding referee for the APS and AIP journals (out of over 40,000 referees)

2008 - Listed in Who's Who in America

2005 The NIOC Chair in Petroleum Engineering, USC

2003 Khwarizmi International Award (sponsored by the United Nations' UNESCO) for  
Distinguished Achievements in Science

2002 NASA/JPL Faculty Fellow  
1999 Kapitza Gold Medal, Russian Academy of Natural Sciences  
1999 Foreign Member, Russian Academy of Natural Sciences  
1997 (July-Dec.) Visiting Scholar, Emory University, Atlanta, Georgia  
1997 Best Teacher, Department of Chemical Engineering, USC School of Engineering  
1993 (Aug.) Visiting Professor, HLRZ-KFA Supercomputer Center, Jülich, Germany  
1993 (July) Visiting Professor, University of Porto, Portugal  
1993 Phi Kappa Phi Honors Society  
1992 Humboldt Research Fellowship Award  
1991 (Sep.-Dec.) Visiting Professor, Dep. of Mathematics, University of Melbourne,  
Australia  
1990 (June-Aug.) Visiting Professor, HLRZ-KFA Supercomputer Center, Jülich, Germany  
1990 Junior Faculty Research Award, USC School of Engineering  
1989 Faculty Research and Innovation Award, USC  
1986 Sigma Xi Honors Society  
1985 Faculty Research and Innovation Award, USC  
1978 - 1979 Scholarship, Atomic Energy Organization of Iran  
1977 Highest Honors (Summa Cum Laude), The University of Tehran

#### **RESEARCH INTERESTS (present and past)**

- Atomistic modeling of nanoporous materials and nanotubes
- Fabrication of nanoporous membranes (carbon molecular-sieves, silicon carbide, layered double hydroxides, mixed-matrix)
- Separation of fluid mixtures
- Markov analysis and reconstruction of nonstationary stochastic processes
- Biological materials (DNA and proteins) in confined environments
- Acoustic and elastic wave propagation in heterogeneous media
- Flow, transport, and reaction in porous media
- Elastic properties and fracture of composite materials
- Percolation theory
- Development of efficient methods for large-scale scientific computations

#### **NOTEWORTHY RESEARCH CONTRIBUTIONS**

- Pore network model of dispersion in flow through porous media (with H. T. Davis, L. E. Scriven).
- Theory of stochastic transport in heterogeneous media (with H. T. Davis, B. D. Hughes, L. E. Scriven).
- Renormalized effective-medium approximation for transport in heterogeneous media.
- Percolation models of catalyst deactivation (with T. T. Tsotsis, S. Arbabi).
- Scaling properties of elastic percolation networks and their application to polymers and gels (with S. Arbabi).
- Discrete models of quasi-static fracture of disordered solids (with S. Arbabi).
- Hydrodynamics of particulate motion in porous membranes (with A. O. Imdakm).
- Percolation models of two-phase flow in porous media (with A. A. Heiba, H. T. Davis, L. E. Scriven, M. Hashemi).
- Molecular structure, precipitation, and scaling equation of state for asphalt aggregates.
- Synthesis and characterization of nanoporous membranes (carbon molecular-sieves, silicon carbide, layered double hydroxides, and mixed-matrix) for gas separation (with T. T. Tsotsis, M. G. Sedigh, B. Elyassi).
- Molecular modeling of adsorption and transport in nanoporous membranes (with X. Yi, J. Ghassemzadeh, L. Xu, M. Firouzi, N. Kim, N. Rajabbeigi, S. Naserifar).
- Use of wavelet transforms for modeling of fluid flow and transport in heterogeneous media (with A. R. Mehrabi, F. Ebrahimi, M. Hashemi, M. R. Rasaei, H. Dashtian).
- Markov analysis and reconstruction of nanostationary stochastic processes (with M. R. Rahimi Tabar).
- Wave propagation in disordered media (with S. M. Vaez Allaei, R. Sepehrinia, M. R. Rahimi Tabar).

## **PATENTS**

- M. Sahimi, S. S. Mohajerzadeh, N. Rajabbeigi, B. Elyassi, and A. Khodadadi, “Oxygen Sensor with a Solid State Reference and Manufacturing Thereof,” Publication Number WO/2004/109252, International Application Number PCT/US2004/016925 (filed May 2005).

## **RESEARCH WORK FEATURED AND EXPERTISE NOTED<sup>1</sup>**

<sup>1</sup>The two Virtual Journals listed below are published by the American Institute of Physics and the American Physical Society in cooperation with numerous other societies, and are edited compilations of selected articles, covering focused area of frontier research in nanoscience and biological physics. These papers are indicated by † in the list of the publications.

- *Chemical & Engineering News* **69** (No. 16), 28 (April 1991).
- *Chemical Engineering Magazine* **98** (No. 7), 30 (July 1991).
- *MOSAIC* (National Science Foundation Quarterly Journal) **23** (No. 2), 12 (Summer 1992; for work on fractals).
- *CHEMTECH* **22**, 687 (November 1992; for the work on fractals).
- *Chemical Engineering Progress* **89** (No. 3), 26 (March 1993; for the paper on nonlinear transport processes in heterogeneous media, indicated by ¶ in the list of publications).
- *Frankfurter Allgemeine Zeitung* (German Newspaper) (26 April 1994; for work on fracture of materials).
- *High-Tech Materials Alert* **12** (No. 8), 11 (August 1995).
- *Human Pathology* (cover) (November 1998; indicated by § in the list of publications).
- *Virtual Journal of Nanoscale Science & Technology* (April 26, 2004 issue)
- *Harvard International Review* (Winter 2005).
- *The New York Times* (March 5, 2006).
- *The New Scientist* (March 11, 2006).
- *Virtual Journal of Nanoscale Science & Technology* (August 13, 2007 issue).
- *The Los Angeles Times* (November 28, 2007).
- *Virtual Journal of Biological Physics Research* (December 15, 2007 issue).
- *Virtual Journal of Nanoscale Science & Technology* (December 24, 2007 issue).
- *Virtual Journal of Biological Physics Research* (April 1, 2008 issue).
- *The EETimes* (April 2, 2008).
- *Membrane Technology* (September 2008), page 11.
- *Virtual Journal of Biological Physics Research* (January 1, 2009 issue).
- *Virtual Journal of Nanoscale Science & Technology* (January 6, 2009 issue).
- *Berliner Zeitung* (February 5, 2009; for the paper on predicting earthquakes, indicated by • in the list of publications)
- *Virtual Journal of Biological Physics Research* (March 1, 2009 issue).

- *Virtual Journal of Nanoscale Science & Technology* (March 16, 2009 issue).
- *Virtual Journal of Nanoscale Science & Technology* (June 15, 2009 issue).
- *Virtual Journal of Biological Physics Research* (June 15, 2009 issue).
- The paper, **A Percolation Model of Mobile ad-hoc Networks** was selected by the Wolfram Demonstrations Project (<http://demonstrations.wolfram.com>) (indicated by †† in the list of publication).
- *Vertical News*, [http://www.verticalnews.com/premium\\_newsletters/Journal-of-Physics-Research-/2009-09-29/67121PR.html](http://www.verticalnews.com/premium_newsletters/Journal-of-Physics-Research-/2009-09-29/67121PR.html) (for paper ).
- *Virtual Journal of Nanoscale Science & Technology* (January 18, 2010 issue).
- *Virtual Journal of Nanoscale Science & Technology* **23** (11) (March 11, 2011).
- *JCP: Biochemical Physics*: <http://jcp-bcp.aip.org> (September 2011 issue)
- *Virtual Journal of Biological Physics Research* (October 1, 2011 issue).
- *Virtual Journal of Nanoscale Science & Technology* (October 10, 2011 issue).
- *Physical Review E, Kaleidoscope Images*; <http://pre.aps.org/kaleidoscope/pre/85/6/066312> (June 2012 issue; for the paper on drying of porous media, indicated by ‡ in the list of the publications).
- *Physical Review E, Kaleidoscope Images*; <http://pre.aps.org/kaleidoscope/pre/88/3/032404> (for the paper, “Pore-scale dynamics of salt precipitation in drying porous media,” indicated by §§ in the list of the publications).

## TEACHING

- **Undergraduate:** Transport phenomena; Chemical reaction engineering
- **Graduate:** Transport phenomena (viscous flow, heat transmission; mass transfer); Numerical methods; Mathematical methods; Porous media and remediation; Reservoir simulation; Advanced separation and bioseparation processes

## EDITORIAL BOARDS

- Technical Editor, *Society of Petroleum Engineers Journals*, 1998 - 2008.
- Editor, Computer Simulation Department, *Computing in Science & Engineering*, 2005 - 2013
- Member of Editorial Board, *Fractals*, 1997 - present
- Member of Editorial Board, *Journal of Porous Media*, 2000 - 2013

- Member of Editorial Board, *Computing in Science & Engineering*, 2013 - present
- Member of Editorial Board, *Special Topics & Reviews in Porous Media*, 2010 - 2013
- Section Editor, *Springer Encyclopedia of Complexity & System Science*, 2008 - present
- Associate Editor, *Journal of Porous Media*, 2013 - present
- Associate Editor, *Special Topics & Reviews in Porous Media*, 2013 - present
- Member of Editorial Board, *Annals of Materials Science & Engineering*, 2014 - present

## MEMBERSHIP

- American Institute of Chemical Engineers
- American Physical Society
- Materials Research Society
- Society of Petroleum Engineers
- Union of Concerned Scientists

## CONSULTING AND SERVICE

- Chevron Oil Company, La Habra, California: 1986
- National Iranian Oil Company: 1989 - 2005
- Shell Oil Company (the Netherlands): 1990 - 1992
- Mobil Oil Company, New Jersey: 1991
- The United Nations (Expatriate Program): 1991 - 1995
- Japan National Oil Corporation: 1999 - 2000
- Millipore Corporation, Bedford, Massachusetts: 1993 - 2003
- Procter & Gamble, Germany: 2009 - 2011
- Avery Dennison Research Center, Pasadena, California: 1997 - present
- Member of numerous NSF and DOE panels: 1987 -
- Organizer and chairman of numerous sessions at the annual meetings of the AIChE annual meetings:  
1987 -

## PUBLICATIONS

### BOOKS

1. M. Sahimi and H. Rassamdana, *Teaching Chemistry* (in Persian), 270 pages, Form Publishing Company, Teheran, Iran (1975; 4th Edition, 1984).
2. M. Sahimi, *Applications of Percolation Theory*, 258 pages, Taylor and Francis, London (1994); 2nd edition in preparation.
3. M. Sahimi, *Flow and Transport in Porous Media and Fractured Rock*, 485 pages, Wiley-VCH, Weinheim, Germany (1995).
4. M. R. H. Khajehpour and M. Sahimi (editors), *Physics and Engineering of Underground Reservoirs: Oil and Gas Fields, and Groundwater Aquifers*, 195 pages, Institute for Advanced Studies in Basic Sciences, Zanzan, Iran (2003).
5. M. Sahimi, *Heterogeneous Materials I: Linear Transport and Optical Properties*, 691 pages, Springer-Verlag, New York (2003).
6. M. Sahimi, *Heterogeneous Materials II: Nonlinear and Breakdown Properties, and Atomistic Modelling*, 636 pages, Springer-Verlag, New York (2003).
7. M. Sahimi, *Flow and Transport in Porous Media and Fractured Rock*, second revised and enlarged edition, 709 pages, Wiley-VCH, Weinheim (2011).

### PEER-REVIEWED PAPERS (PUBLISHED OR IN PRESS)

1. B. D. Hughes and M. Sahimi, "Random Walks on the Bethe Lattices," *Journal of Statistical Physics* **29**, 781-794 (1982).
2. M. Sahimi, A. A. Heiba, B. D. Hughes, L. E. Scriven, and H. T. Davis, "Dispersion in Flow Through Porous Media," *Society of Petroleum Engineers Paper 10969*, 1-72 (1982).
3. A. A. Heiba, M. Sahimi, L. E. Scriven, and H. T. Davis, "Percolation Theory of Two-Phase Relative Permeability," *Society of Petroleum Engineers Paper 11015*, 1-17 (1982).
4. M. Sahimi, B. D. Hughes, L. E. Scriven, and H. T. Davis, "On Pólya Random Walks, Lattice Green Functions and the Bond Percolation Thresholds," *Journal of Physics A* **16**, L67-L71 (1983).
5. M. Sahimi and G. R. Jerauld, "On the Position-Space Renormalisation Group Approach to Diffusion-Limited Cluster Growth Problems," *Journal of Physics A* **16**, L419-L425 (1983).

6. M. Sahimi, B. D. Hughes, L. E. Scriven, and H. T. Davis, "Critical Exponents of Percolation Conductivity by Finite-Size Scaling," *Journal of Physics C: Solid State Physics* **16**, L521-L527 (1983).
7. M. Sahimi and G. R. Jerauld, "Random Walks on Percolation Clusters at the Percolation Threshold," *Journal of Physics C: Solid State Physics* **16**, L1043-L1050 (1983).
8. M. Sahimi, B. D. Hughes, L. E. Scriven, and H. T. Davis, "Stochastic Transport in Disordered Systems," *Journal of Chemical Physics* **78**, 6849-6864 (1983).
9. B. D. Hughes, M. Sahimi, and H. T. Davis, "Random Walks on Pseudo-Lattices," *Physica A* **120**, 515-536 (1983).
10. M. Sahimi, H. T. Davis, and L. E. Scriven, "Dispersion in Disordered Porous Media," *Chemical Engineering Communications* **23**, 329-341 (1983).
11. M. Sahimi, B. D. Hughes, L. E. Scriven, and H. T. Davis, "Real-Space Renormalization and Effective-Medium Approximation to the Percolation Conduction Problem," *Physical Review B* **28**, 307-311 (1983).
12. M. Sahimi and G. R. Jerauld, "Superuniversal Spectral Dimension for Dilute Branched Polymers?" *Journal of Physics A* **17**, L165-L171 (1984).
13. M. Sahimi, "Self-Avoiding Walks on Percolation Clusters," *Journal of Physics A* **17**, L379-L384 (1984).
14. M. Sahimi, "Diffusion and Trapping of Excitations in Disordered Systems," *Journal of Physics A* **17**, 2567-2572 (1984).
15. M. Sahimi, "On the Relationship Between the Critical Exponents of Percolation Conductivity and the Static Exponents of Percolation," *Journal of Physics A* **17**, L601-L607 (1984).
16. M. Sahimi, "Scaling Relation for the Critical Exponents of Backbone of Percolation Clusters," *Journal of Physics A* **17**, 3073-3076 (1984).
17. M. Sahimi, "Finite-Size Scaling Calculation of Conductivity of Three-Dimensional Conductor-Superconductor Percolation Networks at Percolation Threshold," *Journal of Physics C: Solid State Physics* **17**, L355-L358 (1984).
18. M. Sahimi, L. E. Scriven, and H. T. Davis, "On the Improvement of the Effective-Medium Approximation to the Percolation Conductivity Problem," *Journal of Physics C: Solid State Physics* **17**, 1941-1948 (1984).
19. M. Sahimi, "Effective-Medium Approximation for Density of States and the Spectral Dimension of Percolation Networks," *Journal of Physics C: Solid State Physics* **17**, 3957-3966 (1984).



20. B. D. Hughes, M. Sahimi, L. E. Scriven, and H. T. Davis, "Transport and Conduction in Random Systems," *International Journal of Engineering Science* **22**, 1083-1092 (1984).
21. M. Sahimi, G. R. Jerauld, L. E. Scriven, and H. T. Davis, "Position-Space Renormalization Group Approach to the Resistance of Random Walks," *Physical Review A* **29**, 3397-3401 (1984).
22. M. Sahimi, H. T. Davis, and L. E. Scriven, "Thermodynamic Modeling of Phase and Tension Behavior of CO<sub>2</sub>-Hydrocarbon Systems," *Society of Petroleum Engineers Paper 10268*, 1-33 (1981); *Transactions AIME* **279** (1985).
23. M. Sahimi and Y. C. Yortsos, "Pattern Formation in Viscous Fingering: a Diffusion Limited Aggregation Approach," *Physical Review A* **32**, 3762-3764 (1985).
24. M. Sahimi, M. McKarnin, T. Nordahl, and M. V. Tirrell, "Transport and Reaction on Diffusion-Limited Aggregates," *Physical Review A* **32**, 590-595 (1985).
25. M. Sahimi, "Fractal Dimension in a Percolation Model of Fluid Displacement," *Physical Review Letters* **54**, 1698 (1985).
26. S. Feng and M. Sahimi, "Position-Space Renormalization for Elastic Percolation Networks with Bond-Bending Forces," *Physical Review B (Rapid Communications)* **31**, 1671-1673 (1985).
27. M. Sahimi and J. D. Goddard, "Superelastic Percolation Networks and the Viscosity of Gels," *Physical Review B (Rapid Communications)* **32**, 1869-1871 (1985).
28. M. Sahimi, "Some Remarks on the Critical Behavior of Superconducting Percolation Networks," *Journal of Physics A* **18**, 1543-1550 (1985).
29. M. Sahimi, "The Backbone and Conductivity of Random Clusters," *Journal of Physics A* **18**, 83-92 (1985).
30. M. Sahimi and H. Siddiqui, "Diffusion in Superconducting Percolation Networks: Number of Sites Visited," *Journal of Physics A* **18**, L727-L733 (1985).
31. M. Sahimi, "Possible Relations for Topological and Transport Properties of Lattice Animal Model of Branched Polymers," *Journal of Physics A* **18**, 3251-3258 (1985).
32. M. Sahimi, "Phenomenological Renormalisation of Monte Carlo Data for Percolation," *Journal of Physics A* **18**, 3597-3603 (1985).
33. M. Sahimi and T. T. Tsotsis, "A Percolation Model of Catalyst Deactivation by Site Coverage and Pore Blockage," *Journal of Catalysis* **96**, 552-562 (1985).
34. M. Sahimi, H. T. Davis, and L. E. Scriven, "Thermodynamic Modeling of Phase and Tension Behavior of Carbon Dioxide-Hydrocarbon Systems," *Society of Petroleum Engineers Journal* **25**, 235-254 (1985).

35. D.-Y. Kuan, P. K. Kilpatrick, M. Sahimi, L. E. Scriven, and H. T. Davis, "Multicomponent Carbon Dioxide-Water-Hydrocarbon Phase Behavior Modelling: A Comparative Study," *SPE Reservoir Engineering* **1**, 61-72 (1986).
36. M. Sahimi, B. D. Hughes, L. E. Scriven, and H. T. Davis, "Dispersion in Flow through Porous Media: I. One-Phase Flow," *Chemical Engineering Science* **41**, 2103-2122 (1986).
37. M. Sahimi, A. A. Heiba, H. T. Davis, and L. E. Scriven, "Dispersion in Flow through Porous Media: II. Two-Phase Flow," *Chemical Engineering Science* **41**, 2123-2136 (1986).
38. M. Sahimi, "Dynamic Percolation and Diffusion in Disordered Systems," *Journal of Physics C: Solid State Physics* **19**, 1311-1316 (1986).
39. M. Sahimi, "Relation Between the Critical Exponent of Elastic Percolation Networks and the Dynamical and Geometrical Exponents," *Journal of Physics C: Solid State Physics* **19**, L79-L83 (1986).
40. M. Sahimi, "Model for the Formation of Nonequilibrium Clusters," *Physical Review A (Rapid Communications)* **33**, 3618-3621 (1986).
41. M. Sahimi and J. D. Goddard, "Elastic Percolation Models for Cohesive Mechanical Failure in Heterogeneous Systems," *Physical Review B (Rapid Communications)* **33**, 7848-7851 (1986).
42. A. O. Imdakm and M. Sahimi, "Transport of Large Particles in Flow Through Porous Media," *Physical Review A* **36**, 5304-5309 (1987).
43. M. D. Stephens and M. Sahimi, "Distribution of Fracture Strength in Disordered Continua," *Physical Review B* **36**, 8656-8659 (1987).
44. M. Sahimi and T. T. Tsotsis, "Dynamic Scaling for the Fragmentation of Reactive Porous Media," *Physical Review Letters* **59**, 888-891 (1987).
45. M. Sahimi and H. Siddiqui, "The Effect of Morphological Disorder on Viscous Fingers and Diffusion-Limited Aggregates in a Porous Medium," *Journal of Physics A* **20**, L89-L96 (1987).
46. M. Sahimi, "Hydrodynamic Dispersion Near the Percolation Threshold: Scaling and Probability Densities," *Journal of Physics A* **20**, L1293-L1298 (1987).
47. M. Sahimi and T. T. Tsotsis, "Statistical Modeling of Gas-Solid Reactions with Pore Volume Growth: Kinetic Regime," *Chemical Engineering Science* **43**, 113-121 (1988).
48. M. Sahimi, "Diffusion-Controlled Reactions in Porous Media. I: Uniform Distribution of Reactants," *Chemical Engineering Science* **43**, 2981-2993 (1988).

49. R. Mojaradi and M. Sahimi, "Diffusion-Controlled Reactions in Porous Media. II: Non-uniform Distribution of Reactants," *Chemical Engineering Science* **43**, 2995-3004 (1988).
50. M. Sahimi, "On the Determination of Transport Properties of Disordered Systems," *Chemical Engineering Communications* **64**, 179-195 (1988).
51. M. Sahimi, T. T. Tsotsis, and M. L. Occelli, "Computer Simulations of Diffusion, Adsorption and Reaction of Organic Molecules in Pillared Clays," *Microstructure and Properties of Catalysts* **111**, 271-276 (1988).
52. M. Sahimi, T. T. Tsotsis, and G. R. Gavalas, "Statistical Modeling of Fluid-Solid Reactions in Porous Media," *Mathematical & Computer Modeling* **11**, 19-21 (1988).
53. M. Sahimi and A. O. Imdakm, "The Effect of Morphological Disorder on Hydrodynamic Dispersion in Flow Through Porous Media," *Journal of Physics A* **21**, 3833-3870 (1988).
54. S. Arbabi and M. Sahimi, "Absence of Universality in Percolation Models of Disordered Elastic Media with Central Forces," *Journal of Physics A* **21**, L863-L868 (1988).
55. S. Arbabi and M. Sahimi, "Elastic Properties of Three-Dimensional Percolation Networks with Stretching and Bond-Bending Forces," *Physical Review B (Rapid Communications)* **38**, 7173-7176 (1988).
56. M. Sahimi and V. L. Jue, "Hindered Transport in Disordered Porous Media with Connected Pores," *AIChE Symposium Series* **84** (No. 266), 40-49 (1988).
57. M. Sahimi, "Statistical Physics of Linear and Nonlinear, Scalar and Vector Transport Processes in Disordered Media," *Nuclear Physics A* **5**, 200-208 (1988).
58. M. Sahimi and V. L. Jue, "Diffusion of Large Molecules in Porous Media," *Physical Review Letters* **62**, 629-632 (1989).
59. M. Sahimi and S. Arbabi, "Force Distribution, Multiscaling and Fluctuations in Disordered Elastic Media," *Physical Review B* **40**, 4975-4980 (1989).
60. M. Sahimi and T. T. Tsotsis, "Statistical Models of Transport and Reactions in Porous Media and Their Applications in Catalysis," *Characterization and Catalyst Development* **411**, 158-178 (1989).
61. H. Siddiqui and M. Sahimi, "Computer Simulations of Miscible Displacement Processes in Disordered Porous Media," *Chemical Engineering Science* **45**, 163-182 (1990).
62. S. Arbabi and M. Sahimi, "Test of Universality for Three-Dimensional Models of Mechanical Breakdown in Disordered Solids," *Physical Review B* **41**, 772-775 (1990).

63. M. Sahimi, "Diffusion, Adsorption and Reaction in Pillared Clays. I: Rod-like Molecules in a Regular Pore Space," *Journal of Chemical Physics* **92**, 5107-5118 (1990).
64. S. Arbabi and M. Sahimi, "Critical Properties of Viscoelasticity of Gels and Elastic Percolation Networks," *Physical Review Letters* **65**, 725-728 (1990).
65. S. Arbabi and M. Sahimi, "On Three-Dimensional Elastic Percolation Networks with Bond-Bending Forces," *Journal of Physics A* **23**, 2211-2216 (1990).
66. H. Siddiqui and M. Sahimi, "A Statistical Model for Simulating Miscible Viscous Fingers in Porous Media and other Growth Phenomena," *Journal of Physics A* **23**, L497-L503 (1990).
67. M. Sahimi and Y. C. Yortsos, "Applications of Fractal Geometry to Porous Media: A Review," *Society of Petroleum Engineers paper 20476*, pp. 1-25 (1990).
68. D. Stauffer, J. S. Ho, and M. Sahimi, "Monte Carlo Simulation of Three-Dimensional Dilute Widom Model of Microemulsions," *Journal of Chemical Physics* **94**, 1385-1387 (1991).
69. S. Arbabi and M. Sahimi, "Computer Simulations of Catalyst Deactivation - I. Model Formulation and Validation," *Chemical Engineering Science* **46**, 1739-1747 (1991).
70. S. Arbabi and M. Sahimi, "Computer Simulations of Catalyst Deactivation - II. The Effect of Morphological, Transport and Kinetic Parameters on the Performance of the Catalyst," *Chemical Engineering Science* **46**, 1749-1755 (1991).
71. A. O. Imdakm and M. Sahimi, "Computer Simulation of Particle Transport Processes in Flow through Porous Media," *Chemical Engineering Science* **46**, 1977-1993 (1991).
72. M. Sahimi and S. Arbabi, "On Correction to Scaling for Two- and Three-Dimensional Scalar and Vector Percolation," *Journal of Statistical Physics* **62**, 453-461 (1991).
73. M. Sahimi, "Transport, Reaction and Fragmentation in Evolving Porous Media," *Physical Review A* **43**, 5367-5376 (1991).
74. M. Sahimi and D. Stauffer, "Efficient Simulation of Flow and Transport in Porous Media," *Chemical Engineering Science* **46**, 2225-2233 (1991).
75. M. Sahimi and T. S. Ray, "Transport Through Bootstrap Percolation Clusters," *Journal de Physique I* **1**, 685-692 (1991).
76. M. Sahimi and A. O. Imdakm, "Hydrodynamics of Particulate Motion in Porous Media," *Physical Review Letters* **66**, 1169-1172 (1991).
77. D. Chowdhury, M. Sahimi, and D. Stauffer, "A Discrete Model for Immune Surveillance, Tumor Immunity and Cancer," *Journal of Theoretical Biology* **152**, 263-270 (1991).

78. S. Arbabi and M. Sahimi, "Large Scale Computer Simulations of Static and Dynamic Properties of Disordered Materials," *Molecular Simulation* **8**, 1-22 (1991).
79. M. Sahimi and S. Arbabi, "Scaling Laws for Transport, Mechanical and Fracture Properties of Disordered Materials," *Proceedings of the Materials Research Society* **207**, 201-228 (1991).
80. M. Sahimi and B. N. Taylor, "Surface Tension of Binary Liquid-Vapor Mixtures: A Comparison of Mean-Field and Scaling Theories," *Journal of Chemical Physics* **95**, 6749-6761 (1991).
81. S. Mukhopadhyay and M. Sahimi, "Heat Transfer and Two-Phase Flow in Fractured Reservoirs," *Society of Petroleum Engineers Paper 24043*, 207-219 (1992).
82. A. A. Heiba, M. Sahimi, L. E. Scriven, and H. T. Davis, "Percolation Theory of Two-Phase Relative Permeability," *SPE Reservoir Engineering* **7**, 123-132 (1992).
83. M. Sahimi and S. Arbabi, "Percolation and Fracture in Disordered Solids and Granular Media: Approach to a Fixed Point," *Physical Review Letters* **68**, 608-611 (1992).
84. J. A. M. S. Duarte, M. Sahimi, and J. M. de Carvalho, "Dynamic Permeability of a Porous Medium by Cellular Automata," *Journal de Physique II* **2**, 1-5 (1992).
85. M. Sahimi, "Transport of Macromolecules in Porous Media," *Journal of Chemical Physics* **96**, 4718-4728 (1992).
86. M. A. Knackstedt and M. Sahimi, "On the Universality of Geometrical and Transport Exponents of Rigidity Percolation," *Journal of Statistical Physics* **69**, 887-895 (1992).
87. M. Sahimi, "Brittle Fracture in Disordered Media: From Reservoir Rocks to Composite Solids," *Physica A* **186**, 160-182 (1992).
88. M. Sahimi, M. C. Robertson, and C. G. Sammis, "Relation between the Earthquake Statistics and Rock Fracture, and Fractals and Percolation," *Physica A* **191**, 57-68 (1992).
89. S. Arbabi and M. Sahimi, "Mechanics of Disordered Solids. I. Percolation on Elastic Networks with Central Forces," *Physical Review B* **47**, 695-702 (1993).
90. M. Sahimi and S. Arbabi, "Mechanics of Disordered Solids. II. Percolation on Elastic Networks with Bond-Bending Forces," *Physical Review B* **47**, 703-712 (1993).
91. M. Sahimi and S. Arbabi, "Mechanics of Disordered Solids. III. Fracture Properties," *Physical Review B* **47**, 713-722 (1993).
92. M. Sahimi, M. C. Robertson, and C. G. Sammis, "Fractal Distribution of Earthquake Hypocenters and Its Relation with Fault Patterns and Percolation," *Physical Review Letters* **70**, 2186-2189 (1993).

93. B. D. Hughes and M. Sahimi, "Diffusion in Disordered Systems with Multiple Families of Transport Paths," *Physical Review Letters* **70**, 2581-2584 (1993).
94. M. Sahimi and D. Stauffer, "Ising Model above the Upper Critical Dimension: An Application to Biology," *Physical Review Letters* **71**, 4271-4273 (1993).
95. H. Nakanishi, M. Sahimi, M. C. Robertson, C. G. Sammis, and M. D. Rintoul, "Fractal Properties of Distribution of Earthquake Hypcenters," *Journal de Physique I* **3**, 733-739 (1993).
96. M. A. Knackstedt, M. Sahimi, and D. Y. C. Chan, "Cellular Automata Calculation of Frequency-Dependent Permeability of Porous Media," *Physical Review E* **47**, 2593-2597 (1993).
97. K. B. Lauritsen, M. Sahimi, and H. J. Herrmann, "Effect of Quenched and Correlated Disorder on Growth Phenomena," *Physical Review E* **48**, 1272-1278 (1993).
98. B. D. Hughes and M. Sahimi, "Stochastic Transport in Heterogeneous Media with Multiple Families of Transport Paths," *Physical Review E* **48**, 2776-2785 (1993).
99. D. Stauffer and M. Sahimi, "High-Dimensional Simulation and Very Large Cellular Automata for Immunological Shape Space," *International Journal of Modern Physics C* **4**, 401-408 (1993).
100. H. J. Herrmann and M. Sahimi, "Fluid Penetration through a Crack in a Pressure Gradient," *Journal of Physics A* **26**, L1145-1148 (1993).
101. M. Sahimi, "Fractal and Superdiffusive Transport and Hydrodynamic Dispersion in Heterogeneous Porous Media," *Transport in Porous Media* **13**, 3-40 (1993).
102. M. Sahimi, "Nonlinear Transport Processes in Disordered Media," *AIChE Journal* **39**, 369-386 (1993).
103. H. J. Herrmann, M. Sahimi, and F. Tzschichholz, "Examples of Fractals in Soil Mechanics," *Fractals* **1**, 795-805 (1993).
104. D. Stauffer and M. Sahimi, "High-Dimensional Simulation of Simple Immunological Models," *Journal of Theoretical Biology* **166**, 289-297 (1994).
105. M. Sahimi and M. A. Knackstedt, "No Viscous Fingers in Heterogeneous Porous Media," *Journal de Physique I* **4**, 1269-1274 (1994).
106. S. Mukhopadhyay and M. Sahimi, "Scaling Behavior of Permeability and Conductivity Anisotropy near the Percolation Threshold," *Journal of Statistical Physics* **74**, 1301-1308 (1994).
107. M. Sahimi, "Long-Range Correlated Percolation and Flow and Transport in Heterogeneous Porous Media," *Journal de Physique I* **4**, 1263-1268 (1994).

108. M. Sahimi and P. Nowroozi, "Scaling Properties of a Spin Model of Microemulsions," *Physical Review Letters* **73**, 1182-1185 (1994).
109. V. S. Ravi-Kumar, T. T. Tsotsis, M. Sahimi, and I. A. Webster, "Studies of Transport of Asphaltenes through Porous Membranes: Statistical Structural Models and Continuum Hydrodynamic Theories," *Chemical Engineering Science* **49**, 5789-5801 (1994).
110. M. Sahimi and H. Rassamdana, "On Position-Space Renormalization Group Approach to Percolation," *Journal of Statistical Physics* **78**, 1157-1164 (1995).
111. M. Sahimi, "Effect of Long-Range Correlations on Transport Phenomena in Disordered Media," *AIChE Journal* **41**, 229-240 (1995).
112. X. Yi, K. S. Shing, and M. Sahimi, "Molecular Dynamics Simulations of Diffusion in Pillared Clays," *AIChE Journal* **41**, 456-468 (1995).
113. P. Nowroozi and M. Sahimi, "Monte Carlo Simulation of a Lattice Model of Microemulsions in Porous Media," *MRS Proceedings* **366**, 95-100 (1995).
114. X. Yi, M. Sahimi, and K. S. Shing, "Computer Simulation of Diffusion and Adsorption in Pillared Clays," *MRS Proceedings* **368**, 357-362 (1995).
115. M. C. Robertson, C. G. Sammis, M. Sahimi, and A. J. Martin, "Fractal Analysis of Three-Dimensional Spatial Distribution of Earthquakes with a Percolation Interpretation," *Journal of Geophysical Research B* **100**, 609-620 (1995).
116. V. S. Ravi-Kumar, T. T. Tsotsis, M. Sahimi, and I. A. Webster, "Theoretical and Experimental Investigation of Asphaltene Transport," *Proceedings of 3rd International Conference on Inorganic Membranes*, 249-258 (1995).
117. H. Rassamdana, B. Dabir, M. Nematy, M. Farhani, and M. Sahimi, "Asphalt Flocculation and Deposition: I. The Onset of Precipitation," *AIChE Journal* **42**, 10-22 (1996).
118. H. Rassamdana and M. Sahimi, "Asphalt Flocculation and Deposition: II. Formation and Growth of Fractal Aggregates," *AIChE Journal* **42**, 3318-3332 (1996).
119. X. Yi, K. S. Shing, and M. Sahimi, "Molecular Simulation of Adsorption and Diffusion in Pillared Clays," *Chemical Engineering Science* **51**, 3409-3426 (1996).
120. M. Sahimi and S. Mukhopadhyay, "Scaling Properties of a Percolation Model with Long-Range Correlations," *Physical Review E* **54**, 3870-3880 (1996).
121. F. Naeim, F. Moatamed, and M. Sahimi, "Morphogenesis of the Bone Marrow: Fractal Structures and Diffusion-Limited Growth," *Blood* **87**, 5027-5031 (1996).

122. M. Sahimi and S. Arbabi, "Scaling Laws for Fracture of Heterogeneous Materials and Rock," *Physical Review Letters* **77**, 3689-3692 (1996).
123. X. Zhang, M. A. Knackstedt, and M. Sahimi, "Fluid Flow Across Fractal Volumes and Self-Affine Surfaces," *Physica A* **233**, 835-847 (1996).
124. B. Dabir, M. Nematy, A. R. Mehrabi, H. Rassamdana, and M. Sahimi, "Asphalt Flocculation and Deposition: III. The Molecular Weight Distribution," *Fuel* **75**, 1633-1645 (1996).
125. M. Sahimi, A. R. Mehrabi, and F. Naeim, "A Discrete Stochastic Model for Self-Renewal and Differentiation of Progenitor Cells," *Physical Review E (Rapid Communications)* **55**, R2111-R2114 (1997).
126. A. R. Mehrabi, H. Rassamdana, and M. Sahimi, "Characterization of Long-Range Correlations in Complex Distributions and Profiles," *Physical Review E* **56**, 712-722 (1997).
127. M. Sahimi and H. Rassamdana, "Formation, Growth and Precipitation of Fractal Molecular Aggregates in Porous Media," *Physica A* **240**, 419-431 (1997).
128. M. Sahimi, H. Rassamdana, and B. Dabir, "Asphalt Formation and Precipitation: Experimental Studies and Theoretical Modeling," *Society of Petroleum Engineers Journal* **2**, 157-169 (1997).
129. M. Sahimi and T. T. Tsotsis, "Transient Diffusion and Conduction in Heterogeneous Media: Beyond the Classical Effective-Medium Approximation," *Industrial & Engineering Chemistry Research* **36**, 3043-3052 (1997).
130. V. S. Ravi-Kumar, T. T. Tsotsis, and M. Sahimi, "Studies of Transport of Asphaltenes Through Porous Membranes Using Hindered Diffusion Theories for Spheres and Spheroids," *Industrial & Engineering Chemistry Research* **36**, 3154-3162 (1997).
131. A. R. Mehrabi and M. Sahimi, "Coarsening of Heterogeneous Media: Application of Wavelets," *Physical Review Letters* **79**, 4385-4388 (1997).
132. M. Mozaffarian, B. Dabir, M. Sohrabi, H. Rassamdana, and M. Sahimi, "Asphalt Flocculation and Deposition: IV. Dynamic Evolution of the Heavy Organic Compounds," *Fuel* **76**, 1479-1490 (1997).
133. X. Yi, J. Ghassemzadeh, K. S. Shing, and M. Sahimi, "Molecular Dynamics Simulations of Gas Mixtures in Porous Media. I. Adsorption," *Journal of Chemical Physics* **108**, 2178-2188 (1998).
134. M. Hashemi, M. Sahimi, and B. Dabir, "Percolation with Two Invaders and Two Defenders: Volatile Clusters, Oscillations, and Scaling," *Physical Review Letters* **80**, 3548-3251 (1998).
135. L. Xu, M. G. Sedigh, M. Sahimi, and T. T. Tsotsis, "Nonequilibrium Molecular Dynamics Simulation of Gas Mixtures in Nanopores," *Physical Review Letters* **80**, 3511-3514 (1998).



136. §F. Moatamed, M. Sahimi, and F. Naeim, "Fractal Dimensions in the Bone Marrows with Metastatic Lesions," *Human Pathology* **29**, 1299-1303 (1998).
137. M. Sahimi, M. Hashemi, and J. Ghassemzadeh, "Site-Bond Invasion Percolation with Fluid Trapping," *Physica A* **260**, 231-243 (1998).
138. M. G. Sedigh, W. J. Onstot, L. Xu and W. L. Peng, T. T. Tsotsis, and M. Sahimi, "Experiments and Simulation of Transport and Separation with Carbon Molecular Sieve Membranes," *Journal of Physical Chemistry A* **102**, 8580-8589 (1998).
139. A. R. Mehrabi and M. Sahimi, "Diffusion of Ionic Particles in Charged Disordered Media," *Physical Review Letters*, **82**, 735-738 (1999).
140. H. Rassamdana, M. Mozaffarian, M. Farhani, B. Dabir, and M. Sahimi, "Asphalt Flocculation and Deposition. V. Phase Behavior in Miscible and Immiscible Injections," *Energy & Fuels* **13**, 176-187 (1999).
141. M. Sahimi and A. R. Mehrabi, "Percolation in Geological Formations: Upscaling from Microscopic to Megascopic Scales," *Physica A* **266**, 136-152 (1999).
142. M. Hashemi, M. Sahimi, and B. Dabir, "Monte Carlo Simulation of Two-Phase Flow in Porous Media: Invasion with Two Invaders and Two Defenders," *Physica A* **267**, 1-33 (1999).
143. M. Hashemi, B. Dabir, and M. Sahimi, "Dynamics of Two-Phase Flow in Porous Media: Simultaneous Invasion of Two Fluids," *AIChE Journal* **45**, 1365-1382 (1999).
144. M. G. Sedigh, L. Xu, T. T. Tsotsis, and M. Sahimi, "Transport and Morphological Characteristics of Polyetherimide-based Carbon Molecular Sieve Membranes," *Industrial & Engineering Chemistry Research* **38**, 3367-3380 (1999).
145. M. G. Sedigh, P. K. T. Liu, R. J. Ciora, T. T. Tsotsis, and M. Sahimi, "Polyetherimide-Based Carbon Molecular Sieve Membranes: Transport Investigations and Morphological Characterization," *Advances in Filtration and Separation Technology* **13b**, 974-979 (1999).
146. L. Xu, T. T. Tsotsis, and M. Sahimi, "Non-equilibrium Molecular Dynamics Simulations of Transport and Separation of Gases in Carbon Nanopores. I. Basic Results," *Journal of Chemical Physics* **111**, 3252-3264 (1999).
147. M. Sahimi and A. R. Mehrabi, "Reply to Diffusion of Ionic Particles in Charged Disordered Media," *Physical Review Letters* **83**, 1695 (1999).
148. A. P. Sheppard, M. A. Knackstedt, W. V. Pinczewski, and M. Sahimi, "Invasion Percolation: New Algorithms and Universality Classes," *Journal of Physics A* **32**, L521-L529 (1999).

149. L. Xu, M. G. Sedigh, T. T. Tsotsis, and M. Sahimi, "Non-Equilibrium Molecular Dynamics Simulation of Transport and Separation of Gases in Carbon Nanopores. II. Binary and Ternary Mixtures and Comparison with Experimental Data," *Journal of Chemical Physics* **112**, 910-922 (2000).
150. M. A. Knackstedt, M. Sahimi, and A. P. Sheppard, "Invasion Percolation with Long-Range Correlation: First-order Phase Transition and Nonuniversal Scaling Properties," *Physical Review E* **61**, 4920-4934 (2000).
151. J. Ghassemzadeh, L. Xu, T. T. Tsotsis, and M. Sahimi, "Statistical Mechanics and Molecular Simulation of Adsorption of Gas Mixtures in Microporous Materials: Pillared Clays and Carbon Molecular Sieve Membranes," *Journal of Physical Chemistry B* **104**, 3892-3905 (2000).
152. M. Sahimi, A. R. Mehrabi, N. Mirzaee, and H. Rassamdana, "The Effect of Asphalt Precipitation on Flow Behavior and Production of a Fractured Carbonate Oil Reservoir During Gas Injection," *Transport in Porous Media* **41**, 325-347 (2000).
153. S. Mukhopadhyay and M. Sahimi, "Calculation of the Effective Permeabilities of Field-Scale Porous Media," *Chemical Engineering Science* **55**, 4495-4513 (2000).
154. M. Sahimi, "Fractal-Wavelet-Neural Network Approach to Characterization and Upscaling of Fractured Reservoirs," *Computers & Geosciences* **26**, 877-905 (2000).
155. L. Xu, M. Sahimi, and T. T. Tsotsis, "Nonequilibrium Molecular Dynamics Simulations of Transport and Separation of Gas Mixtures in Nanoporous Materials," *Physical Review E* **62**, 6942-6948 (2000).
156. V. Suwanmethanond, E. Goo, P. K. T. Liu, G. Johnson, M. Sahimi, and T. T. Tsotsis, "Porous SiC Sintered Substrates for High Temperature Membranes for Gas Separation," *Industrial & Engineering Chemistry Research* **39**, 3264-3271 (2000).
157. M. G. Sedigh, M. Jahangiri, P. K. T. Liu, M. Sahimi, and T. T. Tsotsis, "Structural Characterization of Supported Polyetherimide-based Carbon Molecular Sieve Membranes," *AIChE Journal* **46**, 2245-2255 (2000).
158. M. Dadvar, M. Sohrabi, and M. Sahimi, "Pore Network Model of Deactivation of Immobilized Glucose Isomerase in Packed-Bed Reactors- I: Two-Dimensional Simulations at the Particle Level," *Chemical Engineering Science* **56**, 1-17 (2001).
159. M. A. Knackstedt, A. P. Sheppard, and M. Sahimi, "Pore Network Modeling of Two-Phase Flow in Porous Rock: The Effect of Correlated Heterogeneity," *Advances in Water Resources* **24**, 257-278 (2001).

160. J. Ghassemzadeh, M. Hashemi, L. Sartor, and M. Sahimi, "Pore Network Simulation of Fluid Imbibition into Paper during Coating Processes: I. Model Development," *AIChE Journal* **47**, 519-535 (2001).
161. M. Sahimi and M. Hashemi, "Wavelet Identification of the Spatial Distribution of Fractures," *Geophysical Research Letters* **28**, 611-614 (2001).
162. L. Xu, T. T. Tsotsis, and M. Sahimi, "Statistical Mechanics and Molecular Simulation of Adsorption of Ternary Gas Mixtures in Nanoporous Materials," *Journal of Chemical Physics* **114**, 7196-7210 (2001).
163. M. Sahimi, "Characterization and Modeling of Oil Reservoirs and Groundwater Aquifers: Application of Wavelet Transformations," *Granular Matter* **3**, 3-14 (2001).
164. M. A. Knackstedt, S. J. Marrink, A. P. Sheppard, W. V. Pinczewski, and M. Sahimi, "Invasion Percolation on Correlated and Elongated Lattices: Implications for the Interpretation of Residual Saturations in Rock Cores," *Transport in Porous Media* **44**, 465-485 (2001).
165. M. A. Knackstedt, M. Sahimi, and A. P. Sheppard, "Nonuniversality of Invasion Percolation in Two-Dimensional Systems," *Physical Review E (Rapid Communications)* **65**, 035101/1-035101/4 (2002).
166. M. Saadatfar and M. Sahimi, "Diffusion in Disordered Media with Long-Range Correlations: Anomalous, Fickian, and Superdiffusive Transport and Log-Periodic Oscillations," *Physical Review E* **65**, 036116/1-036116/8 (2002).
167. M. Hashemi, H. I. Kavak, T. T. Tsotsis, and M. Sahimi, "Computer Simulation of Gas Generation and Transport in Landfills - I: Quasi-Steady-State Condition," *Chemical Engineering Science* **54**, 2475-2501 (2002).
168. W. Yang, Y. Kim, P. K. T. Liu, M. Sahimi, and T. T. Tsotsis, "Study by In-situ Techniques of the Thermal Evolution of the Structure of Mg-Al-CO<sub>3</sub> Layered Double Hydroxide," *Chemical Engineering Science* **57**, 2945-2953 (2002).
169. M. Dadvar and M. Sahimi, "Pore Network Model of Deactivation of Immobilized Glucose Isomerase in Packed-Bed Reactors. II: Three-Dimensional Simulations at the Particle Level," *Chemical Engineering Science* **57**, 939-952 (2002).
170. S. Y. Lim, B. Park, F. Hung, M. Sahimi, and T. T. Tsotsis, "Design Issues of Pervaporation Membrane Reactors for Esterification," *Chemical Engineering Science* **57**, 4933-4946 (2002).
171. F. Ebrahimi and M. Sahimi, "Multiresolution Wavelet Coarsening and Analysis of Transport in Heterogeneous Media," *Physica A* **316**, 160-188 (2002).

172. S. Y. Lim, T. T. Tsotsis, and M. Sahimi, "Molecular Simulation of Diffusion and Sorption of Gases in an Amorphous Polymer," *Journal of Chemical Physics* **119**, 496-504 (2003).
173. M. Sahimi, "Large-Scale Porous Media and Wavelet Transformations," *Computing in Science & Engineering* **5** (No. 4), 75-87 (2003).
174. M. Firouzi, T. T. Tsotsis, and M. Sahimi "Nonequilibrium Molecular Dynamics Simulations of Transport and Separation of Supercritical Fluid Mixtures in Nanoporous Membranes. I: Results for a Single Carbon Nanopore," *Journal of Chemical Physics* **119**, 6810-6822 (2003).
175. M. Sahimi and T. T. Tsotsis, "Molecular Pore Network Models of Nanoporous Materials," *Physica B* **338**, 291-297 (2003).
176. M. Madadi, C. DeW. Van Siclem, and M. Sahimi, "Fluid Flow and Conduction in Fractures with Rough, Self-Affine Surfaces: A Comparative Study," *Journal of Geophysical Research* **108**, 2396-2405 (2003).
177. M. Dadvar and M. Sahimi, "Pore Network Model of Deactivation of Immobilized Glucose Isomerase in Packed-Bed Reactors. III: Multiscale Modeling," *Chemical Engineering Science* **58**, 4935-4951 (2003).
178. M. Madadi and M. Sahimi, "Lattice Boltzmann Simulation of Fluid Flow in Fracture Networks with Rough, Self-Affine Surfaces," *Physical Review E* **67**, 026309/1-026309/12 (2003).
179. J. Ghassemzadeh and M. Sahimi, "Pore Network Simulation of Fluid Imbibition into Paper During Coating II: Characterization of Paper's Morphology and Computation of its Effective Permeability Tensor," *Chemical Engineering Science* **59**, 2265-2280 (2004).
180. J. Ghassemzadeh and M. Sahimi, "Pore Network Simulation of Fluid Imbibition into Paper during Coating III: Modeling of the Two-Phase Flow," *Chemical Engineering Science* **59**, 2281-2296 (2004).
181. E. Nedaaee Oskoe, M. R. H. Khajepour, and M. Sahimi, "Numerical Simulation of a Continuum Model of Growth of Thin Composite Films," *Physical Review E* **69**, 061606/1-061606/4 (2004).
182. F. Ebrahimi and M. Sahimi, "Multiresolution Wavelet Scale Up of Unstable Miscible Displacements in Flow through Heterogeneous Porous Media," *Transport in Porous Media* **57**, 75-102 (2004).
183. A. Heidarinasab, B. Dabir, and M. Sahimi, "Multiresolution Wavelet-Based Simulation of Transport and Photochemical Reactions in the Atmosphere," *Atmospheric Environment* **38**, 6381-6397 (2004).

184. M. Sahimi, A. Heidarinasab, and B. Dabir, "Computer Simulation of Conduction in Heterogeneous Materials: Application of Wavelet Transformation," *Chemical Engineering Science* **59**, 4291-4303 (2004).
185. †M. Firouzi, Kh. Molaai Nezhad, T. T. Tsotsis, and M. Sahimi, "Molecular Dynamics Simulations of Transport and Separation of Carbon Dioxide-Alkane Mixtures in Carbon Nanopores," *Journal of Chemical Physics* **120**, 8172-8185 (2004).
186. T. T. Tsotsis, H. Patel, B. F. Najafi, D. Racherla, M. A. Knackstedt, and M. Sahimi, "An Overview of Laboratory and Modeling Studies of Carbon Dioxide Sequestration in Coalbeds," *Industrial & Engineering Chemistry Research* **43**, 2887-2901 (2004).
187. Y. Kim, W. Yang, P. K. T. Liu, M. Sahimi, and T. T. Tsotsis, "Thermal Evolution of the Structure of a Mg-Al-CO<sub>3</sub> Layered Double Hydroxide. Sorption Reversibility Aspects," *Industrial & Engineering Chemistry Research* **43**, 4559-4570 (2004).
188. R. J. Ciora, B. Fayyaz, P. K. T. Liu, V. Suwanmethanon, R. Mallada, M. Sahimi, and T. T. Tsotsis, "Preparation and Reactive Applications of Nanoporous Silicon Carbide Membranes," *Chemical Engineering Science* **59**, 4957-4965 (2004).
189. J. Ghassemzadeh and M. Sahimi, "Molecular Modeling of Adsorption of Gas Mixtures in Montmorillonites Intercolated with Al<sub>13</sub>-complex Pillars," *Molecular Physics* **102**, 1447-1467 (2004).
190. N. Rajabbeigi, B. Elyassi, A. Khodadadi, S. S. Mohajerzadeh, and M. Sahimi, "A Novel Miniaturized Oxygen Sensor with Solid-State Ceria-Zirconia Reference," *Sensors and Actuators B* **100**, 139-142 (2004).
191. B. Elyassi, N. Rajabbeigi, A. Khodadadi, S. S. Mohajerzadeh, and M. Sahimi, "An Yttria-Doped Ceria-Based Oxygen Sensor with Solid-State Reference," *Sensors and Actuators B* **103**, 178-183 (2004).
192. N. Rajabbeigi, B. Elyassi, A. Khodadadi, S.S. Mohajerzadeh, Y. Mortazavi, and M. Sahimi, "Oxygen Sensor with Solid-State CeO<sub>2</sub>-ZrO<sub>2</sub>-TiO<sub>2</sub> Reference," *Sensors and Actuators B* **108**, 341-345 (2005).
193. B. Elyassi, N. Rajabbeigi, M. Sahimi, A. Khodadadi, S. S. Mohajerzadeh, and Y. Mortazavi, "Oxygen Sensor with Solid-State CeO<sub>2</sub>-TiO<sub>2</sub> Reference," *Proceeding of the 4th IEEE Conference on Sensors*, 334-337 (2005).
194. S. M. Vaez Allaei and M. Sahimi, "Computing Transport Properties of Heterogeneous Media by an Optimization Method," *International Journal of Modern Physics C* **16**, 1-16 (2005).

195. E. Nedaaee Oskoe and M. Sahimi, "Phase Diagrams and Scaling Regimes for a Continuum Model of Growth of Thin Composite Films," *International Journal of Modern Physics C* **16**, 727-743 (2005).
196. M. Sahimi, M. Naderian, and F. Ebrahimi, "Efficient Simulation of AC Conduction in Heterogeneous Materials at Low Temperatures," *Physical Review B* **71**, 094208/1-094208/7 (2005).
197. F. Shahbazi, A. Bahraminasab, S. M. Vaez Allaei, M. Sahimi, and M. R. Rahimi Tabar, "Localization of Elastic Waves in Heterogeneous Media with Off-Diagonal Disorder and Long-Range Correlations," *Physical Review Letters* **94**, 165505/1-165505/4 (2005).
198. D. Stauffer and M. Sahimi, "Diffusion in Scale-Free Networks with Annealed Disorder," *Physical Review E* **72**, 046128/1-046128/6 (2005).
199. M. Sahimi and S. E. Tajer, "Self-Affine Distributions of the Bulk Density, Elastic Moduli, and Seismic Wave Velocities of Rock," *Physical Review E* **71**, 046301/1-046301/8 (2005).
200. F. Ghasemi, J. Peinke, M. Sahimi, and M. R. Rahimi Tabar, "Regeneration of Stochastic Processes: An Inverse Method," *European Physical Journal B* **47**, 411-415 (2005).
201. N. Kim, Y. Kim, T. T. Tsotsis, and M. Sahimi, "Atomistic Simulations of Nanoporous Layered Double Hydroxide Materials and Their Properties I. Structural Modeling," *Journal of Chemical Physics* **122**, 214713/1-214713/12 (2005).
202. L. Yang, Z. Shahrivari, P. K. T. Liu, M. Sahimi, and T. T. Tsotsis, "Removal of Trace Levels of Arsenic and Selenium from Aqueous Solutions by Calcined and Uncalcined Layered Double Hydroxides (LDH)," *Industrial & Engineering Chemistry Research* **44**, 6804-6815 (2005).
203. B. Fayyaz, A. Harale, B.-G. Park, P. K. T. Liu, M. Sahimi, and T. T. Tsotsis, "Design Aspects of Hybrid Adsorbent-Membrane Reactors for Hydrogen Production," *Industrial & Engineering Chemistry Research* **44**, 9398-9408 (2005).
204. M. M. Ostwal, J. Pellegrino, I. Norris, T. T. Tsotsis, M. Sahimi, and B. R. Mattes, "Water Sorption of Acid-Doped Polyaniline Solid Fibers: Equilibrium and Kinetic Response," *Industrial & Engineering Chemistry Research* **44**, 7860-7867 (2005).
205. D. Stauffer and M. Sahimi, "Discrete Simulation of the Dynamics of Spread of Extreme Opinions in a Society," *Physica A* **364**, 537-543 (2006).
206. F. Ebrahimi and M. Sahimi, "Grid Coarsening, Simulation of Transport Processes in, and Scale-up of Heterogeneous Media: Application of Multiresolution Wavelet Transformations," *Mechanics of Materials* **38**, 772-785 (2006).

207. S. M. Vaez Allaei and M. Sahimi, "Shape of a Wave Front in a Heterogeneous Medium," *Physical Review Letters* **96**, 075507/1-075507/4 (2006).
208. M. Firouzi, M. Sahimi, and T. T. Tsotsis, "Supercritical Fluids in Porous Composite Materials: Direction-Dependent Flow Properties," *Physical Review E* **73**, 036312/1-036312/8 (2006).
209. H. Hamzhepour and M. Sahimi, "Generation of Long-Range Correlations in Large Systems as an Optimization Problem," *Physical Review E* **73**, 056121/1-056121/9 (2006).
210. H. Hamzhepour and M. Sahimi, "Development of Optimal Models of Porous Media by Combining Static and Dynamic Data: The Porosity Distribution," *Physical Review E* **74**, 026308/1-026308/12 (2006).
211. E. Pazhoohesh, H. Hamzhepour, and M. Sahimi, "Numerical Simulation of ac Conduction in Three-Dimensional Heterogeneous Materials," *Physical Review B* **73**, 174206/1-174206/11 (2006).
212. E. Nedaaee Oskoe and M. Sahimi, "Transport Properties of Composite Solid Films with Rough Self-Affine Surface," *Physical Review B* **74**, 045413/1-045413/7 (2006).
213. F. Ghasemi, J. Peinke, M. R. Rahimi Tabar, and M. Sahimi, "Statistical Properties of the Interbeat Interval Cascade in Human Hearts," *International Journal of Modern Physics C* **17**, 571-580 (2006).
214. F. Ghasemi, M. Sahimi, J. Peinke, and M. R. Rahimi Tabar, "Analysis of Non-stationary Data for Heart-Rate Fluctuations in Terms of Drift and Diffusion Coefficients," *Journal of Biological Physics* **32**, 117-128 (2006).
215. L. Yang, Z. Shahrivari, M. Dadwhal, M. Ostwal, P. K. T. Liu, M. Sahimi, and T. T. Tsotsis, "Adsorption of Arsenic on Layered Double Hydroxides: Effect of the Particle Size," *Industrial & Engineering Chemistry Research* **45**, 4742-4751 (2006).
216. M. M. Ostwal, B. Qi, J. Pellegrino, A. G. Fadeev, I. D. Norris, T. T. Tsotsis, M. Sahimi, and B. R. Mattes, "Water Sorption of Acid-Doped Powders and Hollow Fibers: Equilibrium and Kinetic Response," *Industrial & Engineering Chemistry Research* **45**, 6021-6031 (2006).
217. R. Sanchez, M. Hashemi, T. T. Tsotsis, and M. Sahimi, "Computer Simulation of Gas Generation and Transport in Landfills II: Dynamic Conditions," *Chemical Engineering Science* **61**, 4750-4761 (2006).
218. A. Bahraminasab, M. Sadegh Movahed, S. D. Nasiri, A. A. Masoudi, and M. Sahimi, "Exact Analysis of Level-crossing statistics for (d+1)-Dimensional Flocculating surfaces," *Journal of Statistical Physics* **124**, 1471-1490 (2006).

219. N. Abedpour, M. D. Nirry, A. Bahraminasab, A. A. Masoudi, J. Davoudi, M. Sahimi, and M. R. Rahimi Tabar, "Stochastic  $\phi^4$  - Theory in the Strong Coupling Limit," *Nuclear Physics B* **761** [FS], 93-108 (2006).
220. B. Elyassi, M. Sahimi, and T. T. Tsotsis, "Silicon Carbide Membranes for Gas Separation Applications," *Journal of Membrane Science* **288**, 290-297 (2007).
221. A. Bahraminasab, S. M. Vaez Allaei, F. Shahbazi, M. Sahimi, M. D. Nirry, and M. R. Rahimi Tabar, "Renormalization Group Analysis and Numerical Simulation of Propagation and Localization of Acoustic Waves in Heterogeneous Media," *Physical Review B* **75**, 069702/1-069702/13 (2007).
222. F. Ghasemi, M. Sahimi, J. Peinke, R. Friedrich, G. R. Jafari, and M. R. Rahimi Tabar, "Markov Analysis and Kramers-Moyal Expansion of Nonstationary Stochastic Processes with an Application to the Fluctuations in the Oil Price," *Physical Review E (Rapid Communications)* **75**, 060102(R)/1-060102(R)/4 (2007).
223. H. Hamzeshpour, M. R. Rasaei, and M. Sahimi, "Development of Optimal Models of Porous Media by Combining Static and Dynamic Data: The Permeability and Porosity Distributions," *Physical Review E* **75**, 056311/1-056311/17 (2007).
224. †S. Y. Lim, M. Sahimi, T. T. Tsotsis, and N. Kim, "Molecular Dynamics Simulation of Diffusion of Gases in Carbon Nanotube-Polyetherimide Polymer Composite," *Physical Review E* **76**, 011810/1-011810/15 (2007).
225. M. Dadvar and M. Sahimi, "The Effective Diffusivities in Porous Media with and without Non-linear Reactions," *Chemical Engineering Science* **62**, 1466-1476 (2007).
226. M. Firouzi, T. T. Tsotsis, and M. Sahimi, "Molecular Dynamics Simulation of Transport and Separation of Supercritical Carbon Dioxide - Alkane Mixtures in Supported Membranes," *Chemical Engineering Science* **62**, 2777-2789 (2007).
227. A. Harale, H. Hwang, P. K. T. Liu, M. Sahimi, and T. T. Tsotsis, "Experimental Studies of a Hybrid Adsorbent - Membrane Reactor (HAMR) System for Hydrogen Production," *Chemical Engineering Science* **62**, 4126-4137 (2007).
228. R. Sanchez, T. T. Tsotsis, and M. Sahimi, "Computer Simulation of Gas Generation and Transport in Landfills. III: Development of Landfills' Optimal Model," *Chemical Engineering Science* **62**, 6378-6390 (2007).
229. M. M. Ostwal, T. T. Tsotsis, and M. Sahimi, "Molecular Dynamics Simulation of Diffusion and Sorption of Water in Conducting Polyaniline," *Journal of Chemical Physics* **126**, 124903/1-124903/7 (2007).



230. †N. Kim, A. Harale, T. T. Tsotsis, and M. Sahimi, "Atomistic Simulation of Nanoporous Layered Double Hydroxide Materials and Their Properties: II Adsorption and Diffusion," *Journal of Chemical Physics* **127**, 224701/1 - 224701/12 (2007).
231. F. Bagheri-Tar, M. Sahimi, and T. T. Tsotsis, "Preparation of Polyetherimide Nanoparticles by an Electrospray Technique," *Industrial & Engineering Chemistry Research* **46**, 3348-3357 (2007).
232. G. R. Jafari, M. Sadegh Movahed, P. Noroozadeh, A. Bahraminasab, M. Sahimi, and M. R. Rahimi Tabar, "Criticality and Uncertainties in Stock-Price Fluctuations," *International Journal of Modern Physics C* **18**, 1-9 (2007).
233. D. Stauffer and M. Sahimi, "Can a few Fanatics Influence the Opinion of a Large Segment of a Society?" *European Physical Journal B* **57**, 147-152 (2007).
234. F. Farahpour, Z. Eskandari, A. Bahraminasab, G. R. Jafari, F. Ghasemi, M. Sahimi, and M. R. Rahimi Tabar, "A Langevin Equation for the Rates of Currency Exchanges based on the Markov Analysis," *Physica A* **385**, 601-608 (2007).
235. M. Sahimi and S. M. Vaez Allaei, "Numerical Simulation of Wave Propagation, Part I: Sequential Computing," *Computing in Science & Engineering* **10** (No. 3), 66-75 (2008).
236. M. Sahimi and S. M. Vaez Allaei, "Numerical Simulation of Wave Propagation, Part II: Parallel Computing," *Computing in Science & Engineering* **10** (No. 4), 76-83 (2008).
237. M. R. Rasaei and M. Sahimi, "Efficient Simulation of Water Flooding in Three-Dimensional Heterogeneous Reservoirs Using Wavelet Transformations: Application to the SPE-10 Model," *Transport in Porous Media* **72**, 311-338 (2008).
238. F. Chen, R. Mourhatch, T. T. Tsotsis, M. Sahimi, "Pore Network Model of Transport and Separation of Binary Gas Mixtures in Nanoporous Membranes," *Journal of Membrane Science* **315**, 48-57 (2008).
239. B. Elyassi, M. Sahimi, and T. T. Tsotsis, "A Novel Sacrificial Interlayer-Based Method for the Preparation of Silicon Carbide Membranes," *Journal of Membrane Science* **316**, 73-79 (2008).
240. H. T. Hwang, A. Harale, P. K. T. Liu, M. Sahimi, and T. T. Tsotsis, "A Membrane-Based Reactive Separation System for CO<sub>2</sub> Removal in a Life Support System," *Journal of Membrane Science* **315**, 116-124 (2008).
241. F. Chen, R. Mourhatch, T. T. Tsotsis, and M. Sahimi, "Experimental Studies and Computer Simulation of the Preparation of Nanoporous Silicon-Carbide Membranes by Chemical-Vapor Infiltration/Chemical-Vapor Deposition Techniques," *Chemical Engineering Science* **63**, 1460-1470 (2008).

242. M. Dadwhal, T. W. Kim, M. Sahimi, and T. T. Tsotsis, "The Study of CO<sub>2</sub> Diffusivity in Calcined Layered Double Hydroxides: Effect of Particle Size," *Industrial & Engineering Chemistry Research* **47**, 6150-6157 (2008)
243. †L. Javidpour, M. R. Rahimi Tabar, and M. Sahimi, "Molecular Simulation of Protein Dynamics in Nanopores. I. Stability and Folding," *Journal of Chemical Physics* **128**, 115105/1-115105/15 (2008).
244. A. R. Mehrabi and M. Sahimi, "Cluster Conformations and Multipole Distributions in Ionic Fluids I. Two-Dimensional Systems of Mobile Ions," *Journal of Chemical Physics* **128**, 234503/1-234503/15 (2008).
245. R. H. Abdolvahab, F. Roshani, N. Nourmohammad, M. Sahimi, and M. R. Rahimi Tabar, "Analytical and Numerical Studies of Sequence Dependence of Passage Times for Translocation of Heterobiopolymer Through Nanopores," *Journal of Chemical Physics* **129**, 235102/1-235102/8 (2008).
246. S. M. Vaez Allaei, M. Sahimi, and M. R. Rahimi Tabar, "Propagation of Acoustic Waves as a Probe for Distinguishing Heterogeneous Media with Short-Range and Long-Range Correlations," *Journal of Statistical Mechanics: Theory and Experiment*, P03016/1-P03016/28 (2008).
247. R. Sepehrinia, M. D. Niry, B. Bozorg, M. R. Rahimi Tabar, and M. Sahimi, "Exact Lyapunov Exponent of the Harmonic Magnon Modes of One-Dimensional Heisenberg-Mattis Spin Glasses," *Physical Review B* **77**, 104202/1-104202/6 (2008).
248. R. Sepehrinia, A. Bahraminasab, M. Sahimi, and M. R. Rahimi Tabar, "Dynamic Renormalization Group Analysis of Propagation of Elastic Waves in Two-Dimensional Heterogeneous Media," *Physical Review B* **77**, 014203/1-014203/12 (2008).
249. R. Sepehrinia, M. R. Rahimi Tabar, and M. Sahimi, "Numerical Simulation of Localization of Elastic Waves in Two- and Three-Dimensional Heterogeneous Media," *Physical Review B* **78**, 024207/1-024207/9 (2008).
250. A. Bahraminasab, A. Esmailpour, S. M. Vaez Allaei, F. Shahbazi, M. Sahimi, and M. R. Rahimi Tabar, "Reply to 'Comment on Renormalization Group Analysis and Numerical Simulation of Propagation and Localization of Waves in Heterogeneous Media,'" *Physical Review B* **77**, 216302/1-216303/4 (2008).
251. A. Esmailpour, M. Esmailpour, A. Sheikhan, M. Elahi, M. R. Rahimi Tabar, and M. Sahimi, "Localization Properties of Acoustic Waves in the Random Dimer Model," *Physical Review B* **78**, 134206/1-134206/6 (2008).
252. T. W. Kim, M. Sahimi, and T. T. Tsotsis, "Preparation of Hydrotalcite Thin Films Using an Electrophoretic Technique," *Industrial & Engineering Chemistry Research* **47**, 9127-9132 (2008).

253. • P. Manshoor, S. Saberi, M. Sahimi, J. Peinke, A. F. Pacheco, and M. R. Rahimi Tabar, “Turbulencelike Behavior of Seismic Time Series,” *Physical Review Letters* **102**, 014101/1 - 014101/4 (2009).
254. T. W. Kim, M. Sahimi, and T. T. Tsotsis, “The Preparation and Characterization Hydrotalcite Micromembranes,” *Chemical Engineering Science* **64**, 1585-1590 (2009).
255. N. Rajabbeigi, B. Elyassi, T. T. Tsotsis, and M. Sahimi, “Molecular Pore-Network Model for Nanoporous Materials. I: Application to Adsorption in Silicon-Carbide Membranes,” *Journal of Membrane Science* **335**, 5-12 (2009).
256. N. Rajabbeigi, T. T. Tsotsis, and M. Sahimi, “Molecular Pore-Network Model for Nanoporous Materials. II: Application to Transport and Separation of Gaseous Mixtures in Silicon-Carbide Membranes,” *Journal of Membrane Science* **345**, 323-330 (2009).
257. †L. Javidpour, M. R. Rahimi Tabar, and M. Sahimi, “Molecular Simulations of Protein Dynamics in Nanopores. II. Diffusion,” *Journal of Chemical Physics* **130**, 085105/1-085105/13 (2009).
258. M. Sahimi, M. R. Rahimi Tabar, A. Bahraminasab, R. Sepehrinia, and S. M. Vaez Allaei, “Propagation and Localization of Acoustic and Elastic Waves in Heterogeneous Materials: Renormalization Group Analysis and Numerical Simulations,” *Acta Mechanica* **205**, 197-222 (2009).
259. M. R. Rasaei and M. Sahimi, “Upscaling of the Permeability by Multiscale Wavelet Transformations and Simulation of Multiphase Flows in Heterogeneous Porous Media,” *Computational Geosciences* **13**, 187-214 (2009).
260. †M. M. Ostwal, M. Sahimi, and T. T. Tsotsis, “Water Harvesting Using a Conducting Polymer: A Study by Molecular Dynamics Simulation,” *Physical Review E* **79**, 061801/1-061801/16 (2009).
261. M. Dadwhal, M. M. Ostwal, P. K. T. Liu, M. Sahimi, and T. T. Tsotsis, “Adsorption of Arsenic on Conditioned Layered Double Hydroxides: Column Experiments and Modeling,” *Industrial & Engineering Chemistry Research* **48**, 2076-2084 (2009).
262. T. W. Kim, M. Sahimi, and T. T. Tsotsis, “The Preparation and Characterization of Hydrotalcite Thin Films,” *Industrial & Engineering Chemistry Research* **48**, 5794-5801 (2009).
263. A. R. Mehrabi and M. Sahimi, “Analysis and Simulation of Long-Range Correlations in Curved Space,” *International Journal of Modern Physics C* **20**, 1211-1232 (2009).
264. A. Sheikhan, M. R. Rahimi Tabar, and M. Sahimi, “Numerical Simulations of Localization of Electromagnetic Waves in Two- and Three-Dimensional Disordered Media,” *Physical Review B* **80**, 035130/1-035130/8 (2009).

265. A. Shirazi, G. R. Jafari, J. Davoudi, J. Peinke, M. R. Rahimi Tabar, and M. Sahimi, "Mapping Stochastic Processes onto Complex Networks," *Journal of Statistical Mechanics: Theory and Experiment* P07046/1-P07046/11 (2009).
266. M. R. Rasaei and M. Sahimi, "Upscaling of the Geological Models of Large-Scale Porous Media Using Multiresolution Wavelet Transformations," *Journal of Heat Transfer* **131**, 101007/1-101007/12 (2009).
267. B. Elyassi, T. W. Kim, M. Sahimi, and T. T. Tsotsis, "Effect of Polystyrene on the Morphology and Physical Properties of Silicon-Carbide Nanofibers," *Materials Physics and Chemistry* **118**, 259-263 (2009).
268. T. W. Kim, M. Sahimi, and T. T. Tsotsis, "Preparation and Characterization of Hybrid Hydrotalcite-Sulfonated Polyetheretherketone (SPEEK) Cation-Exchange Membranes," *Industrial & Engineering Chemistry Research* **48**, 9504-9513 (2009).
269. †‡H. Mohammadi, E. Nedaaee Oskoe, M. Afsharchi, N. Yazdani, and M. Sahimi, "A Percolation Model of Mobile Ad-Hoc Networks," *International Journal of Modern Physics C* **20**, 1871-1902 (2009).
270. A. Harale, H. T. Hwang, M. Sahimi, P. K. T. Liu, and T. T. Tsotsis, "Design Aspects of the Cyclic Hybrid Adsorbent-Membrane Reactor (HAMR) System for Hydrogen Production," *Chemical Engineering Science* **65**, 427-435 (2010).
271. R. Sanchez, T. T. Tsotsis, and M. Sahimi, "Computer Simulation of Gas Generation and Transport in Landfills. IV: Modelling of Two-Phase Flow," *Chemical Engineering Science* **65**, 1212-1226 (2010).
272. †K. Malek and M. Sahimi, "Molecular Dynamics Simulations of Adsorption and Diffusion of Gases in Silicon-Carbide Nanotubes," *Journal of Chemical Physics* **132**, 014310/1-014310/10 (2010).
273. A. Sheikhan, N. Abedpour, R. Sepehrinia, M. D. Niry, M. R. Rahimi Tabar, and M. Sahimi, "Anderson Localization and Propagation of Electromagnetic Waves through Disordered Media," *Waves in Random and Complex Media* **20**, 191-200 (2010).
274. R. Mazaheri, A. H. Shirazi, N. Saeedi, G. R. Jafari, and M. Sahimi, "Differentiating the Protein- and RNA-Coding Segments of DNA Using Shannon Entropy," *International Journal of Modern Physics C* **21**, 1-9 (2010).
275. F. Shayeganfar, L. Javidpour, N. Taghavinia, M. R. Rahimi Tabar, M. Sahimi, and F. Bagheri-Tar, "Controlled Nucleation and Growth of CdS Nanoparticles by Turbulent Flow," *Physical Review E* **81**, 026304/1-026304/8 (2010).

276. M. Sahimi, R. Darvishi, M. Haghighi, and M. R. Rasaei, "Upscaled Unstructured Grids for Efficient Simulation of Flow in Fractured Reservoirs," *Transport in Porous Media* **83**, 195-218 (2010).
277. R. Mourhatch, T. T. Tsotsis, and M. Sahimi, "Network Model for the Evolution of the pore Structure of Silicon-Carbide Membranes During Their Fabrication," *Journal of Membrane Science* **356**, 138-146 (2010).
278. M. Sahimi and H. Hamzhepour, "Efficient Computational Strategies for Solving Global Optimization Problems," *Computing in Science & Engineering* **12** (No. 4), 74-82 (2010).
279. M. Abdollahi, J. Yu, P.K.T. Liu, R. Ciora, M. Sahimi, and T.T. Tsotsis, "Hydrogen Production from Coal-Derived Syngas using a Catalytic Membrane Reactor-Based Process," *Journal of Membrane Science* **363**, 160-169 (2010).
280. P. Manshour, F. Ghasemi, T. Matsumoto, J. Gómez, M. Sahimi, J. Peinke, A.F. Pacheco, and M.R. Rahimi Tabar, "Anomalous Fluctuations of Vertical Velocity of Earth and their Possible Implications for Earthquakes," *Physical Review E* **82**, 036105/1-036105/9 (2010).
281. M. Abdollahi, J. Yu, H. T. Hwang, P. K. T. Liu, R. Ciora, M. Sahimi, and T. T. Tsotsis, "Process Intensification in Hydrogen Production from Biomass-Derived Syngas," *Industrial & Engineering Chemistry Research* **49**, 10986-10993 (2010).
282. R. Mourhatch, T.T. Tsotsis, and M. Sahimi, "Determination of the True Pore Size Distribution by Flow Permporometry Experiments: An Invasion Percolation Algorithm," *Journal of Membrane Science* **367**, 53-62 (2010).
283. G. R. Jafari, M. Sahimi, M. R. Rasaei, and M. R. Rahimi Tabar, "Analysis of Porosity Distribution of Large-Scale Porous Media and Their Reconstruction by Langevin Equation," *Physical Review E* **83**, 026309/1-026309/7 (2011).
284. †E. Nedaaee Oskoe and M. Sahimi, "Electric Currents in Networks of Interconnected Memristors," *Physical Review E* **83**, 031105/1-031105/8 (2011).
285. M. Dadwhal, M. Sahimi, and T. T. Tsotsis, "Adsorption Isotherms of Arsenic on Conditioned Layered Double Hydroxide in the Presence of Various Competing Ions," *Industrial & Engineering Chemistry Research* **50**, 2220-2226 (2011).
286. F. Ghasemi, J.R. van Ommen, and M. Sahimi, "Analysis of Pressure Fluctuations in Fluidized Beds. I. Similarities with Turbulent Flow," *Chemical Engineering Science* **66**, 2627-2636 (2011).
287. F. Ghasemi and M. Sahimi, "Analysis of Pressure Fluctuations in Fluidized Beds. II. Reconstruction of the Data by the Fokker-Planck and Langevin Equations," *Chemical Engineering Science* **66**, 2637-2645 (2011).

288. H. Li, R. Sanchez, S. J. Qin, H. I. Kavak, I. A. Webster, T. T. Tsotsis, and M. Sahimi, "Computer Simulation of Gas Generation and Transport in Landfills. V: Use of Artificial Neural Network and Genetic Algorithm for Short- and Long-Term Forecasting and Planning," *Chemical Engineering Science* **66**, 2646-2659 (2011).
289. H. Dashtian, G. R. Jafari, M. Sahimi, and M. Masihi, "Scaling, Multifractality, and Long-Range Correlations in Well Log Data of Large-Scale Porous Media," *Physica A* **390**, 2096-2111 (2011).
290. H. Dashtian, G. R. Jafari, Z. Koochi Lai, M. Masihi, and M. Sahimi, "Analysis of Cross Correlations between Well Logs of Hydrocarbon Reservoirs," *Transport in Porous Media* **90**, 445-464 (2011).
291. †L. Javidpour and M. Sahimi, "Confinement in Nanopores can Destabilize  $\alpha$ -Helix Folding Proteins and Stabilize the  $\beta$  Structures," *Journal of Chemical Physics* **135**, 125101/1 - 125101/12 (2011).
292. A. Yazdi, H. Hamzeshpour, and M. Sahimi, "Permeability, Porosity, and Percolation Properties of Two-Dimensional Disordered Fracture Networks," *Physical Review E* **84**, 046317/1 - 046317/10 (2011).
293. T. W. Kim, M. Sahimi, and T. T. Tsotsis, "Hybrid Hydrotalcite-Sulfonated Poly (ether ether ketone) Cation-Exchange Membranes Prepared by in-Situ Sulfonation," *Industrial & Engineering Chemistry Research* **50**, 3880-3888 (2011).
294. M. Khademi and M. Sahimi, "Molecular Dynamics Simulation of Pressure-Driven Water Flow in Silicon-Carbide Nanotubes," *Journal of Chemical Physics* **135**, 204509/1-204509/7 (2011).
295. M. Abdollahi, J. Yu, P. K. T. Liu, R. Ciora, M. Sahimi, and T. T. Tsotsis, "Ultra Pure Hydrogen Production from Reformate Mixtures using a Palladium Membrane Reactor System," *Journal of Membrane Science* **390-391**, 32-42 (2012).
296. M. Sahimi, "Dispersion in Porous Media, Continuous-Time Random Walks, and Percolation," *Physical Review E* **85**, 016316/1-016316/8 (2012).
297. M. Ansari-Rad, S. M. Vaez Allaei, and M. Sahimi, "Nonuniversality of Roughness Exponent of Quasi-Static Fracture Surfaces," *Physical Review E* **85**, 021121/1-021121/9 (2012).
298. H. Li, S. J. Qin, T. T. Tsotsis, and M. Sahimi, "Computer Simulation of Gas Generation and Transport in Landfills. VI. Dynamic Updating of the Model Using the Ensemble Kalman Filter," *Chemical Engineering Science* **74**, 69-78 (2012).
299. P. Tahmasebi, A. Hezarkhani, and M. Sahimi, "Multiple-Point Geostatistical Modeling Based on the Cross-Correlation Functions," *Computational Geosciences* **16**, 779-797 (2012).

300. N. Shokri, M. Sahimi, and D. Or, “Morphology, Propagation Dynamics and Scaling Characteristics of Drying Fronts in Porous Media,” *Geophysical Research Letters* **39**, L09401/1-L09401/5 (2012).
301. P. Tahmasebi, M. Sahimi, G. Mariethoz, and A. Hezarkhani, “Accelerating Geostatistical Simulations using Graphics Processing Units (GPU),” *Computers & Geosciences* **46**, 51-59 (2012).
302. †N. Shokri and M. Sahimi, “The Structure of Drying Fronts in Three-Dimensional Porous Media,” *Physical Review E* **85**, 066312/1 - 066312/8 (2012).
303. P. Tahmasebi and M. Sahimi, “Reconstruction of Three-Dimensional Porous Media Using a Single Thin Section,” *Physical Review E* **85**, 066709/1 - 066709/13 (2012).
304. F. Ghasemi, M. Sahimi, M. R. Rahimi Tabar, and J. Peinke, “Multiscale Probability Distribution of Pressure Fluctuations in Fluidized Beds,” *Journal of Statistical Mechanics: Theory and Simulation*, P07008/1 - P07008/12 (2012).
305. P. Tahmasebi and M. Sahimi, “Cross-Correlation Function for Accurate Reconstruction of Heterogeneous Media,” *Physical Review Letters* **110**, 078002/1 - 078002/5 (2013).
306. A. H. Shirazi, C. Aghamohammadi, G. Anvari, A. Bahraminasab, M. R. Rahimi Tabar, M. Sahimi, and M. Marsili, “Scale Dependence of the Directional Relationships between Coupled Time Series,” *Journal of Statistical Mechanics: Theory and Experiment*, Paper P02042/1 - P02042/11, (2013).
307. S. Naserifar, L. Liu, W. A. Goddard, T. T. Tsotsis, and M. Sahimi, “Toward a Process-Based Molecular Model of SiC Membranes. 1. Development of a Reactive Force Field,” *Journal of Physical Chemistry C* **117**, 3308-3319 (2013).
308. S. Naserifar, W. A. Goddard, L. Liu, T. T. Tsotsis, and M. Sahimi, “Toward a Process-Based Molecular Model of SiC Membranes. 2. Reactive Dynamics Simulation of the Pyrolysis of Polymer Precursor to Form Amorphous SiC,” *Journal of Physical Chemistry C* **117**, 3320-3329 (2013).
309. G. Amaral-Labat, M. Sahimi, A. Pizzi, V. Fierro, and A. Celzard, “Mechanical Properties of Heat-Treated Organic Foams,” *Physical Review E* **87**, 032156/1 - 032156/7 (2013).
310. T. A. Tafti, M. Sahimi, F. Aminzadeh, and C. G. Sammis, “Use of Microseismicity for Determining the Structure of the Fracture Network of Large-Scale Porous Media,” *Physical Review E* **87**, 032152/1 - 032152/10 (2013).
311. H.-C. Lee, M. Monji, D. Parsley, M. Sahimi, P. Liu, F. Egolfopoulos, and T. T. Tsotsis, “Use of Steam Activation as a Post-Treatment Technique in the Preparation of Carbon Molecular Sieve Membranes,” *Industrial & Engineering Chemistry Research* **52**, 1122-1132 (2013).

312. T. Jadidi, G. Anvari, A. Mashaghi, M. Sahimi, and M.R. Rahimi Tabar, "Vibrational Lifetimes of Hydrated Phospholipids," *Europhysics Letters* **102**, 28008/p1 - 28008/p5 (2013).
313. B. Elyassi, W. Deng, M. Sahimi, and T.T. Tsotis, "On the Use of Porous and Nonporous Fillers in the Fabrication of Silicon-Carbide Membranes," *Industrial & Engineering Chemistry Research* **52**, 10269 - 10275 (2013).
314. H. Dashtian and M. Sahimi, "Analysis of Pressure Fluctuations in Fluidized Beds. III. The Significance of the Cross Correlations," *Chemical Engineering Science* **101**, 390-400 (2013).
315. B. Ghanbarian, A.G. Hunt, M. Sahimi, R.P. Ewing, and T.E. Skinner, "Percolation Theory Generates a Physically Based Description of Tortuosity in Saturated and Unsaturated Porous Media," *Soil Science Society of America Journal* **77**, 1920 - 1929 (2013).
316. <sup>§§</sup>M. Norouzi Rad, N. Shokri, and M. Sahimi, "Pore-Scale Dynamics of Salt Precipitation in Drying Porous Media," *Physical Review E* 032404/1 - 032404/5 (2013).
317. D. Parsley, R. J. Ciora, D. L. Flowers, J. Laukaitaus, A. Chen, P. K. T. Liu, J. Yu, M. Sahimi, A. Bonsu, and T. T. Tsotsis, "Field Evaluation of Carbon Molecular Sieve Membranes for the Separation and Purification of Hydrogen from Coal- and Biomass-Derived Syngas," *Journal of Membrane Science* **450**, 81 - 92 (2013).
318. F. Shayeganfar, Z. Eskandari, M. R. Rahimi Tabar, and M. Sahimi, "Molecular Dynamics Simulation of Formation and Growth of CdS Nanoparticles," *Molecular Simulation* **40**, 361-369 (2014).
319. W. Deng, X. Yu, M. Sahimi, and T. T. Tsotsis, "Highly Permeable Porous Silicon Carbide Support Tubes for the Preparation of Nanoporous Inorganic Membranes," *Journal of Membrane Science* **451**, 192-204 (2014).
320. J. Yu, M. Tan, P. K. T. Liu, M. Sahimi, and T. T. Tsotsis, "Hydrogen Production from Biomass-Derived Syngas Using a Catalytic Membrane Reactor Based Process," *Industrial & Engineering Chemistry Research* **53**, 819-827 (2014).
321. S. H. Barghi, T. T. Tsotsis, and M. Sahimi, "Chemisorption, Physisorption and Hysteresis During Hydrogen Storage in Carbon Nanotubes," *International Journal of Hydrogen Energy* **39**, 1390-1397 (2014).
322. H. Li, T. T. Tsotsis, M. Sahimi, and S. J. Qin, "Ensembles-Based and GA-Based Optimization for Landfill Gas Production," *AIChE Journal* **60**, 2063 - 2071 (2014).
323. H. Hamzeshpour, F. Haghsheno Kasani, M. Sahimi, and R. Sepehrinia, "Wave Propagation in Disordered Fractured Porous Media," *Physical Review E* **89**, 023301/1 - 023301/10 (2014).



324. H. Hamzehpour, A. Atakhani, A. K. Gupta, and M. Sahimi, "Electro-osmotic Flow in Disordered Porous and Fractured Media," *Physical Review E* **89**, 033007/1 - 033007/11 (2014).
325. X. Yan, T. T. Tsotsis, and M. Sahimi, "Fabrication of Nanoporous Silicon Oxycarbide Materials Using Layered Double-Hydroxide as a Sacrificial Template," *Microporous and Mesoporous Materials* **190**, 267-274 (2014).
326. P. Tahmasebi, M. Sahimi, and J. Caers, "MS-CCSIM: Accelerating pattern-based geostatistical simulation of categorical variables using a multi-scale search in Fourier space," *Computers & Geosciences* **67**, 75-88 (2014).
327. H. Dashtian and M. Sahimi, "Coherence Index and Curvelet Transformation for Denoising Geophysical Data," *Physical Review E* **90**, 042810/1 - 04281011 (2014).
328. S. H. Barghi, T. T. Tsotsis, and M. Sahimi, "Hydrogen Sorption Hysteresis and Superior Storage Capacity of Silicon-Carbide Nanotubes over their Carbon Counterparts," *International Journal of Hydrogen Energy* **39**, 21107 - 21115 (2014).
329. S. Naserifar, W.A. Goddard III, T.T. Tsotsis, and M. Sahimi, "Toward a Process-Based Molecular Model of SiC Membranes. III. Prediction of Transport and Separation of Binary Gaseous Mixtures Based on the Atomistic Reactive Force Field," *Journal of Membrane Science* **473**, 85-93 (2015).
330. B. Ghanbarian, H. Daigle, A. G. Hunt, R. P. Ewing, and M. Sahimi, "Gas and Solute Diffusion in Partially Saturated Porous Media: Percolation Theory and Effective-Medium Approximation Compared with Lattice-Boltzmann Simulations," *Journal of Geophysical Research: Solid Earth*, DOI: 10.1002/2014JB011645
331. X. Yan, T. T. Tsotsis, and M. Sahimi, "Fabrication of High-Surface Area Nanoporous SiOC Materials Using Pre-ceramic Polymer Blends and a Sacrificial Template," *Microporous and Mesoporous Materials*
332. P. Tahmasebi and M. Sahimi, "Geostatistical Simulation and Reconstruction of Porous Media by a Cross-Correlation Function and Integration of Hard and Soft Data," *Transport in Porous Media*
333. M. Sahimi, "ac Hopping Conduction at Extreme Disorder Takes Place on the Percolating Cluster," *Physical Review B*
334. M. Sahimi and F. Bagheri-Tar, "On Detection of the Onsets of Asphalt Flocculation and Precipitation Using Electrical Conductivity," *Journal of Colloid and Interface Science*

## INVITED JOURNAL REVIEWS AND BOOK CHAPTERS

335. M. Sahimi, "Critical Exponents and Thresholds for Percolation and Conduction," in *The Mathematics and Physics of Disordered Media*, edited by B. D. Hughes and B. W. Ninham, *Lecture Notes in Mathematics* **1035** (Springer, Berlin, 1983), pp. 314-346.
336. M. Sahimi, "Random Walks, Transport and Dispersion in Porous Media," in *Random Walks and Their Applications to the Physical and Biological Sciences*, edited by M. F. Shlesinger and B. J. West, *AIP Conference Proceedings* **109** (American Institute of Physics, New York, 1984), pp. 189-204.
337. M. Sahimi, G. R. Gavalas, and T. T. Tsotsis, "Statistical and Continuum Models of Fluid-Solid Reactions in Porous Media," *Chemical Engineering Science* **45**, 1443-1502 (1990).
338. M. Sahimi, "Structural and Dynamical Properties of Branched Polymers and Gels and Their Relation with Elastic Percolation Networks," *Modern Physics Letters B* **6**, 507-520 (1992).
339. M. Sahimi, "Fractal Concepts in Chemistry," *CHEMTECH* **22**, 687-693 (1992).
340. M. A. Knackstedt and M. Sahimi, "Effect of Permeability Heterogeneity on Viscous Fingers in Porous Media," in *Complex Systems: From Biology to Computations*, edited by D. G. Green and T. Bossomaier (IOS Press, Amsterdam, 1992), pp. 131-140.
341. M. Sahimi, "Flow Phenomena in Rocks: From Continuum Models to Fractals, Percolation, Cellular Automata, and Simulated Annealing," *Reviews of Modern Physics* **65**, 1393-1534 (1993).
342. M. Sahimi and S. Mukhopadhyay, "Fractals: Basic Concepts and Selected Applications," in *Encyclopedia of Telecommunications*, edited by F. E. Fröhlich, 219-267 (1994).
343. M. Sahimi, "Progress in Percolation Theory and its Applications," *Annual Reviews of Computational Physics* **II**, 175-242 (1995).
344. M. Sahimi, H. Rassamdana, and A. Mehrabi, "Fractals in Porous Media: From Pore to Field Scale," in *Fractal Aspects of Materials*, edited by F. Family, P. Meakin, B. Sapoval, and R. Wood, *MRS Proceedings* **367** 203-214 (1995).
345. M. Sahimi, "Linear and Non-linear, Scalar and Vector Transport Processes in Heterogeneous Media: Fractals, Percolation, and Scaling Laws," *The Chemical Engineering Journal* **64**, 21-44 (1996).
346. M. Sahimi, "Non-linear and Non-local Transport in Heterogeneous Media: From Long-Range Correlated Percolation to Fracture and Materials Breakdown," *Physics Reports* **306**, 213-395 (1998).
347. M. Sahimi, "Percolation Processes," in *Encyclopedia of Applied Physics*, Update 1, edited by G. L. Trigg (Wiley-VCH, Berlin, 1999), pp. 81-144.

348. M. Sahimi, "Characterization of Geology of, and Flow and Transport in, Field-Scale Porous Media: Application of Fractal and Percolation Concepts," in *Handbook of Porous Media*, edited by K. Vafai (Marcel Dekker, New York, 2000), pp. 113-170.
349. M. Sahimi, "Wavelet Transformations and Data Processing: Application to Characterization and Simulation of Large-Scale Porous Media," *Annual Reviews of Computational Physics VIII*, 83-112 (2000).
350. A. Schroth, C. Kirkconnell, and M. Sahimi, "Numerical Model for Pulse Tubes Using Method of Lines," in *Cryocoolers 12*, edited by R. G. Ross, Jr. (Kluwer, New York, 2003), pp. 379-387.
351. M. Sahimi and T. T. Tsotsis, "Computational Methods for Atomistic Modelling of Nanoporous Materials and Their Properties," in *Handbook of Theoretical and Computational Nanotechnology*, edited by M. Rieth and W. Schommers (American Scientific, New York, 2006), pp. 604-689.
352. M. R. Rahimi Tabar, F. Ghasemi, J. Peinke, R. Friedrich, K. Kaviani, F. Taghavi, S. Sadeghi, G. Bijani, and M. Sahimi, "New Computational Approaches to Analysis of Interbeat Intervals in Human Subjects," *Computing in Science & Engineering* **8** (No. 2), 86-97 (2006).
353. M. Sahimi, M. R. Rasaei, and M. Haghighi, "Gas Injection and Fingering in Porous Media," in *Gas Transport in Porous Media*, edited by C. K. Ho and S. W. Webb (Kluwer, Amsterdam, 2006), pp. 133-167.
354. M. R. Rahimi Tabar, M. Sahimi, F. Ghasemi, K. Kaviani, M. Allamehzadeh, J. Peinke, M. Mokhtari, M. Vesaghi, M. D. Niry, A. Bahraminasab, S. Tabatabai, S. Fayazbakhsh, and M. Akbari, "Short-Term Prediction of Medium- and Large-Size Earthquakes Based on Markov and Extended Self-Similarity Analysis of Seismic Data," in *Modelling Critical and Catastrophic Phenomena in Geoscience*, edited by P. Bhattacharyya and B. K. Chakrabarti (Springer, Berlin, 2006), pp. 281-301.
355. M. Sahimi, "Introduction to Percolation," in *Encyclopedia of Complexity and Systems Science*, Volume 7, edited by R. A. Meyers (Springer, Heidelberg, 2009), pp. 6518-6521.
356. M. Sahimi, "Percolation Phase Transition," in *Encyclopedia of Complexity and Systems Science*, Volume 7, edited by R. A. Meyers (Springer, Heidelberg, 2009), pp. 6538-6545.
357. M. Sahimi, "Percolation and Polymer Morphology and Rheology," in *Encyclopedia of Complexity and Systems Science*, Volume 7, edited by R. A. Meyers (Springer, Heidelberg, 2009), pp. 6545-6565.
358. B. Elyassi, M. Sahimi, and T. T. Tsotsis, "Inorganic Membranes," in *Encyclopedia of Chemical Processing*, edited by S. K. B. Lee (Taylor & Francis, London, 2009).

359. R. Friedlich, J. Peinke, M. Sahimi, and M. R. Rahimi Tabar, "Approaching Complexity by Stochastic Methods: From Biological Systems to Turbulence" *Physics Reports* **506**, 87-162 (2011).
360. P. K. T. Liu, M. Sahimi, and T. T. Tsotsis, "Process Intensification in Hydrogen Production from Coal Biomass via the Use of Membrane-Based Reactive Separations," *Current Opinion in Chemical Engineering* **1**, 342-351 (2012).
361. B. Ghanbarian-Alavijeh, A. G. Hunt, R. E. Ewing, and M. Sahimi, "Tortuosity in Porous Media: a Critical Review," *Soil Science Society of America Journal* **77**, 1461 - 1477 (2013).
362. M. Sahimi, "Molecular Modeling of Nanoporous Membranes and Transport and Separation Therein," in, *Advances in Membrane Characterization*, edited by J. Pellegrino (Wiley, New York, in press, 2015).
363. M. Sahimi, "Characterization of Fractures and Fracture Network of Porous Media," in *Handbook of Porous Media*, 3rd edition, edited by K. Vafai (CRC Press, Baton Rouge, 2014), in press.
364. P. Tahmasebi and M. Sahimi, "Geostatistical Simulation and Reconstruction of Porous Media," in *Handbook of Porous Media*, 3rd edition, edited by K. Vafai (CRC Press, Baton Rouge, 2014), in press.

## BOOK REVIEWS

1. J. H. Cushman (ed.), *Dynamics of Fluids in Hierarchical Porous Media*, published in *Chemical Engineering Science* **47**, 512 (1992).
2. N. R. Morrow (ed.), *Interfacial Phenomena in Petroleum Recovery*, published in *Energy Sources* **14**, 467-468 (1992).
3. B. K. Chakrabarti and L. G. Benguigui, *Statistical Physics of Fracture and Breakdown in Disordered Systems*, published in *Journal of Statistical Physics* **94**, 1057-1059 (1999).
4. S. Torquato, *Random Heterogeneous Materials*, published in *Journal of Statistical Physics* **109**, 331-333 (2002).
5. A. G. Hunt, *Percolation Theory for Flow in Porous Media*, *Hydrogeology Journal* **17**, 1817-1819 (2009).

## INVITED LECTURES AND SEMINARS

1. "Critical Exponents and Thresholds in Percolation and Conduction," Institute for Mathematics and Its Applications, University of Minnesota, Minneapolis, March 1, 1983.
2. "Phase and Tension Behavior of CO<sub>2</sub>-Water-Hydrocarbon Systems," Gordon Research Conference on Fluids in Permeable Media, New Hampshire, July 25-29, 1983.
3. "Percolation and Transport in Disordered Systems," Graduate Seminar, Department of Mechanical Engineering and Engineering Mechanics, Michigan Technological University, Houghton, Michigan, October 7, 1983.
4. "Elements of Dispersion in Flow through Porous Media," Graduate Seminar, Department of Chemical Engineering, University of California, Davis, January 9, 1984.
5. "Dispersion in Flow through Porous Media," Graduate Seminar, Department of Chemical Engineering, University of Southern California, Los Angeles, January 23, 1984.
6. "Fundamentals of Enhanced Oil Recovery," Graduate Seminar, Department of Chemical Engineering, University of Illinois, Chicago, June 19, 1984.
7. "Application of Percolation Theory to the Determination of Transport and Mechanical Properties of Disordered Systems," 22nd Annual Meeting of Society of Engineering Sciences, the Pennsylvania State University, October 8, 1985.
8. "Percolation Phenomena: Theory and Applications," Graduate Seminar, Department of Mathematics, University of Southern California, Los Angeles, February 14, 1986.
9. "Statistical Modeling of Fluid Displacement Processes in Porous Media," Chevron Oil Field Research Company, La Habra, CA, February 26, 1986.
10. "Computer Simulations of Fluid Displacement Processes in Porous Media," Graduate Seminar, Department of Chemical Engineering and Materials Science, University of Minnesota, Minneapolis, February 27, 1986.
11. "Computer Simulations of Linear and Nonlinear Transport Processes in Disordered Solids," Graduate Seminar, Department of Chemical Engineering, University of California, San Diego, September 30, 1987.
12. "Computer Simulations of Linear and Nonlinear, Scalar and Vector Transport Processes in Disordered Systems," Graduate Seminar, Department of Chemical Engineering, University of California, Los Angeles, February 5, 1988.
13. "Computer Simulations of Miscible Displacement Processes in Porous Media," Graduate Seminar, Department of Chemical Engineering, Rice University, Houston, Texas, March 2, 1989.

14. "Applications of Large-Scale Computations and Statistical Physics of Disordered Systems to Transport and Reaction in Porous Media," International Conference on Large-Scale Computations in Statistical Physics, University of Southern Mississippi, February 26-27, 1990.
15. "Modeling of Mechanical Properties of Disordered Solids," Graduate Seminar, Department of Mechanical Engineering, University of Southern California, March 8, 1990.
16. "Failure of Composite Solids and Granular Media: Computer Simulations, Scaling, Universality, Fixed Points and Comparison with Experimental Data," Workshop on Percolation Models of Material Failure, Mathematical Sciences Institute, Cornell University, Ithaca, New York, May 30-June 3, 1990.
17. "Reaction and Fragmentation of Disordered Solids," Supercomputer Center HLRZ, KFA Jülich, West Germany, June 14, 1990.
18. "Computer Simulations of Catalyst Deactivation," Koninklijke/Shell-Laboratorium, Amsterdam, The Netherlands, June 25, 1990.
19. "Immiscible Displacement Processes in Porous Media," Université Pierre et Marie Curie, Paris, France, June 28, 1990.
20. "Transport and Reaction in Porous Media: Fractals, Scaling and Large Scale Simulation," Gordon Research Conference on Fractals, Plymouth College, New Hampshire, August 9, 1990.
21. "Scaling Behavior of Rheological and Fracture Properties of Gels and Composite Solids," Graduate Seminar, Department of Physics, Colorado State University, Fort Collins, Colorado, October 24, 1990.
22. "Polymers, Disordered Materials and Fractals," the Rohm and Haas Company, Bristol, Pennsylvania, October 26, 1990.
23. "Role of Fractal Structures in Transport, Reaction and Adsorption in Catalysts and other Porous Media," 201st American Chemical Society Meeting, Division of Theoretical Chemistry, Atlanta, Georgia, April 16, 1991.
24. "Calculating Permeability and Conductivity of Porous Media: Effective-Medium Theory and Renormalization Group Methods," Chevron Oil Field Research Company, La Habra, California, August 6, 1991.
25. "Computer Simulation of Catalyst Deactivation," Mobil Oil Company, Paulsboro, New Jersey, August 16, 1991.
26. "Elasticity and Fracture of Disordered Materials," Graduate Seminar, Department of Mathematics, University of Melbourne, Australia, September 6, 1991.

27. "Percolation Models of Rheological, Mechanical and Fracture Properties of Disordered Materials," Graduate Seminar, Department of Chemical Engineering, University of Adelaide, South Australia, October 16, 1991.
28. "Scaling Laws for Fracture of Disordered Materials," International Workshop on Statistical Physics of Disordered Solids, Glasses and Polymers, Calcutta, India, January 7, 1992.
29. "Fractals, Fracture and Electrical Breakdown of Disordered Materials," Materials Research Society Meeting, San Francisco, California, April 27, 1992.
30. "Applications of Fractal Concepts to Heterogeneous Catalysis," Florida Catalysis Meeting, Palm Coast, Florida, April 29-May 1, 1992.
31. "Fractals, Fracture and Electrical Breakdown of Disordered Materials," International Conference on Fractals in Engineering, École Polytechnique, Montreal, Canada, June 3-5, 1992.
32. "Fracture of Disordered Materials," Graduate Seminar, Department of Chemistry, University of California, Los Angeles, June 12, 1992.
33. "Hydrodynamic Dispersion in Heterogeneous Porous Media," Invited Presentation, 66th Colloid and Surface Science Symposium, the American Chemical Society, Morgantown, West Virginia, June 14-17, 1992.
34. "Two-phase Flow in Porous Media," Koninklijke/Shell-Laboratorium, the Hague, the Netherlands, June 26, 1992.
35. "Earthquakes, Rock Fracture, Fractals, and Percolation," HLRZ-KFA Supercomputer Center, Jülich, Germany, July 2, 1992.
36. "Relation between Earthquake Statistics and Rock Fractures, and Fractals and Percolation," Invited Presentation, International Conference on Fractals and Disordered Systems, Hamburg, Germany, July 29-31, 1992.
37. "High-Dimensional and Very Large Cellular Automata for Immunological Shape Space," Invited Presentation, 4th International Conference on Physics Computing, Prague, Czechoslovakia, August 24-28, 1992.
38. "Computer Simulation of Particle Transport Processes in Porous Media," Graduate Seminar, Department of Civil and Environmental Engineering, University of California, Los Angeles, October 12, 1992.
39. "Large-Scale Computer Simulations of Mechanical and Fracture Properties of Disordered Media," Graduate Seminar, Department of Chemical and Nuclear Engineering, University of California, Santa Barbara, California, October 22, 1992.

40. "Computer Simulation of Catalyst Deactivation," Catalytica Corporation, Mountain View, California, April 5, 1993.
41. "Role of Fractals, Percolation, Scaling, and Long-Range Correlations in Flow through Porous Media," Invited Presentation, International Conference on Porous Media and the Environment, the University of Manitoba, Winnipeg, Manitoba, Canada, May 7-8, 1993.
42. "Computer Simulation of Particle Transport Processes in Porous Media," Millipore Corporation, Bedford, Massachusetts, May 24, 1993.
43. "Nucleation and Propagation of Fractures in Heterogeneous Rock," Graduate Seminar, Department of Petroleum Engineering, Stanford University, Stanford, California, May 25, 1993.
44. "Computer Simulation of Fracture of Disordered Media," Graduate Seminar, Departments of Physics and Chemical Engineering, University of Porto, Porto, Portugal, July 13, 1993.
45. "Scaling Properties of Branched Polymers and Gels," Research Institute for Theoretical Physics, University of Helsinki, Helsinki, Finland, July 21, 1993.
46. "Fracture of Disordered Solids and Rocks," Graduate Seminar, Department of Electrical Engineering, Tampere University of Technology, Tampere, Finland, July 23, 1993.
47. "Transport in Porous Media: Fractals, Percolation and Monte Carlo Simulations," HLRZ Supercomputer Center, KFA Jülich, Germany, August 20, 1993.
48. "High Dimensional and Very Large Cellular Automata for Immunological Shape Space," First World Congress on Computational Medicine, Public Health and Biotechnology, Austin, Texas, April 24-28, 1994.
49. "Computer Simulation of Formation of Fracture Networks in Heterogeneous Rock," Graduate Seminar, Department of Petroleum Engineering, the University of Texas at Austin, Austin, Texas, April 26, 1994.
50. "Fractals in Porous Media: From Aggregation to Long-Range Correlated Percolation," Fall Meeting of the Materials Research Society, Boston, November 26-29, 1994.
51. "Percolation and Aggregation in Evolving Porous Media" (5 lectures), International Summer School on Topics in Non-Equilibrium Statistical Mechanics, University of Porto, Portugal, September 3-16, 1995.
52. "Molecular Simulation of Diffusion and Adsorption in Porous Catalytic Materials," Graduate Seminar, Department of Chemical Engineering, University of Missouri-Rolla, October 5, 1995.



53. "Dynamics of Diffusion and Adsorption in Pillared Clays," Graduate Seminar, Department of Chemistry and Center for Fundamental Materials Research, Michigan State University, East Lansing, Michigan, October 16, 1995.
54. "Rigidity Percolation," Graduate Seminar, Department of Physics, Michigan State University, East Lansing, Michigan, October 16, 1995.
55. "An  $\mathcal{O}(\log N)$  Algorithm for Massively-Parallel Molecular Dynamics Simulations," International Conference on Toward Teraflop Computing and New Grand Challenge Applications, Baton Rouge, Louisiana, February 5-7, 1996.
56. "Characterization of Field-Scale Heterogeneous Porous Media," Argonne National Laboratory, Argonne, Illinois, November 14, 1996.
57. "Coarsening of Heterogeneous Porous Media from Pore to Field Scale," Workshop on Porous Media Processes, Los Alamos National Laboratory, Los Alamos, New Mexico, April 4, 1997.
58. "Application of Percolation Theory to Multiphase Flow in Porous Media," Lawrence Berkeley National Laboratory, Berkeley, California, April 25, 1997.
59. "Scale up of Heterogeneous Three-Dimensional Porous Media: Fractals, Renormalization Group Transformations, and Wavelets," Fourth SIAM Conference on Mathematical and Computational Issues in the Geosciences, Albuquerque, New Mexico, June 17, 1997.
60. "A Neuro-Fuzzy-Fractal Approach to Reservoir Characterization," Symposium, *Berkeley Initiative on Soft Computing*, Lawrence Berkeley National Laboratory, Berkeley, California, March 3-4, 1998.
61. "Wavelets and Percolation in Geological Formations," International Conference on Percolation and Disordered Media, Giessen University, Germany, July 15-17, 1998.
62. "Analysis of Complex Systems by Wavelet Transformations," Institute for Advanced Studies on Basic Sciences, Zanjan, Iran, August 24, 1998.
63. "Modelling of Naturally Fractured Reservoirs," Fourth Caribbean Conference on Fluid Dynamics, Merida, Mexico, January 11, 1999.
64. "Application of Wavelet Transformations to Reservoir Characterization," Annual Deeplook Meeting, Lawrence Livermore National Laboratory, Livermore, California, March 23, 1999.
65. "Application of Wavelet Transforms to Characterization and Modelling of Geological Formations and Flow and Transport Therein," Institut für Chemie und Dynamik der Geosphäre, Forschungszentrum Jülich, Germany, June 24, 1999.

66. "Scaling of Disordered Systems: From Polymers to Porous Materials" (5 Lectures), International Summer School on Scaling and Disordered Systems, Zanjan, Iran, July 3-16, 1999.
67. "Fractal and Geostatistical Characterization of Fractured Rock," Idaho National Engineering and Environmental Laboratory, September 2, 1999.
68. "Characterization and Simulation of Oil and Gas Reservoirs" (8 Lectures), Japan National Oil Corporation, Chiba, Japan, November 24-26, 1999.
69. "Characterization and Modeling of Oil Reservoirs and Groundwater Aquifers: Application of Wavelet Transformations," Workshop of the Consortium of the Americas on Interdisciplinary Science on Sparsely Connected Systems: Porous and Granular Materials, San Carlos de Bariloche, Argentina, March 14, 2000.
70. "Transport and Separation of Fluid Mixtures in Nanoporous Materials: Theory, Simulation, and Experiment," Workshop of the Consortium of the Americas on Interdisciplinary Science on Sparsely Connected Systems: Porous and Granular Materials, San Carlos de Bariloche, Argentina, March 16, 2000.
71. "Pore Network Simulation of Imbibition of a Coating Fluid into Printing Paper," Gordon Research Conference on Modeling of Flow in Permeable Media, Andover, New Hampshire, August 10, 2000.
72. "Iran's Oil Policy," "The Asia Society Symposium on Iran, Los Angeles, California, January 26, 2001.
73. "Molecular Pore Network Models of Nanoporous Materials," Sixth International Conference on Electrical Transport and Optical Properties of Inhomogeneous Materials, Snowbird, Utah, July 17, 2002.
74. "Transport and Separation of Fluid Mixtures in Nanoporous Membranes (four lectures)," Symposium on Complex Fluids, Instituto de Fisica, Universidad Autonoma de San Luis Potosi, San Luis Potosi, Mexico, August 26-30, 2002.
75. "Transport Properties of Heterogeneous Materials," Department of Physics, University of Southern California, Los Angeles, September 30, 2002.
76. "Transport of Fluid Mixtures in Nanoporous Membranes," Graduate Seminar, Department of Physics, Ferdowsi University of Mashhad, Mashhad, Iran, October 26, 2002.
77. "Chemical Engineering in the 21st Century," Keynote Speech, 5th Iranian National Congress of Chemical Engineering, Tehran, Iran, October 28, 2002.

78. "Molecular Simulation of Transport and Absorption of Fluid Mixtures in Nanoporous Membranes," Graduate Seminar, Institute for Physics and Mathematics, Tehran, Iran, October 29, 2002.
79. "Molecular Dynamics Simulation of Transport and Separation of Fluid Mixtures in Nanoporous Membranes," Graduate Seminar, Advanced Studies in Basic Sciences, Zanjan, Iran, December 31, 2002.
80. "Computer Simulation of Transport of Particles and Clogging in Flow Through Porous Media," The Millipore Corporation, January 20, 2003.
81. "Molecular Dynamics Simulation of Transport and Separation of Fluid Mixtures in Nanoporous Membranes," Graduate Seminar, Department of Chemical Engineering and Materials Science, University of California, Irvine, February 14, 2003.
82. "Characterization, Modeling, and Simulation of Fluid Flow in Microporous Media," Proctor & Gamble Corporation, Cincinnati, Ohio, March 13, 2003.
83. "X-Ray Computed Tomography for Characterizing the Structure of a Porous Medium," Chevron-Texaco Chemical Research Company, Richmond, California, March 17, 2003.
84. "Nonequilibrium Molecular Dynamics Simulation of Transport and Separation of Fluid Mixtures in Nanoporous Materials," Graduate Seminar, Faculty of Applied Sciences, Delft University of Technology, Delft, the Netherlands, June 24, 2003.
85. "Use of Multiresolution Wavelet Transformations in Upscaling of Heterogeneous Reservoirs," International Workshop on Recent Advances in Multiphase Flow and Transport in Porous Media, Delft University of Technology, Delft, the Netherlands, June 24, 2003.
86. "Atomistic Modeling and Simulation of Transport of Fluid Mixtures in Nanoporous Materials," Graduate Seminar, Department of Chemical Engineering, University of California, Los Angeles, October 17, 2003.
87. "Atomistic Modeling of Flow of Mixtures in Nanoporous Materials," Satellite Meeting of STAT-PHYS22, Zanjan, Iran, June 27-30, 2004.
88. "Wavelet Transformations: Application to Characterization of Heterogeneous Rock," Department of Physics, Universidade Federal do Rio Grande do Norte, Natal, Brazil, September 30, 2004.
89. "Wavelet Transformations: Application to Upscaling of Models of Oil Reservoirs," Department of Physics, Universidade Federal do Rio Grande do Norte, Natal, Brazil, October 1, 2004.

90. "Effect of Long-Range Correlations on Acoustic, Mechanical, and Breakdown Properties of Disordered Materials," Lorentz Workshop on the Statistical Physics of Disorder and Pattern Formation in Fracture, Leiden University, the Netherlands, November 15-19, 2004.
91. "Does Iran Need Nuclear Power Plants for its Energy Needs?" Graduate Seminar, Department of International Studies, University of California, Irvine, February 3, 2005.
92. "Iran's Nuclear Energy Program," Graduate Seminar, Loyola Law School, Los Angeles, California, February 17, 2005.
93. "The Effect of Connectivity of Microscopic Elements of Disordered Systems on Their Macroscopic Properties: Introduction to Percolation Theory," Graduate Seminar, Hydrologic Sciences Group, University of California, Davis, April 14, 2005.
94. "Short-Term Prediction of Medium- and Large-Size Earthquakes Based on Markov and Extended Self-Similarity Analysis of Seismic Data," International Conference on *Models of Earthquake: The Physics Approach*, Saha Institute of Nuclear Physics, Kolkata, December 13-16, 2005.
95. "Atomistic Simulation of Nonporous Materials and Their Properties," Graduate Seminar, Department of Chemical Engineering and Biological Engineering, Drexel University, Philadelphia, April 19, 2006.
96. "Fluid Flow in Porous Media: From Classic Methods to Modern Approaches," National Research Council Institute for Fuel Cell Innovation, Vancouver, Canada, October 5, 2006.
97. "Application of Wavelet Transformations to Simulation of Fluid Flow and Energy Transfer in Pulse Tubes," Raytheon Corporation, Los Angeles, October 15, 2006.
98. "Atomistic Simulation of Nanoporous Materials: Layered Double Hydroxides and Polymer Composites," Graduate Seminar, Division of Chemistry and Chemical Engineering, California Institute of Technology, Pasadena, October 19, 2006.
99. "Markov Analysis and Kramers-Moyal Expansion of Nonstationary Stochastic Processes," International Conference on Perspectives on Nonlinear Dynamics, International Center for Theoretical Physics, Trieste, Italy, July 17, 2007.
100. "Statistical Models of Fracture in Heterogeneous Media," Eleventh International Symposium on Continuum Models and Discrete Systems (CMD511), Paris, France, July 30, 2007.
101. "Characterization of Heterogeneous Oil Reservoirs and Efficient Simulation of Multiphase Flow Therein," Complexity in the Oil Industry (COI2007), Natal, Brazil, August 6, 2007.
102. "Characterizing Microstructure of Composite and Porous Media, and Computing Their Effective Transport Properties: Application of Percolation Theory," Kirkham Conference on Soil Physics, University of California, Davis, February 24-26, 2008.

103. "Application of Nanoparticles to Enhanced Oil Recovery," Advanced Energy Consortium Workshop, Austin, Texas, May 20-21, 2008.
104. "Characterization and Modeling of Composite Materials," Avery Dennison Research Center, Pasadena, California, June 12, 2008.
105. "Atomistic Simulation of Nanoporous Materials and Membranes and Their Properties," Gordon Research Conference on Membranes, Colby-Sawyer College, New Hampshire, August 12, 2008.
106. "Development and Optimization of a Dynamic Model of Landfills," RaiseBio-Higrade Summer School on Chemicals in Soils, Leipzig, Germany, September 23, 2008.
107. "Propagation and Location of Acoustic and Elastic Waves in Strongly Heterogeneous Media," 45th Annual Conference of the Society of Engineering Science, University of Illinois, Urbana, October 14, 2008.
108. "Efficient Multiscale Simulation of Transport and Reaction Processes in Heterogeneous Media: Application of Wavelet Transformations," Workshop on Models and Images for Porous Media, Université Paris Descartes, Paris, January 13, 2009.
109. "Propagation and Localization of Acoustic and Elastic Waves in Disordered Media," PMC-CNRS, Ecole Polytechnique, Paris, France, January 16, 2009.
110. "Frontiers of Research in Chemical Engineering and Materials Science," King Saud University of Science & Technology, London, April 5, 2009.
111. "Iran's Nuclear Program: Economic Justification and Political Implications," International Conference on Iran's Economy, University of Southern California, Los Angeles, California, September 18, 2009.
112. "Iran's Nuclear Program," International Conference on Iran, University of Illinois, Urbana, Illinois, October 2, 2009.
113. "Characterization and Modeling of Multiscale Porous Media: Application of Multiresolution Wavelet Transformations," Materials Research Society Fall Meeting, Boston, MA, December 1-3, 2009.
114. "Modeling and Upscaling of Heterogeneous Porous Media, and Simulation of Multiphase Fluid Flow Therein: Applications of Wavelet Transformations," Fall Meeting of the American Geophysical Union, San Francisco, California, December 14-18, 2009.
115. "Upscaled Unstructured Grid for Simulation of Fluid Flow in Fractured Porous Media," Gordon Research Conference on Flow Through Porous Media, New Hampshire, July 11-16, 2010.

116. "Diffusion in Porous Media," Diffusion Fundamentals IV Conference, Rensselaer Polytechnique Institute, Troy, New York, August 21-24, 2011.
117. "Fluid Flow Through Fractured Porous Media," Fracture & Flow in Porous Media, the Institute of Mathematical Sciences, Chennai, India, January 11-14, 2012.
118. "Atomistic Modeling of Nanostructured Materials and Their Properties," Graduate Seminar, Department of Chemical Engineering and Materials Science, University of California, Irvine, March 9, 2012.
119. "Simulation of Fluid Flow and Transport in Large-Scale Porous Media: Application of Wavelet Transformations," Graduate Seminar, Department of Geoscience, Boston University, Boston, April 11, 2012.
120. "Porous Media, Small and Large: From Quantum-Mechanical to Field Scale," Graduate Seminar, Department of Materials and Transport Engineering, Arizona State University, Tempe, Arizona, April 4, 2014.
121. "Nuclear Energy and Iran," Graduate Seminar, San Jose State University, San Jose, California, April 24, 2014.
122. "Porous Media, Small and Large: From Quantum-Mechanical to Field Scale," Graduate Seminar, Department of Physics, Wright State University, Dayton, Ohio, May 1, 2014.
123. "Porous Media, Small and Large: From Quantum-Mechanical to Field Scale," Invited Talk, 6th International Conference on Porous Media, Milwaukee, Wisconsin, May 29, 2014.

## CONFERENCE PAPERS

1. M. Sahimi (Speaker), L. E. Scriven, and H. T. Davis, "Application of Gradient Theory to Planar Interfaces of Multicomponent Polyatomic Fluids," Symposium on the Structure and Thermodynamics of Fluid Interfaces, American Chemical Society, Las Vegas, Nevada, August 25-29 (1980).
2. M. Sahimi (Speaker), H. T. Davis, and L. E. Scriven, "Thermodynamic Modelling of Phase and Tension Behavior of Carbon Dioxide-Hydrocarbon Systems," 56th Annual Fall Meeting of Society of Petroleum Engineers, San Antonio, Texas, Oct. 5-7 (1981).
3. M. Sahimi (Speaker), L. E. Scriven, and H. T. Davis, "A Random Walk Model of Multiphase Dispersion in Porous Media," Symposium on Random Walks and Their Applications to the Physical and Biological Sciences, National Bureau of Standards, Gaithersburg, Maryland, June 28-July 1 (1982); *Journal of Statistical Physics* **30** (1983).
4. M. Sahimi (Speaker), A. A. Heiba, B. D. Hughes, H. T. Davis, and L. E. Scriven, "Dispersion in Flow Through Porous Media," 57th Annual Fall Meeting of Society of Petroleum Engineers, New Orleans, Louisiana, September 26-29 (1982).
5. A. A. Heiba, M. Sahimi, L. E. Scriven and H. T. Davis, "Percolation Theory of Two-Phase Relative Permeability," 57th Annual Fall Meeting of Society of Petroleum Engineers, New Orleans, Louisiana, September 26-29 (1982).
6. M. Sahimi (Speaker), B. D. Hughes, L. E. Scriven and H. T. Davis, "Transport in Disordered Systems: Random Hopping, Percolation and Effective-Medium Approximation," AIChE Annual Meeting, Los Angeles, California, November 14-18 (1982).
7. M. Sahimi (Speaker), B. D. Hughes, L. E. Scriven, and H. T. Davis, "Renormalised Effective-Medium Approximation Approach to the Percolation Conduction Problem," March Meeting of the American Physical Society, Los Angeles, California, March 24-29 (1983); *Bulletin of American Physical Society* **28**, 522 (1983).
8. B. D. Hughes, M. Sahimi (Speaker), L. E. Scriven, and H. T. Davis, "Stochastic Transport on Pseudo-lattices," March Meeting of the American Physical Society, Los Angeles, California, March 24-29 (1983); *Bulletin of American Physical Society* **28**, 406-407 (1983).
9. D.-Y. Kuan, P. K. Kilpatrick, M. Sahimi (Speaker), L. E. Scriven, and H. T. Davis, "Multicomponent Carbon Dioxide/Water/Hydrocarbon Phase Behavior Modelling: a Comparative Study," 58th Annual Fall Meeting of Society of Petroleum Engineers, San Francisco, California, October 3-6 (1983).

10. M. Sahimi (Speaker) and T. T. Tsotsis, "A Study of Catalyst Deactivation Phenomenon by Site Poisoning and Pore Blockage," 9th North American Meeting of Catalysis Society, Houston, Texas, March 18-21 (1985).
11. M. Sahimi, "Mixing in Flow Through Porous Media: Random Walks on the Backbone of Percolation Clusters in an External Field," March Meeting of the American Physical Society, Baltimore, Maryland, March 24-29 (1985); *Bulletin of American Physical Society* **30**, 619 (1985).
12. T. T. Tsotsis and M. Sahimi (Speaker), "Deactivation of Porous Catalysts: A New Percolation Problem," March Meeting of the American Physical Society, Baltimore, Maryland, March 24-29 (1985); *Bulletin of American Physical Society* **30**, 415 (1985).
13. M. Sahimi, "Monte Carlo Simulations of Diffusion-Limited Reactions in Disordered Systems", AIChE Annual Meeting, Chicago, Illinois, November 10-14 (1985).
14. M. Sahimi, "Pattern Formation by Non-equilibrium Growth Processes," AIChE Annual Meeting, Chicago, Illinois, November 10-14 (1985).
15. M. Sahimi (Speaker) and T. T. Tsotsis, "A Study of Catalyst Deactivation Phenomenon by Site Poisoning and Pore Blockage," AIChE Annual Meeting, Chicago, Illinois, November 10-14 (1985).
16. M. Sahimi (Speaker) and T. T. Tsotsis, "Statistical Modelling of Gas-Solid Reaction Processes in Porous Media," Fall Meeting of the California Catalysis Society, Newport Beach, California, October 17-18 (1985).
17. M. Sahimi (Speaker) and Y. C. Yortsos, "Pattern Formation in Viscous Fingering and Diffusion-Limited Aggregation," Annual Meeting of the Fluid Mechanics Division of the American Physical Society, Tucson, Arizona, November 24-27 (1985).
18. M. Sahimi (Speaker) and J. D. Goddard, "Models for Microstructural Damage in Heterogeneous Systems," 10th U.S. Congress of Applied Mechanics, Austin, Texas, June 16-20 (1986).
19. M. Sahimi, "Percolation and Growth Models for Fluid-Solid Reactions in Porous Media," 16th International Conference on Statistical Physics, Boston, Massachusetts, August 11-15 (1986).
20. M. Sahimi (Speaker) and R. Mojaradi, "Hindered Diffusion in Porous Catalysts," Fall Meeting of the California Catalysis Society, Brea, California, October 16-17 (1986).
21. R. Mojaradi and M. Sahimi (Speaker), "Diffusion and Reaction in Porous Media: Analytical Approximations and Monte Carlo Methods," Fall Meeting of the California Catalysis Society, Brea, California, October 16-17 (1986).



22. M. Sahimi (Speaker) and T. T. Tsotsis, "Statistical Modelling of Non-catalytic Gas-Solid Reactions with Pore Volume Growth," paper 50e, AIChE Annual Meeting, Miami Beach, Florida, November 2-7 (1986).
23. M. Sahimi (Speaker) and T. T. Tsotsis, "A Percolation Model of Catalyst Deactivation by Site Coverage and Pore Blockage in the Presence of Diffusion Limitations," paper 67h, AIChE Annual Meeting, Miami Beach, Florida, November 2-7 (1986).
24. M. Sahimi, "Transfer-Matrix Method for Calculation of Transport and Mechanical Properties of Disordered Systems," paper 108e, AIChE Annual Meeting, Miami Beach, Florida, November 2-7 (1986).
25. M. Sahimi, "Discrete Models of Pattern Formation by Non-equilibrium Growth Processes," paper 135b, AIChE Annual Meeting, Miami Beach, Florida, November 2-7 (1986).
26. M. Sahimi (Speaker), M. D. Stephens, and J. D. Goddard, "A Percolation Model for Brittle Fracture," Symposium on Rheology of Mechanical Failure, Winter Meeting of the Society of Rheology, Santa Monica, California, January 19-21 (1987).
27. Y. Bashir, M. Sahimi, and J. D. Goddard, "Monte Carlo Simulations of Shear Flow of Granular Media," March Meeting of the American Physical Society, New York, New York, March 16-20 (1987); *Bulletin of American Physical Society* **32**, 732 (1987).
28. M. Sahimi, "Dynamic Scaling for the Fragmentation of Chemically-Reactive Fractal Surfaces," March Meeting of the American Physical Society, New York, New York, March 16-20 (1987); *Bulletin of American Physical Society* **32**, 862 (1987).
29. M. Sahimi (Speaker) and T. T. Tsotsis, "Computer Simulations of Catalyst Deactivation in the Presence of Diffusional Limitations," Spring Meeting of the California Catalysis Society, Berkeley, California, March 26-27 (1987).
30. M. Sahimi, "The Effect of Morphology on the Selectivity and Reaction Properties of Porous Catalysts," Spring Meeting of the California Catalysis Society, Berkeley, CA, March 26-27 (1987).
31. M. Sahimi, "Dynamic Scaling for the Fragmentations of Chemically-Reactive Fractal Surfaces," 61st Colloid and Surface Science Symposium, the American Chemical Society, Ann Arbor, Michigan, June 21-24 (1987).
32. M. Sahimi (Speaker), G. R. Gavalas and T. T. Tsotsis, "Statistical Modelling of Fluid-Solid Reactions in Porous Media," 6th International Conference on Mathematical Modelling, St. Louis, Missouri, August 4-6 (1987).
33. M. Sahimi, "Hindered Diffusion in Porous Catalysts," paper 14d, AIChE Annual Meeting, New York, November 15-20 (1987).

34. M. Sahimi (Speaker) and T. T. Tsotsis, "Stochastic Modelling of Surface Diffusion Phenomena in Porous Catalysts," paper 8g, AIChE Annual Meeting, New York, November 15-20 (1987).
35. M. Sahimi (Speaker), M. L. Occelli, and T. T. Tsotsis, "Computer Simulations of Diffusion, Adsorption and Reaction of Organic Molecules in Pillared Clays," paper 141e, AIChE Annual Meeting, New York, November 15-20 (1987).
36. H. Siddiqui and M. Sahimi (Speaker), "Computer Simulations of Fluid Displacement Processes in Porous Media," paper 65k, AIChE Annual Meeting, New York, November 15-20 (1987).
37. M. Sahimi (Speaker) and A. O. Imdakm, "Hydrodynamic Dispersion in Poorly-Connected Porous Media," paper 47a, AIChE Annual Meeting, New York, November 15-20 (1987).
38. H. Siddiqui and M. Sahimi (Speaker), "Computer Simulations of Miscible Displacement Processes in Porous Media," Annual Meeting of the Division of Fluid Mechanics of the American Physical Society, Eugene, Oregon, November 22-24 (1987); *Bulletin of American Physical Society* **32**, 2085 (1987).
39. M. Sahimi (Speaker) and A. O. Imdakm, "Hydrodynamic Dispersion in Network Models of Porous Media," Annual Meeting of the Division of Fluid Mechanics of the American Physical Society, Eugene, Oregon, November 22-24 (1987); *Bulletin of American Physical Society* **32**, 2085 (1987).
40. M. Sahimi (Speaker), T. T. Tsotsis, and M. L. Occelli, "Computer Simulations of Diffusion, Adsorption and Reaction of Organic Molecules in Pillared Clays," Fall Meeting of the Materials Research Society, Boston, December 1-4 (1987).
41. J. D. Goddard, M. Sahimi, and Y. Bashir, "Continuum and Microstructural Models for Dilatancy in Granular Masses," March Meeting of the American Physical Society, New Orleans, Louisiana, March 21-25 (1988); *Bulletin of American Physical Society* **33**, 799 (1988).
42. M. Sahimi, "Statistical Physics of Linear and Nonlinear, Scalar and Vector Transport Processes in Disordered Media," 3rd University of California Conference on Statistical Mechanics, Davis, California, March 27-30 (1988).
43. M. Sahimi (Speaker) and T. T. Tsotsis, "Statistical Modeling of Fluid-Solid Reactions in Porous Catalysts," Division of Petroleum Chemistry, American Chemical Society Meeting, Los Angeles, California, September 26-30 (1988).
44. V. L. Jue and M. Sahimi (Speaker), "Diffusion and Adsorption of Large Molecules in Pillared Clays," The California Catalysis Society Meeting, Lake Arrowhead, California, October 20-21 (1988).

45. V. L. Jue and M. Sahimi (Speaker), "Hindered Transport Processes in Porous Catalysts with Connected Pores," The California Catalysis Society Meeting, Lake Arrowhead, California, October 20-21 (1988).
46. M. Sahimi (Speaker), V. L. Jue, M. L. Occelli, and T.T. Tsotsis, "Recent Studies of Adsorption, Diffusion and Reaction in Pillared Clays," paper 72c, AIChE Annual Meeting, Washington, D.C., November 27-December 2 (1988).
47. M. Sahimi, "Computer Simulations of Catalyst Deactivation," paper 97g, AIChE Annual Meeting, Washington, D.C., November 27-December 2 (1988).
48. M. Sahimi, "Flow, Dispersion and Displacement Processes in Porous Media and Enhanced Recovery of Oil," paper 98d, AIChE Annual Meeting, Washington, D.C., November 27-December 2 (1988).
49. M. Sahimi (Speaker) and V. L. Jue, "Diffusion-Controlled Reactions in Heterogeneous Catalyst Particles," paper 125e, AIChE Annual Meeting, Washington, D.C., November 27-December 2 (1988).
50. M. Sahimi (Speaker) and G. A. Mansoori, "Accurate Prediction of Phase and Interfacial Behavior of Binary and Ternary Systems Containing Polar Components," paper 147b, AIChE Annual Meeting, Washington, D.C., November 27-December 2 (1988).
51. H. Siddiqui and M. Sahimi (Speaker), "Multiphase Flow in Porous Media," paper 153g, AIChE Annual Meeting, Washington, D.C., November 27-December 2 (1988).
52. S. Arbabi and M. Sahimi (Speaker), "Universality and Non-universality of Scaling Laws for Elasticity and Superelasticity of Percolation Fractals," Materials Research Society Fall Meeting, Boston, Massachusetts, November 28-December 1 (1988).
53. S. Arbabi and M. Sahimi (Speaker), "Force Distribution in an Elastic Percolation Network and its Relation with Failure Properties of the System," March Meeting of the American Physical Society, St. Louis, Missouri, March 20-24 (1989); *Bulletin of the American Physical Society* **34**, 950 (1989).
54. V. L. Jue and M. Sahimi (Speaker), "Diffusion of Large Molecules in Porous Media," March Meeting of the American Physical Society, St. Louis, MO, March 20-24 (1989); *Bulletin of the American Physical Society* **34**, 546 (1989).
55. M. Sahimi, "Failure of Composite Systems with Random Topology," March Meeting of the American Physical Society, St. Louis, Missouri, March 20-24 (1989); *Bulletin of the American Physical Society* **34**, 822 (1989).

56. M. Sahimi, "Convection and Diffusion of Large Macromolecules in Porous Media," paper 53f, AIChE Annual Meeting, San Francisco, California, November 5-10 (1989).
57. M. Sahimi and Y. C. Yortsos, "Flow of Non-Newtonian Fluids in Porous Media," Les Rencontres Scientifiques de L'IFP, "Fundamentals of Fluid Transport in Porous Media," Arles, France, May 14-18 (1990).
58. A. O. Imdakm and M. Sahimi, "Computer Simulations of Particle Transport Processes in Flow through Porous Media," 21st Annual Meeting of the Fine Particle Society, San Diego, California, August 19-25 (1990).
59. S. Arbabi and M. Sahimi (Speaker), "Large Scale Simulations of Static and Dynamic Properties of Disordered Materials," paper 42d, AIChE Annual Meeting, Chicago, Illinois, November 11-16 (1990).
60. M. Sahimi, "Fragmentation in Evolving Media: Fractals, Scaling and Large Scale Simulations," paper 15f, AIChE Annual Meeting, Chicago, Illinois, November 11-16 (1990).
61. M. Sahimi, "Convection and Diffusion of Large Molecules in Disordered Porous Media," paper M4.3, Materials Research Society Fall Meeting, Boston, MA, November 26-December 1 (1990).
62. S. Arbabi and M. Sahimi (Speaker), "Fracture of Disordered Solids and Granular Media: Approach to a Fixed Point," paper W2.4/I4.4, Materials Research Society Fall Meeting, Boston, MA, November 26-December 1 (1990).
63. G. A. Kohring, D. Stauffer, D. Chowdhury, and M. Sahimi (Speaker), "Efficient Simulation of Two Problems in Porous Media," Physics Computing '91, American Physical Society, San Jose, California, June 10-14 (1991).
64. S. Arbabi and M. Sahimi (Speaker), "Scaling Laws for Mechanical and Rheological Properties of Gel Polymers near the Gel Point," paper 24f, AIChE Annual Meeting, Los Angeles, California, November 17-22 (1991).
65. M. Sahimi (Speaker) and S. Arbabi, "Computer Simulation of Catalyst Deactivation," paper 87f, AIChE Annual Meeting, Los Angeles, California, November 17-22 (1991).
66. M. Sahimi, "Effective-Medium Approximation for Diffusion and Reaction in Porous Media with Macropores and Micropores," paper 88i, AIChE Annual Meeting, Los Angeles, California, November 17-22 (1991).
67. M. Sahimi, "Lattice Gas Methods for Solving Partial Differential Equations of Interest to Chemical Engineers," paper 141d, AIChE Annual Meeting, Los Angeles, California, November 17-22 (1991).

68. M. Sahimi (Speaker) and A. O. Imdakm, "Hydrodynamics of Particulate Motion in Porous Medium," Materials Research Society Fall Meeting, Boston, MA, December 3 (1992).
69. V. S. Ravi Kumar, T. T. Tsotsis, M. Sahimi, and I. A. Webster, "Studies of Diffusion of Petroleum Liquid Macromolecules through Model Membranes," paper 24g, AIChE Annual Meeting, Miami Beach, Florida, November 1-6 (1992).
70. M. Sahimi (Speaker) and B. N. Taylor, "Phase Behavior and Interfacial Properties of Multi-component Mixtures Based on Mean-Field and Scaling Theories," paper 34e, AIChE Annual Meeting, Miami Beach, Florida, November 1-6 (1992).
71. M. Sahimi (Speaker) and M. A. Knackstedt, "Dynamic Properties of Porous Media by Cellular Automata," paper 76h, AIChE Annual Meeting, Miami Beach, Florida, November 1-6 (1992).
72. M. Sahimi, "Distribution of Hydrodynamical Forces Acting on Fractal and Nonfractal Aggregates Moving in a Fluid," paper 79h, AIChE Annual Meeting, Miami Beach, Florida, November 1-6 (1992).
73. M. Sahimi (Speaker), M. C. Robertson, and C. G. Sammis, "Relation between Earthquake Statistics and Fault Patterns, and Fractals and Percolation," paper P3.2, Materials Research Society Fall Meeting, Boston, MA, November 30-December 4 (1992).
74. M. C. Robertson, C. G. Sammis, and M. Sahimi (Speaker), "Fractal Distribution of Earthquakes and Its Relation to Fault Patterns and Percolation," March Meeting of the American Physical Society, Seattle, WA, March 22-26 (1993); *Bulletin of the American Physical Society* **38**, 738 (1993).
75. M. Sahimi (Speaker), M. C. Robertson, and C. G. Sammis, "The Scale-Dependence of the Structure of the Fracture Network of Rocks," March Meeting of the American Physical Society, Seattle, Washington, March 22-26 (1993); *Bulletin of the American Physical Society* **38**, 738 (1993).
76. M. Sahimi, "Effect of Quenched Disorder With Long-Range Correlations on Growth Phenomena," Paper 136h, AIChE Annual Meeting, St. Louis, Missouri, November 7-12 (1993).
77. X. Yi, K. S. Shing, and M. Sahimi (Speaker), "Molecular Dynamics Simulations of Diffusion in Pillared Clays," Paper 164e, AIChE Annual Meeting, St. Louis, Missouri, November 7-12 (1993).
78. M. Sahimi (Speaker) and D. Stauffer, "Stochastic Models of Natural Immune Systems," Paper 138f, AIChE Annual Meeting, St. Louis, Missouri, November 7-12 (1993).
79. M. Sahimi, "Fractal and Superdiffusion Transport in Heterogeneous Media," Paper 139g, AIChE Annual Meeting, St. Louis, Missouri, November 7-12 (1993).

80. B. Dabir, M. Farhani, M. Nikazar, H. Rassamdana, and M. Sahimi (Speaker), "Experimental and Theoretical Studies of Fluid Flow and Asphaltene Formation in a Porous Medium," Paper 18b, AIChE Annual Meeting, St. Louis, Missouri, November 7-12 (1993).
81. V. S. Ravi-Kumar, L. Yang, T. T. Tsotsis, M. Sahimi, and I. A. Webster, "Experimental and Theoretical Studies of Transport of Asphaltenes," paper 18h, AIChE Annual Meeting, St. Louis, Missouri, November 7-12 (1993).
82. M. Sahimi, "Nonlinear Transport Processes in Disordered Media," Paper 76i, AIChE Annual Meeting, St. Louis, Missouri, November 7-12 (1993).
83. M. Sahimi (Speaker) and A. Fijany, "Efficient Time- and Space-Parallel Algorithms for Solutions of Transport Equations in Heterogeneous Media," paper 142e, AIChE Annual Meeting, St. Louis, Missouri, November 7-12 (1993).
84. P. Nowroozi and M. Sahimi (Speaker), "Monte Carlo Simulation of a Spin Model of Microemulsions," paper 103h, AIChE Annual Meeting, San Francisco, California, November 13-18 (1994).
85. M. Sahimi, "Transport of Passive Particles in an Oscillating Random Flow Field," paper 110e, AIChE Annual Meeting, San Francisco, California, November 13-18 (1994).
86. M. Sahimi, "Effect of Fractal Structure and Long-Rang Correlations on Transport Processes," paper 236g, AIChE Annual Meeting, San Francisco, California, November 13-18 (1994).
87. X. Yi, M. Sahimi (Speaker), and K. S. Shing, "Computer Simulation of Diffusion and Adsorption in Pillared Clays," Fall Meeting of Materials Research Society, Boston, MA, November 26-29 (1994).
88. P. Nowroozi and M. Sahimi (Speaker), "Monte Carlo Simulation of a Lattice Model of Microemulsions in Porous Media," Fall Meeting of Materials Research Society, Boston, MA, November 26-29 (1994).
89. V. S. Ravi-Kumar, T. T. Tsotsis, and M. Sahimi, "Studies of Transport and Reaction of Petroleum Compounds through Membranes and Catalysts," 14th North American Catalysis Society Meeting, Snow Bird, Utah, June 12-16 (1995).
90. M. Sahimi, "New Models for Natural and Hydraulic Fracturing of Heterogeneous Rock," Society of Petroleum Engineers Western Regional Meeting, Bakersfield, California, April 15-17 (1995).
91. X. Yi, K. S. Shing, and M. Sahimi (Speaker), "Molecular Simulation of Adsorption and Diffusion in Pillared Clays," Paper 7e, AIChE Annual Meeting, Miami Beach, Florida, November 12-17 (1995).

92. A. R. Mehrabi and M. Sahimi (Speaker), "Monte Carlo Simulation of Diffusion of Ionic Particles in Zeolites," Paper 86i, AIChE Annual Meeting, Miami Beach, Florida, November 12-17 (1995).
93. X. Zhang, M. Knackstedt, and M. Sahimi (Speaker), "Lattice-Gas Simulation of Flow over Rough Surfaces," Paper 106e, AIChE Annual Meeting, Miami Beach, Florida, November 12-17 (1995).
94. M. Sahimi, "Formation of Fractal Aggregates in Porous Media," Paper 152h, AIChE Annual Meeting, Miami Beach, Florida, November 12-17 (1995).
95. A. R. Mehrabi, H. Rassamdana, and M. Sahimi (Speaker), "Characterization of Rough Surfaces, Interfaces and Disordered Systems," Paper 169i, AIChE Annual Meeting, Miami Beach, Florida, November 12-17 (1995).
96. M. Sahimi, "Characterization of Field-Scale Heterogeneous Porous Media," Argonne National Laboratory, Argonne, Illinois, November 14 (1996).
97. M. Sahimi (Speaker), H. Rassamdana, and B. Dabir, "Asphalt Formation and Precipitation: Experimental Studies and Theoretical Modeling," Society of Petroleum Engineers Western Regional Meeting, Anchorage, Alaska, May 22-24 (1996).
98. M. Sahimi, "Coarsening of Heterogeneous Porous Media from Pore to Field Scale," Workshop on Porous Media Processes, Los Alamos National Laboratory, New Mexico, April 4, (1997).
99. M. Sahimi, "Application of Percolation Theory to Multiphase Flow in Porous Media," Lawrence Berkeley National Laboratory, Berkeley, California, April 25 (1997).
100. M. Sahimi, "Scale-up of Heterogeneous Three-Dimensional Porous Media: Fractals, Renormalization Group Transformations, and Wavelets," Fourth SIAM Conference on Mathematical and Computational Issues in the Geosciences, Albuquerque, New Mexico, June 17 (1997).
101. M. Hashemi, M. Sahimi (Speaker), and B. Dabir, "Percolation with Two Invaders and Two Defenders: Volatile Clusters, Oscillations, and Scaling," March Meeting of the American Physical Society, Los Angeles, California, March 16-20 (1998); *Bulletin of the American Physical Society* **43**, 268 (1998).
102. L. Xu, M. G. Sedigh, M. Sahimi (Speaker), and T. T. Tsotsis, "Non-equilibrium Molecular Dynamics Simulation of Transport of Gas Mixtures in Nanoporous," March Meeting of the American Physical Society, Los Angeles, California, March 16-20 (1998); *Bulletin of the American Physical Society* **43**, 268 (1998).
103. A. R. Mehrabi and M. Sahimi (speaker), "Diffusion of Ionic Particles in Charged Disordered Media," March Meeting of the American Physical Society, Los Angeles, California, March 16-20, (1998); *Bulletin of the American Physical Society* **43**, 559 (1998).

104. M. Sahimi and A. R. Mehrabi, "Coarsening of Heterogeneous Media: Application of Wavelets," March Meeting of the American Physical Society, Los Angeles, California, March 16-20 (1998); *Bulletin of the American Physical Society* **43**, 268 (1998).
105. J. S. Devinny, I. A. Webster, E. G. Walther, H. Kavak, A. R. Mehrabi, M. Sahimi, B. C. E. Schwarz, and T. T. Tsotsis, Paper 11c, AIChE Annual Meeting, Miami Beach, Florida, November 15-20 (1998).
106. M. Sahimi (Speaker), H. Rassamdana, and B. Dabir, "Molecular Structure and Thermodynamics of Asphalt Aggregates," Paper 67m, AIChE Annual Meeting, Miami Beach, Florida, November 15-20 (1998).
107. L. Xu, M. G. Sedigh, T. T. Tsotsis, and M. Sahimi (Speaker), "Nonequilibrium Molecular Dynamics Simulations of Transport of Gas Mixtures in Nanopores," Paper 84g, AIChE Annual Meeting, Miami Beach, Florida, November 15-20 (1998).
108. A. R. Mehrabi and M. Sahimi (Speaker), "Wavelet Scale up of Transport Processes in Heterogeneous Media," Paper 106b, AIChE Annual Meeting, Miami Beach, Florida, November 15-20 (1998).
109. X. Yi, J. Ghassemzadeh, K. S. Shing, and M. Sahimi, "Statistical Mechanics and Molecular Simulation of Adsorption in Porous Media," Paper 151c, AIChE Annual Meeting, Miami Beach, Florida, November 15-20 (1998).
110. V. Suwanmethanod, T. T. Tsotsis, M. Sahimi, and P. K. T. Liu, "New Technique for Making Porous SiC Sintered Substrates by Sol-Gel Method for High Temperature Membrane Gas Separation," American Ceramic Society Meeting, Boston, MA, May 5-10 (1999).
111. M. Sahimi, P. K. T. Liu, E. Goo, V. Suwanmethanod, and T. T. Tsotsis, "Silicon Carbide Ceramic Membranes," Paper 17e, AIChE Annual Meeting, Dallas, Texas, October 31-November 5 (1999).
112. M. Sahimi (speaker) and J. Ghassemzadeh, "Molecular Simulation and Statistical Mechanical Theory of Adsorption in Microporous Materials," Paper 40e, AIChE Annual Meeting, Dallas, Texas, October 31-November 5, (1999).
113. M Sahimi (Speaker), T. T. Tsotsis, and L. Xu, "Non-equilibrium Molecular Dynamics Simulation of Transport and Separation of Gas Mixtures in Carbon Molecular Sieve Membranes," Paper 80I, AIChE Annual Meeting, Dallas, Texas, October 31-November 5 (1999).
114. M. Sahimi (Speaker), H. Kavak, and T. T. Tsotsis, "Gas Generation and Transport in Landfills and Other Sites - A Case Study of Multiscaling Modelling," Paper 106e, AIChE Annual Meeting, Dallas, Texas, October 31-November 5 (1999).



115. M. Sahimi, F. Naeim, and J. Ghassemzadeh, "Discrete Stochastic Model for Self-Renewal and Differentiation of Progenitor Cells," Paper 236e, AIChE Annual Meeting, Dallas, Texas, October 31-November 5 (1999).
116. M. Sahimi, J. H. Park, and C.-A. Peng, "Population Dynamics of Competative Mixed Cells in Disordered Microporous Media," Paper 258g, AIChE Annual Meeting, Dallas, Texas, October 31-November 5 (1999).
117. V. Suwanmethanond, E. Goo, M. Sahimi, and T. T. Tsotsis, "Application of Sol-Gel Technique for the preparation of SiC Membranes," Paper 202f, AIChE Annual Meeting, Los Angeles, California, Nov 12-17 (2000).
118. L. Xu, J. Ghassemzadeh, T. T. Tsotsis, and M. Sahimi, "Adsorption of Ternary Gas Mixtures in Microporous Materials: Statistical Mechanical Theory and Molecular Simulations," Paper 92I, AIChE Annual Meeting, Los Angeles, California, November 12-17 (2000).
119. J. Ghassemzadeh, M. Hashemi, and M. Sahimi, "Pore Network Simulation of Imbibition into Paper During Coating Processes," Paper 112g, AIChE Annual Meeting, Los Angeles, California, November 12-17 (2000).
120. A. Schroth, M. Madadi, and M. Sahimi (Speaker), "Lattice Boltzmann Simulation of Heat Transfer and Fluid Flow in Complex Geometries," Paper 180b, AIChE Annual Meeting, Los Angeles, California, November 12-17 (2000).
121. L. Xu, T. T. Tsotsis, and M. Sahimi, "Molecular Simulation of Chemisorption and Gas Separation in Carbon Nanopores," Paper 144p, AIChE Annual Meeting, Los Angeles, California, November 12-17 (2000).
122. M. Sahimi (Speaker) and M. Dadvar, "A Multiscale Approach to Deactivation of Immobilized Glucose Isomerase in Packed-Bed Reactors," Paper 344e, AIChE Annual Meeting, Reno, Nevada, November 4-9 (2001).
123. M. Sahimi (Speaker) and F. Ebrahimi, "Use of Wavelet Transformation in Modelling of Transport Processes in Heterogenous Media," Paper 164d, AIChE Annual Meeting, Reno, Nevada, November 4-9 (2001).
124. M. Sahimi and J. Ghassemzadeh, "Characterization of the Morphology of Paper and Computation of its Effective Permeability Tensor," Paper 165e, AIChE Annual Meeting, Reno, Nevada, November 4-9 (2001).
125. S. Y. Lim, M. Sahimi, and T. T. Tsotsis, "Design Issues of Pervaporation Membrane and Pervaporation Membrane/Adsorption Reactors for Esterifications," Paper 364b, AIChE Annual Meeting, Reno, Nevada, November 4-9 (2001).

126. S. Y. Lim, T. T. Tsotsis, and M. Sahimi (Speaker), "Molecular Simulation of Diffusion and Sorption of Small Molecules in Polymers," Paper 231d, AIChE Annual Meeting, Reno, Nevada, November 4-9 (2001).
127. V. Suwanmethanond, B. Fayyaz, P. K. T. Liu, M. Sahimi, and T. T. Tsotsis, "Silicon Ceramic Membrane Prepared by Sol-Gel and Pyrolysis of Pre ceramic Polymer," Paper 5d, AIChE Annual Meeting, Reno, Nevada, November 4-9 (2001).
128. M. Firouzi, T. T. Tsotsis, and M. Sahimi (Speaker), "Non-Equilibrium Molecular Dynamics Simulation of Carbon Dioxide-Alkane Chains in Carbon Nanopores under Supercritical Conditions," Paper 132g, AIChE Annual Meeting, Reno, Nevada, November 4-9 (2001).
129. W. Yang, Y. Kim, P. K. T. Liu, M. Sahimi, and T. T. Tsotsis, "Characterization of the Thermal Evolution of Mg-Al-CO<sub>3</sub> Layered Double Hydroxides by In-situ Techniques," Paper 93h, AIChE Annual Meeting, Reno, Nevada, November 4-9 (2001).
130. V. Suwanmethanond, B. Fayyaz, P. K. T. Liu, M. Sahimi, and T. T. Tsotsis, "Silicon Ceramic Membrane Prepared by Sol-Gel and Pyrolysis of Pre ceramic Polymer," North American Membrane Society Annual Meeting, Lexington, Kentucky, May 15-18 (2001).
131. M. Sahimi (Speaker), M. Firouzi, K. Molaai Nezhad, and T. T. Tsotsis, "Experimental Studies and Molecular Simulations of Transport of Mixtures through Nanoporous Membranes," North American Membrane Society Meeting, Long Beach, California, May 8 (2002).
132. V. Suwanmethanond, B. Fayyazna, P. K. T. Liu, M. Sahimi, W. Yang, and T. T. Tsotsis; "Preparation of Silicon Carbide Ceramic Membrane with Mesoporous and Microporous Structure," ICIM-7, Dalian, China, June 23 - 26, (2002).
133. M. Sahimi (Speaker) and M. Dadvar, "Transport in Heterogeneous Media with Multiple Families of Transport Patterns," Paper 69f, AIChE Annual Meeting, Indianapolis, IN, November 4 - 8 (2002).
134. J. Ghassemzadeh and M. Sahimi (Speaker), "Molecular Modeling of Pillared Clay Membranes and Adsorption of Gas Mixtures Therein," Paper 120h, AIChE Annual Meeting, Indianapolis, Indiana, November 4 - 8 (2002).
135. S. Y. Lim, T. T. Tsotsis, and M. Sahimi (Speaker), "Development of an Atomistic Model of Carbon Molecular - Sieve Membranes Using Massively - Parallel Molecular Simulations," Paper 276i, AIChE Annual Meeting, Indianapolis, Indiana, November 4 - 8 (2002).
136. M. Firouzi, T. T. Tsotsis, and M. Sahimi (Speaker), "Molecular Simulations of Adsorption and Transport of Supercritical Fluid Mixtures through Carbon - Molecular Sieve Membranes," Paper 125b, AIChE Annual Meeting, Indianapolis, Indiana, November 4 - 8 (2002).

137. M. Hashemi, P. S. Patel, T. T. Tsotsis, and M. Sahimi (Speaker), "A Three-Dimensional Model of Gas Generation and Transport in Landfills," Paper 227h, AIChE Annual Meeting, Indianapolis, Indiana, November 4 - 8 (2002).
138. K. Molaai Nezhad, T. T. Tsotsis, and M. Sahimi (Speaker), "A Study of Transport and Separation of Supercritical Fluids in Carbon Molecular - Sieve Membranes," Paper 74d, AIChE Annual Meeting, Indianapolis, Indiana, November 4 - 8 (2002).
139. Y. Kim, M. Sahimi, and T. T. Tsotsis, "A Study of Thermal Evolution of the Structure of a Mg-Al-CO<sub>3</sub> Layered Double Hydroxide," Paper 127e, AIChE Annual Meeting, Indianapolis, Indiana, November 4 - 8 (2002).
140. N. Shah, T. T. Tsotsis, and M. Sahimi, "Experimental and Computer Simulation Studies of CO<sub>2</sub> Sequestration in Coalbeds," Paper 221a, AIChE Annual Meeting, Indianapolis, Indiana, November 4 - 8 (2002).
141. A. E. Schroth, M. Sahimi, and C. S. Kirkconnell, "Numerical Simulation and Experimental Study of Gas Flow in Pulse Tubes," Paper 68f, AIChE Annual Meeting, Indianapolis, Indiana, November 4 - 8 (2002).
142. W. S. Yang, Y. Kim, P. K. T. Liu, M. Sahimi, and T. T. Tsotsis, "In-Situ Study of the Thermal Evolution of the Structure of a Mg-Al-CO<sub>3</sub> Layered Double Hydroxide," International Symposium on Chemical Reaction Engineering, Hong Kong, September 2 - 7 (2002).
143. M. Firouzi, T. T. Tsotsis, and M. Sahimi, "Molecular Dynamic Simulations of Transport and Separation of Supercritical Fluid Mixtures through Nanoporous Membranes," NanoTech 2003, San Francisco, California, February 25 (2003).
144. Y. Kim, W. Yang, P. K. T. Liu, T. T. Tsotsis, and M. Sahimi (speaker), "Layered Double Hydroxide (LDH) Materials for CO<sub>2</sub> Adsorption and Separation," 96th Annual A & WWA Conference and Exhibition, San Diego, California, June 22-26 (2003).
145. S. Y. Lim, T. T. Tsotsis, and M. Sahimi (speaker), "Molecular Simulation of Mixed-Matrix Polyetherimide Membranes," Paper 77b, AIChE Annual Meeting, San Francisco, California, November 17-21 (2003).
146. M. Firouzi, T. T. Tsotsis, M. Sahimi (speaker), "Molecular Dynamics Simulation of Transport and Separation of Alkane Mixtures Through Nanoporous Carbon-Molecular Sieve Membranes," Paper 80b, AIChE Annual Meeting, San Francisco, California, November 17-21 (2003).
147. M. Dadvar and M. Sahimi (speaker), "Are the Effective Diffusivities of Microporous Materials With and Without Nonlinear Reactions the Same?," AIChE Annual Meeting, San Francisco, California, November 17-21 (2003).

148. M. Sahimi (speaker) and M. Saddatfar, "Diffusion in Heterogeneous Porous Media with Long-Range Correlations," Paper 274j, AIChE Annual Meeting, San Francisco, California, November 17-21 (2003).
149. N. Kim, Y.-M. Kim, T. T. Tsotsis, and M. Sahimi (speaker), "Molecular Modeling of Thermal Evolution of the Structure of Mg-Al-CO<sub>3</sub> Layered Double Hydroxide," Paper 327g, AIChE Annual Meeting, San Francisco, California, November 17-21 (2003).
150. E. N. Oskoe, M. R. H. Khajepour, and M. Sahimi (speaker), "Numerical Simulations of Growth of Thin Composite Films," Paper 400a, AIChE Annual Meeting, San Francisco, California, November 17-21 (2003).
151. S. Y. Lim, T. T. Tsotsis, and M. Sahimi (speaker), "Massively-Parallel Nonequilibrium Molecular Modelling of Carbon Molecular Sieve Membranes and Simulations of Transport and Separation of Gas Mixtures Therein," Paper 452e, AIChE Annual Meeting, San Francisco, California, November 17-21 (2003).
152. B. Fayyaz, Kh. Molaai Nezhad, H. Patel, R. J. Ciora, P. K. T. Liu, M. Sahimi, and T. T. Tsotsis, "Nanoporous Silicon Carbide Membranes, Preparation and Reactive Applications," ISCRE-18, Chicago, Illinois, June 6-9 (2004).
153. B. Fayyaz, B.-Gi Park, M. Sahimi, and T. T. Tsotsis, Reactor Design Aspects of Hybrid Adsorbent-Membrane Reactor (HAMR) Systems, NAMS Meeting, Honolulu, Hawaii, June 26-30 (2004).
154. B. Fayyaz, Kh. Molaai Nezhad, H. Patel, R. J. Ciora, P. K. T. Liu, M. Sahimi, and T. T. Tsotsis, "Preparation and Applications of Nanoporous Silicon Carbide Membranes," NAMS Meeting, Honolulu, Hawaii, June 26-30 (2004).
155. B. Fayyaz, Kh. Molaai Nezhad, H. Patel, R. J. Ciora, P. K. T. Liu, M. Sahimi, and T. T. Tsotsis, "Nanoporous Silicon Carbide Membranes, Preparation and Reactive Applications," ICCMR-6 Meeting, Lahnstein, Germany, July 7-9 (2004).
156. R. Sanchez, T. T. Tsotsis, and M. Sahimi (speaker), "Development of Optimal Model of a Landfill Using Massively-Parallel Computations," Paper 200f, AIChE Annual Meeting, Austin, Texas, November 7-12 (2004).
157. A. E. Schroth, M. Sahimi (speaker), and C. S. Kirkconnell, "Numerical Simulation of Heat Transfer and Oscillating Fluid Flow in Pulse Tubes," Paper 202c, AIChE Annual Meeting, Austin, Texas, November 7-12 (2004).
158. M. Firouzi, Kh. Molaai Nezhad, T. T. Tsotsis, and M. Sahimi (speaker), "Asymmetry in the Permeation Properties of a Nanoporous Membrane with Supercritical Fluids," Paper 208b, AIChE Annual Meeting, Austin, Texas, November 7-12 (2004).

159. M. Firouzi, T. T. Tsotsis, and M. Sahimi, "Three-Dimensional Molecular Pore Network Modelling of Transport of Mixtures Through Nanoporous Membranes," Paper 240b, AIChE Annual Meeting, Austin, Texas, November 7-12 (2004).
160. T. T. Tsotsis, B. Fayyaz Najafi, Kh. Molaai Nezhad, H. Patel, R. J. Ciora, P. K. T. Liu, and M. Sahimi, "Preparation and Applications of Nanoporous Silicon Carbide Membranes," Paper 247c, AIChE Annual Meeting, Austin, Texas, November 7-12 (2004).
161. N. Kim, T. T. Tsotsis, and M. Sahimi (speaker), "Atomistic Modelling of a New Class of Nanoporous Materials: Layered Double Hydroxides," Paper 251g, AIChE Annual Meeting, Austin, Texas, November 7-12 (2004).
162. L. Yang, Z. Shahrivari, T. T. Tsotsis, and M. Sahimi, "Removal of Trace Level of Arsenic from Aqueous Solutions Using Calcined and Uncalcined Layered Double Hydroxides," Paper 384d, AIChE Annual Meeting, Austin, Texas, November 7-12 (2004).
163. A. Heidarinasah, B. Dabir, and M. Sahimi (speaker), "Multiresolution Wavelet-Based Simulation of Transport and Photochemical Reactions in the Atmosphere," Paper 384d, AIChE Annual Meeting, Austin, Texas, November 7-12 (2004).
164. T. T. Tsotsis, B. Fayyaz, M. Sahimi, and B. G. Park, "Reactor Design Aspects of Hybrid Adsorbent-Membrane Reactor (HAMR), Paper 392f, AIChE Annual Meeting, Austin, Texas, November 7-12 (2004).
165. M. Sahimi (speaker), M. R. Rasaei, F. Ebrahimi, and M. Haghghi, "Upscaling of Unstable Miscible Displacements and Multiphase Flows Using Multiresolution Wavelet Transformation," 2005 SPE Reservoir Simulation Symposium, Houston, Texas, 31 January - 2 February, 2005; SPE Paper 93320.
166. S. F. Shariatpanahi, A. Dastyari, B. Bashukoo, M. Haghghi, M. Sahimi, F. Jalali, and S. S. Ayatollahi, "Visualization Experiments on Immiscible Gas and Water Injection by Using 2D-Fractured Glass Micromodels," 14th SPE Middle East Oil and Gas Show and Conference, Bahrain, 12-15 March, 2005; SPE Paper 93537.
167. A. Dastyari, B. Bashukoo, S. F. Shariatpanahi, M. Haghghi, and M. Sahimi, "Visualization of Gravity Drainage in a Fractured System During Gas Injection Using Glass Micromodels," 14th SPE Middle East Oil and Gas Show and Conference, Bahrain, 12-15 March, 2005; SPE Paper 93673.
168. A. Harale, H. T. Hwang, B. Fayyaz, M. Sahimi, and T. T. Tsotsis, "Hydrogen Production through a Hybrid Adsorbent Membrane Reactor System," North American Membrane Society Meeting, Providence, Rhode Island, June 13 (2005).

169. A. Harale, B. Fayyaz, B. G. Park, M. Sahimi, and T. T. Tsotsis, "A HAMR System for Hydrogen Production," ICOM Conference, Seoul, South Korea, August 23 (2005).
170. M. Sahimi (Speaker), T. T. Tsotsis, and N. Kim, "Atomistic Simulation of Nanoporous Layered Double Hydroxide Materials and Their Properties," AIChE Annual Meeting, Cincinnati, Ohio, November 11-17 (2005).
171. M. Sahimi (Speaker), T. T. Tsotsis, and S. Y. Lim, "Modeling and Simulation of Mixed-Matrix Membranes," AIChE Annual Meeting, Cincinnati, Ohio, November 11-17 (2005).
172. F. Bagheri-Tar, M. Sahimi, and T. T. Tsotsis, "Preparation of Polyetherimide Nanoparticles by Electrospray Drying, and Their use in the Preparation of Carbon Molecular-Sieve Adsorbents and Membranes," AIChE Annual Meeting, Cincinnati, Ohio, November 11-17 (2005).
173. H. Hwang, M. Sahimi, and T. T. Tsotsis, "A Reactive Separation Method for CO<sub>2</sub> Removal for a Life Support System," Habitation 2006, February 6-8 (2006).
174. S. Y. Lim, F. Bagheri-Tar, L. Yang, N. Kim, T. T. Tsotsis, and M. Sahimi, "Experiments and Molecular Simulations of Mixed-Matrix Membranes," 17th Annual Meeting, North American Membrane Society, Chicago, Illinois, May 12-17 (2006).
175. S. Y. Lim, F. Bagheri-Tar, L. Yang, N. Kim, T. T. Tsotsis, and M. Sahimi, "Experiments, Modeling and Molecular Simulations of Mixed-Matrix Membranes," 9th International Conference on Inorganic Membranes (ICIM 9), Lillehammer, Norway, June 25-29 (2006).
176. A. Harale, H. Hwang, B. Park, M. Sahimi, P. K. T. Liu, and T. T. Tsotsis, "Experimental Studies of a Hybrid Adsorbant-Membrane Reactor (HAMR) System for Hydrogen Production," 9th International Conference on Inorganic Membranes (ICIM 9), Lillehammer, Norway, June 25-29 (2006).
177. A. Harale, H. Hwang, P. K. T. Liu, M. Sahimi, and T. T. Tsotsis, "A Hybrid Adsorbent-Membrane (HAMR) System for Hydrogen Production," Paper 141b, AIChE Annual Meeting, San Francisco, California, November 12-17 (2006).
178. N. Kim, T. T. Tsotsis, and M. Sahimi, "Molecular Simulation of Adsorption in Polycrystalline Nanoporous Materials," Paper 244f, AIChE Annual Meeting, San Francisco, California, November 12-17 (2006).
179. T. W. Kim, M. Sahimi, and T. T. Tsotsis, "The Preparation and Characterization of Hydrotalcite Membranes," Paper 285e, AIChE Annual Meeting, San Francisco, California, November 12-17 (2006).
180. A. R. Mehrabi and M. Sahimi, "Phase Behavior of Ionic Fluids in Charged Disordered Media," Paper 321a, AIChE Annual Meeting, San Francisco, California, November 12-17 (2006).

181. N. Kim, T. T. Tsotsis, and M. Sahimi, "Molecular Simulation of Arsenic Adsorption in Layered Double Hydroxides," Paper 479c, AIChE Annual Meeting, San Francisco, California, November 12-17 (2006).
182. M. Ostwal, T. T. Tsotsis, and M. Sahimi (speaker), "Atomistic Simulation Studies of Water Sorption in Conducting Polyanniline," AIChE Annual Meeting, Salt Lake City, Utah, November 4-9 (2007).
183. A. Harale, H. Hwang, M. Sahimi, P. K. T. Liu, and T. T. Tsotsis, "A Hybrid Adsorbent-Membrane Reactor (HAMR) System for Hydrogen Production," 6th International Symposium on Catalysis in Multiphase Reactor (CAMUR-6) and 5th International Symposium on Multifunctional Reactors (ISMR-5), Pune, India, January 14-17 (2007).
184. A. Harale, H. Hwang, M. Sahimi, P. K. T. Liu, and T. T. Tsotsis, "A Hybrid Adsorbent-Membrane Reactor (HAMR) System for Hydrogen Production," 2nd North American Symposium on Chemical Reaction Engineering (NASCRE-2), Houston, Texas, February 4-8 (2007).
185. B. Elyassi, M. Sahimi, and T. T. Tsotsis, "A Novel Sacrificial Interlayer-Based Method for the Preparation of Silicon Carbide Membranes," 18th Annual Meeting, North American Membrane Society, Orlando, Florida, May 12-16 (2007).
186. T. W. Kim, M. Sahimi, and T. T. Tsotsis, "The Preparation and Characterization of CO<sub>2</sub>-Selective Hydrotalcite Membranes and Films," 18th Annual Meeting, North American Membrane Society, Orlando, Florida, May 12-16 (2007).
187. T. W. Kim, M. Sahimi, and T. T. Tsotsis, "The Study of SPEEK-Hydrotalcite Proton Exchange Membranes for DMFC," 18th Annual Meeting, North American Membrane Society, Orlando, Florida, May 12-16 (2007).
188. A. Harale, H. Hwang, M. Sahimi, P. K. T. Liu, and T. T. Tsotsis, "HAMR System for Hydrogen Production," North American Catalysis Society, Houston, Texas, June 17-22 (2007).
189. T. W. Kim, M. Sahimi, and T. T. Tsotsis, "The Preparation and Characterization of Nanoporous Hydrotalcite Membranes," International Zeolite Membrane Meeting, Zaragoza, Spain, July 23 (2007).
190. B. Elyassi, M. Sahimi, and T. T. Tsotsis, "A Novel Sacrificial Interlayer-Based Method for the Preparation of Silicon Carbide Membranes," 234th National Meeting of the American Chemical Society, Boston, MA, August 19-23 (2007).
191. M. Ostwal, T. T. Tsotsis, and M. Sahimi (speaker), "Atomistic Simulation Studies of Water Sorption in Conducting Polyanniline," AIChE Annual Meeting, Salt Lake City, Utah, November 4-9 (2007).

192. H. Hwang, A. Harale, M. Sahimi, P. K. T. Liu, and T. T. Tsotsis, "Simulation of Reactive Separation Application for CO<sub>2</sub> Removal," AIChE Annual Meeting, Salt Lake City, Utah, November 4-9 (2007).
193. B. Elyassi, M. Sahimi, and T. T. Tsotsis, "Polystyrene Sacrificial Interlayer for the Preparation of Silicon-Carbide Membranes," AIChE Annual Meeting, Salt Lake City, Utah, November 4-9 (2007).
194. H. Hwang, A. Harale, M. Sahimi, P. K. T. Liu, and T. T. Tsotsis, "Experimental and Simulation Studies of a Reactive Separation Application for CO<sub>2</sub> Removal in a Life Support System," 8th International Conference on Catalysis in Membrane Reactors, Kolkata, India, December 18-21 (2007).
195. R. Sanchez, T. T. Tsotsis, and M. Sahimi (speaker), "Modeling of Landfills as Large-Scale Bioreactors. A Tool for Predicting Landfill Gas Production and Addressing Safety Issues," AIChE Annual Meeting, Salt Lake City, Utah, November 4-9 (2007).
196. A. Harale, H. Hwang, P. K. T. Liu, M. Sahimi, and T. T. Tsotsis, "Cyclic Hybrid Adsorbent-Membrane Reactor (HAMR) Studies for Hydrogen Production, International Congress on Membranes and Membrane Processes, Honolulu, Hawaii, July 12-18 (2008).
197. R. Mourhatch, B. Elyassi, F. Chen, M. Sahimi, T. T. Tsotsis, "Recent Developments on the Preparation and Modeling of Nanoporous Silicon Carbide Membranes for Gas Separation Applications," International Congress on Membranes and Membrane Processes, Honolulu, Hawaii, July 12-18 (2008).
198. B. Elyassi, M. Sahimi, and T. T. Tsotsis, "Application of Nanoporous Fillers in Silicon Carbide Membranes," International Congress on Membranes and Membrane Processes, Honolulu, Hawaii, July 12-18 (2008).
199. N. Rajabbeigi, B. Elyassi, M. Sahimi (speaker), and T. T. Tsotsis, "Molecular Pore Network Model for Nanoporous Materials," International Congress on Membranes and Membrane Processes, Honolulu, Hawaii, July 12-18 (2008).
200. R. Mourhatch, B. Elyassi, F. Chen, M. Sahimi (speaker), and T. T. Tsotsis, "Preparation and Modeling of Nanoporous Silicon Carbide Membranes for Gas Separation Applications," International Conference on Inorganic Membranes, Kyoto, Japan, August 18-22 (2008).
201. N. Rajabbeigi, B. Elyassi, M. Sahimi, and T. T. Tsotsis, "Molecular Pore Network Model for Nanoporous Materials," 10th International Conference on Inorganic Membranes, Kyoto, Japan, August 18-22 (2008).



202. A. Harale, H. Hwang, P. K. T. Liu, M. Sahimi, and T. T. Tsotsis, "Cyclic Hybrid Adsorbent-Membrane Reactor (HAMR) Studies for Hydrogen Production," 10th International Conference on Inorganic Membranes, Kyoto, Japan, August 18-22 (2008).
203. H. Hwang, A. Harale, M. Sahimi, P. K. T. Liu, and T. T. Tsotsis, "Membrane-Based Reactive Separation Systems for Application in Life Support Systems and in-Situ Resource Utilization," 10th International Conference on Inorganic Membranes, Kyoto, Japan, August 18-22 (2008).
204. M. Abdolahi, R. Mourhatch, F. Chen, T. T. Tsotsis, and M. Sahimi "Pore Network Simulation of Transport and Separation of Gaseous Mixtures Through Nanoporous Membranes," AIChE Annual Meeting, Philadelphia, November 16-21 (2008).
205. R. Mourhatch, F. Chen, T. T. Tsotsis, and M. Sahimi (speaker), "Preparation and Modeling of Nanoporous Silicon Carbide Membranes by Chemical-Vapor Infiltration/Chemical-Vapor Deposition Techniques," AIChE Annual Meeting, Philadelphia, November 16-21 (2008).
206. B. Elyassi, M. Sahimi, and T. T. Tsotsis, "Preparation of Silicon Carbide Membranes Using Nanoporous Fillers," AIChE Annual Meeting, Philadelphia, November 16-21 (2008).
207. N. Rajabbeigi, B. Elyassi, M. Sahimi (speaker), and T. T. Tsotsis, "Molecular Dynamics Simulation of Transport in Silicon Carbide Membranes Using a New Molecular Pore Network Model," AIChE Annual Meeting, Philadelphia, November 16-21 (2008).
208. A. R. Mehrabi and M. Sahimi (speaker), "Cluster Conformations and Multipole Distributions In Ionic Fluids," AIChE Annual Meeting, Philadelphia, November 16-21 (2008).
209. M. Dadwhal, M. Sahimi, and T. T. Tsotsis, "Adsorption of Trace Levels of Arsenic from Aqueous Solutions by Conditioned Layered Double Hydroxides: Flow Experiments and Multi-Solute Batch Experiments," AIChE Annual Meeting, Philadelphia, November 16-21 (2008).
210. A. E. Schroth, C. A. Kirkconnell, and M. Sahimi, "Numerical Simulation of Heat Transfer and Oscillating Fluid Flow in a Cryogenic System with Pulse Tubes," AIChE Annual Meeting, Philadelphia, November 16-21 (2008).
211. M. Abdollahi, J. Yu, P.K.T. Liu, M. Sahimi, and T.T. Tsotsis, "Integrated one Box Process for Hydrogen Production from Syngas," presented at the AIChE annual meeting, Nashville, November 8-13 (2009).
212. H.-C. Lee, M. Sahimi, and T.T. Tsotsis, "Development of Carbon Molecular-Sieve Membranes with Tunable Properties," presented at the AIChE annual meeting, Nashville, November 8-13 (2009).

213. R. Mourhatch, T.T. Tsotsis, and M. Sahimi, "Pore Network Modeling of the CVD Processes in the Preparation of Nanoporous SiC Membranes," presented at the AIChE annual meeting, Nashville, November 8-13 (2009).
214. M. Abdollahi, J. Yu, R.J. Ciora, P.K.T. Liu, M. Sahimi, and T.T. Tsotsis, "Hydrogen from Biomass: A Novel Application of Catalytic Membrane Reactors," presented at the AIChE annual meeting, Salt Lake City, November 7-12 (2010).
215. H. Liu, S.J. Qin, M. Sahimi (Speaker) and T.T. Tsotsis, "Landfill Modeling Using Ensemble Kalman Filter," presented at the AIChE annual meeting, Salt Lake City, November 7-12 (2010).
216. H.-C. Lee, M. Sahimi, and T.T. Tsotsis, "Development of Carbon Molecular Sieve Membranes with Tunable Properties," presented at the AIChE annual meeting, Salt Lake City, November 7-12 (2010).
217. R. Mourhatch, T.T. Tsotsis, and M. Sahimi (Speaker), "Network Model for the Evolution of the Pore Structure of Silicon-Carbide Membranes During Their Fabrication," presented at the AIChE annual meeting, Salt Lake City, November 7-12 (2010).
218. R. Mourhatch, T.T. Tsotsis, and M. Sahimi (Speaker), "A Network Model of the Flow Perporometry Method Used in the Determination of the Pore Size Distribution of Porous SiC Membrane Supports," presented at the AIChE annual meeting, Salt Lake City, November 7-12 (2010).
219. M. Sahimi (Speaker) and M. Khademi, "Molecular Dynamics Simulation of Pressure-Driven Water Flow in Silicon-Carbon Nanotubes," presented at the AIChE annual meeting, Salt Lake City, November 7-12 (2010).
220. M. Abdollahi, J. Yu, R.J. Ciora, P. K. T. Liu, M. Sahimi, and T. T. Tsotsis, "Process Intensification in Hydrogen Production from Syngas," NAMS/ICIM Joint Annual Conference, Washington, D.C. (2010).
221. M. Abdollahi, P.K.T. Liu, M. Sahimi, and T. T. Tsotsis, "Pure Hydrogen Production using an Industrial Scale Membrane Reactor System," NAMS/ICIM joint annual conference, Washington, D.C. (2010).
222. B. Elyassi, R. Mourhatch, N. Rajabbeigi, S. Thongsai, M. Sahimi, and T. T. Tsotsis, "Preparation, Characterization, and Modeling of Nanoporous Silicon Carbide Membranes," 5th International Zeolite Membrane Meeting, May 23 -26 (2010).
223. M. Abdollahi, J. Yu, P.K.T. Liu, M. Sahimi, and T.T. Tsotsis, "Palladium Membrane Reactors: An Enabling Technology for Pure Hydrogen Production From Reformate Mixtures," presented at the AIChE annual meeting, Minneapolis, October 16-21 (2011).

224. F. Bagheri-Tar, M. Sahimi (Speaker), and T.T. Tsotsis, "Preparation of Mixed-Matrix Carbon Molecular-Sieve (CMS) Membranes Using Nano-Sized Particles," presented at the AIChE annual meeting, Minneapolis, October 16-21 (2011).
225. M. Sahimi (Speaker), F. Ghasemi, and R. van Ommen, "Analysis of Pressure Fluctuations in Fluidized Beds: I. Similarities with Turbulent Flow," presented at the AIChE annual meeting, Minneapolis, October 16-21 (2011).
226. M. Sahimi (Speaker) and M. Khademi, "Molecular Dynamics Simulation of Pressure-Driven Water Flow in Silicon-Carbide Nanotubes," presented at the AIChE annual meeting, Minneapolis, October 16-21 (2011).
227. M. Sahimi (Speaker) and L. Javidpour, "Confinement Can Destabilize Alpha-Helix Folding Proteins by Stabilizing the Beta Structures," presented at the AIChE annual meeting, Minneapolis, October 16-21 (2011).
228. M. Sahimi (Speaker) and F. Ghasemi, "Analysis of Pressure Fluctuations in Fluidized Beds. II Reconstruction of the Data by the Fokker-Planck and Langevin Equations," presented at the AIChE annual meeting, Minneapolis, October 16-21 (2011).
229. S. Naserifar, L. Liu, T. T. Tsotsis, M. Sahimi, and W. A. Goddard, "Simulations of the Pyrolysis of Hydridopolycarbosilane (HPCS) Polymer Using the Reaxff Reactive Force Field," Presented at the AIChE Annual meeting, Pittsburgh (2012).
230. S. Naserifar, L. Liu, T. T. Tsotsis, M. Sahimi, and W. A. Goddard, "Toward a Molecular Model of SiC Nanoporous Membranes: Application of Reactive Molecular Dynamics Simulation to the Study of the Pyrolysis of HPCS Polymer Precursor," Presented at the AIChE annual meeting, Pittsburgh (2012).
231. X. Yan, W. Deng, M. Khawaji, T. T. Tsotsis, and M. Sahimi, "Fabrication of Nanoporous Silicon Oxycarbide Materials Using Layered Double Hydroxide as a Sacrificial Template," Presented at the AIChE annual meeting, San Francisco, November 4 (2013).
232. W. Deng, X. Yan, M. Sahimi, and T. T. Tsotsis, "Fabrication of Silicon Carbide Sintered Supports and Silicon Carbide Membranes," Presented at the AIChE annual meeting, San Francisco, November 5 (2013).
233. S. H. Barghi, T. T. Tsotsis, and M. Sahimi, "Chemisorption, Physisorption and Hysteresis during Hydrogen Storage in Carbon Nanotubes," presented at the AIChE annual meeting, San Francisco, November 5 (2013).
234. S. Naserifar, T. T. Tsotsis, and M. Sahimi, "Toward a Process-Based Molecular Model of SiC Membranes. III. Thermo-Mechanical Properties and Application to Transport and Separation of

- Gaseous Mixtures in SiC Membranes,” presented at the AIChE annual meeting, San Francisco, November 6 (2013).
235. S. Soltani, X. Yu, M. Sahimi, and T. T. Tsotsis, “Methanol Synthesis in a Membrane Reactor,” presented at the AIChE annual meeting, San Francisco, November 6 (2013).
  236. S. Soltani, M. Sahimi, and T. T. Tsotsis, “A Membrane-based methanol synthesis process,” presented at the 24th annual meeting of the North American Membrane Society, Houston, Texas, May 31 - June 4, (2014).
  237. B. Ghanbarian, H. Daigle, and M. Sahimi, “A Novel Approach to Model Hydraulic and Electrical Conductivity in Fractal Porous Media,” Fall meeting of the American Geophysical Union, San Francisco, December 15 (2014).
  238. B. Ghanbarian, H. Daigle, A.G. Hunt, R.P. Ewing, and M. Sahimi, “Diffusion in Porous Media: Theory Compared with Numerical Simulations,” Paper presented at Symposium on the Application of Geophysics to Engineering and Environmental Problems (SAGEEP), Austin, Texas March 22-26 (2015).

# RESEARCH STUDENTS SUPERVISED

## I. POST DOCTORAL STUDENTS

1. Dr. U. Jaekel (May - August 1998)
2. Dr. R. Mallada (January - December 2000)
3. Dr. M. Hashemi (April 2000 - June 2001)
4. Dr. W. Yang (December 2000 - December 2001)
5. Dr. J. Ghassemzadeh (August 2002 - May 2003)
6. Dr. L. Yang (August 2003 - August 2005)
7. Dr. F. Ghasemi (February 2009 - April 2010)
8. Dr. Arash Nadri (June - December 2011)
9. Dr. Deyong Yang (January 2014 - December 2014)
10. Dr. Hongbao Zhao (February 2014 - February 2015)

## II. DOCTORAL STUDENTS

1. H. Siddiqui, "Cluster Aggregation and Fluid Displacement Processes in Porous Media" (September 1989).
2. S. Arbabi, "Computer Simulation of Rheology, Elasticity and Fracture of Disordered Materials" (January 1991).
3. A. O. Imdakm, "Computer Simulation of Particle Transport Processes in Porous Media" (January 1991).
4. S. Mukhopadhyay, "The Effect of Correlations and Large-Scale Heterogeneities on Flow and Transport in Porous Media and Fractured Rocks" (May 1995).
5. X. Yi, "Molecular Simulation of Adsorption and Diffusion in Pillared Clays" (December 1996).
6. H. Rassamdana, "Asphalts and Asphaltenes: Molecular Structures, Flow and Precipitation Properties" (August 1998).
7. H. I. Kavak, "Gas Flow Models for Landfills" (August 1998).
8. M. Hashemi, "Fractional Flow in Porous Media: Pore Network Simulation and Experimental Studies" (December 1999).

9. M. G. Sedigh, "Transport and Morphological Characteristics of Polyetherimide-based Carbon Molecular Sieve Membrane" (December 1999).
10. L. Xu, "Non-Equilibrium Molecular Dynamics Simulations of Transport and Separation of Multi-Component Gas Mixtures in Carbon Molecular-Sieve Membranes" (May 2001).
11. M. Dadvar, "Computer Simulation of Deactivation of Immobilized Glucose Isomerase in Packed-Bed Reactors" (August 2001).
12. C. Rivard, "Simulation of Solute Transport in Fractured Rock Based on Percolation Networks" (December 2001).
13. J. Ghassemzadeh, "Molecular and Pore Network Simulation of Transport of Gases and Liquids in Porous Materials: Pillared Clays and Printing Paper" (May 2002).
14. M. Madadi, "Lattice Boltzmann Simulation of Fluid Flow and Transport in Network of Fractures with Rough, Self-Affine Surfaces" (July 2002).
15. F. Ebrahimi, "Scale-up of Geological Models of Oil Reservoirs Based on Wavelet Transformations" (October 2002).
16. A. Heidarinasab, "Three-Dimensional Modeling of Photochemical Air Pollution Using Wavelet Transformations" (December 2002).
17. S. Aziz Mohammadi, "Upscaling of Heterogeneous and Fractured Reservoirs using Wavelet Transformation" (February 2005).
18. E. Nedaaee Oskoe, "Numerical Simulation of the Morphology and Transport Properties of Thin Composite Solid Films" (July 2005).
19. M. R. Rasaei, "Upscaling of Multiphase Flows in Heterogeneous Reservoirs using Multiresolution Wavelet Transformations" (July 2005).
20. M. Firouzi, "Molecular Simulation of the Structure, Transport, and Separation of Fluid Mixtures in Nanoporous Membranes under Subcritical and Supercritical Conditions" (December 2005).
21. B. Fayyaz-Najafi, "Nanoporous Silicon Carbide Membranes: Preparation and Reactive Applications" (December 2005).
22. Y. Kim, "In-Situ Studies of the Thermal Evolution of the Structure and Sorption Properties of Mg-Al-CO<sub>3</sub> Layered Double Hydroxide" (May 2006).
23. H. Hamzhepour, "Development of Optimal Models of Large-Scale Porous Media using Static and Dynamic Data and Simulated Annealing" (December 2006).
24. S. M. Vaez Allaei, "Wave Propagation in Heterogeneous Media" (January 2007).

25. M. M. Ostwal, "Experimental and Atomistic Simulation Studies of Water Sorption in Conducting Polyanniline" (August 2007).
26. F. Bagheri-Tar, "Preparation of Polyetherimide Nanoparticles by Electrospray Drying, and Their Use in the Preparation of Mixed-Matrix Carbon Molecular-Sieve Membranes" (December 2007).
27. N. Kim, "Atomistic Simulation of Nanoporous Layered Double Hydroxide Materials and Their Properties" (December 2007).
28. A. Harale, "A Hybrid Adsorbent-Membrane Reactor (HAMR) System for Hydrogen Production" (June 2008).
29. A. R. Mehrabi, "Complex Phenomena in Heterogeneous Media: Three Case Studies" (August 2008).
30. R. Sepehrinia, "Propagation and Localization of Elastic Waves in Heterogeneous Media" (August 2008).
31. R. Sanchez, "Dynamic Modeling and Optimization of a Model of a Landfill" (August 2008).
32. T. W. Kim, "Studies of Transport Phenomena in Hydrotalcite Membranes, and Their Use in Methanol Fuel Cells" (August 2008).
33. H. T. Hwang, "A Study of the Application of Membrane-Based Reactive Separation to the Carbon Dioxide Methanation" (October 2008).
34. L. Javidpour, "Molecular Dynamics Simulation of Folding, Stability, and Transport of Proteins in Nanopores" (December 2008).
35. B. Elyassi, "Fabrication of Nanoporous Silicon-Carbide Membranes for Gas Separation Applications" (May 2009).
36. N. Rajabbeigi, "Molecular Modeling of Silicon Carbide Nanoporous Membranes and Transport and Adsorption of Gaseous Mixtures Therein" (August 2009).
37. M. Dadwhal, "Adsorption of Trace Levels of Arsenic and Selenium from Aqueous Solutions by Conditioned Layered Double Hydroxides" (October 2009).
38. R. Mourhatch, "Experimental Studies and Computer Simulation of the Preparation of Nanoporous Silicon-Carbide Membranes by Chemical-Vapor Infiltration/Chemical-Vapour Deposition" (May 2010).
39. H.-C. Lee, "Development of Carbon Molecular-Sieve Membranes with Tunable Properties: Modification of the Pore Size and Surface Affinity" (August 2010).
40. M. Abdollahi, "An Integrated One Box Process for Hydrogen Production" (May 2011).

41. P. Tahmasebi, "Multiple-Point Geostatistical Simulation based on the Cross-Correlation Function" (May 2012).
42. H. Li, "Performance Prediction, State Estimation, and Production Optimization of a Landfill" (December 2012).
43. J. Yu, "The Use of Carbon Molecule Sieve and Pd Membranes for Conventional and Reactive Applications" (August 2013).
44. W. Deng, "Fabrication of Silicon Carbide Sintered Support and Silicon Carbide Membranes" (September 2013).
45. S. Soltani, "Methanol Synthesis in a Membrane Reactor" (May 2014).
46. X. Yan, "Fabrication of Nanoporous Silicon Oxycarbide Materials via a Sacrificial Template Technique" (June 2014).
47. M. Khademi, "Exploring Various Properties of Silicon-Carbide Nanotubes" (December 2014).
48. S.H. Barghi, "Silicon-Carbide Nanotubes as Materials for Storing Hydrogen" (December 2014).

### III. MASTERS STUDENTS

1. M. D. Stephens, "The Effect of Microscopic Inhomogeneities on the Failure and Fracture Behavior of Disordered and Reinforced Materials" (August 1988).
2. M. Saadatfar, "Monte Carlo Simulation of Diffusion in Disordered Media with Long-Range Correlations" (March 2000).
3. M. Jahangiri, "Transport and Separation of PEI-Based Carbon Molecular Sieve Membranes" (August 2000).
4. E. Nedaaee Oskoei, "Numerical Simulation of Phase Ordering and Roughening in Growing Films" (July 2001).
5. A. Gholami, "Non-Newtonian Behavior in Suspensions" (September 2001).
6. M. Naderian, "Efficient Simulation of AC Conductivity of Heterogeneous and Amorphous Semiconductors Using Wavelet Transformations" (June 2003).
7. M. Rahimi, "Miscible Gas Injection in a Fractured Reservoir in Southwestern Iran" (September 2003).
8. P. N. Patel, "Laboratory Studies of Carbon Dioxide Sequestration in Coalbeds" (May 2004).
9. E. Pazhoohesh, "Efficient Simulation of AC Conduction in Heterogeneous Materials at Low Temperatures: Application of Three-Dimensional Wavelet Transformation" (July 2005).



10. Z. Shahrivari, "Removal of Trace Levels of Arsenic and Selenium from Aqueous Solutions by Calcined and Uncalcined Layered Double Hydroxides (LDH)" (December 2005).
11. A. Mohebbi, "Development of a Static Model for Homa Gas Reservoir" (December 2005).
12. H. Dashtian, "Analysis of Well Logs with Detrended Fluctuation Analysis and its Comparison with other Methods" (December 2010).