

## Curriculum Vitae

STEPHEN WHITAKER

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DEGREES - Ph. D.	University of Delaware, 1959
M.S.	University of Delaware, 1956
B.S.	University of California, Berkeley, 1954

ACADEMIC EXPERIENCE:	Department of Chemical Engineering Northwestern University Assistant Professor, 1961-1964
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UNIVERSITY OF CALIFORNIA AT DAVIS	Department of Chemical Engineering Assistant Professor, 1964–1966 Associate Professor, 1966–1971 Professor, 1971–2003  Department of Mathematics Professor 1987–2003
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Departments of Chemical Engineering & Mathematics  
Professor Emeritus, July 2003

Visiting Professor, Department of Chemical Engineering  
Universidad de Oriente, Venezuela (September and December 1976)  
Graduate Course: “Transport Phenomena”

Visiting Professor, Department of Chemical Engineering  
University of Houston (Fall Semester, 1978)  
Graduate Course: “Fluid Mechanics”  
(Leave of Absence - U.C. Davis)

Visiting Lecturer, INTEC, Universidad Nacional del Litoral  
Santa Fe, Argentina (August, 1981)  
Short Course: “Two-Phase Flow in Porous Media”

Visiting Lecturer, INTEC, Universidad Nacional del Litoral,  
Santa Fe, Argentina (August 1983)  
Short Course: “Transport Processes with Heterogeneous Reaction”

Visiting Lecturer, PLAPIQUI, Universidad Nacional del Sur  
Bahia Blanca, Argentina (September 1983)  
Short Course: “Transport Processes with Heterogeneous Reaction”  
Research: “Drying Cellular Material”

Visiting Lecturer, PLAPIQUI, Universidad Nacional del Sur  
Bahia Blanca, Argentina (September 1984)  
Short Course: “Two-Phase Flow in Porous Media”  
Research: “Drying Cellular Material”

Fulbright Research Scholar, Laboratoire Energétique et Phénomènes de Transfert  
Université de Bordeaux I (January-July 1985)  
Research: "Flow in Homogeneous and Heterogeneous Porous Media"

Visiting Professor, Department of Chemical Engineering  
University of Houston (Fall semester, 1985)  
Graduate Course: "Fluid Mechanics"  
Undergraduate Course: "Heat and Mass Transport"  
(Leave of Absence - U.C.Davis)

Chercheur Associé du Centre National De La Recherche Scientifique  
Laboratoire Energétique et Phénomènes de Transfert  
Université de Bordeaux I (July-September, 1987)  
Research: "Two-Phase Flow in Heterogeneous Porous Media"

Visiting Lecturer, Universidad Simón Bolívar  
Caracas, Venezuela (December 1987)  
Short Course: "Fenomenos de Transporte en Medios Porosos"

Merck Sharp & Dohme Lecturer  
Department of Chemical Engineering  
University of Puerto Rico (March 1988)  
"Heat Conduction in Porous Media"

Visiting Scientist, Laboratoire Energétique et Phénomènes de Transfert  
Université de Bordeaux I (August-September, 1988)  
Research: "Two-Phase Flow in Heterogeneous Porous Media"

Professeur Associé à l'Université de Bordeaux  
Laboratoire Energétique et Phénomènes de Transfert  
Graduate Course: "Phénomènes de Transfert en Milieux Poreux"  
(October-December, 1989)  
Cours Avancé: "Transferts dans les Milieux Poreux Homogènes et Hétérogènes." (November, 1989)

Fulbright Research Scholar, Laboratoire Energétique et Phénomènes de Transfert  
Université de Bordeaux I (September - December 1989)  
Research: "Non-Local Theory of Two-Phase Flow in Heterogeneous Porous Media"

National Science Council Lectureship  
Tsing Hua University, Taiwan (March 1990)  
Short Course: "The Method of Volume Averaging"

Visiting Lecturer, Instituto Tecnológico de Celaya  
Celaya, México (January 1991)  
Short Course: "La Estructura Matemática y Física del Proceso de Transferencia de Masa"

Visiting Scientist, Laboratorio de Energía Solar  
Instituto de Investigaciones en Materiales, UNAM  
Temixco, México (August 1991)  
Short Course: "El Proceso de Secado: Transferencia de Masa y Calor en Medios Porosos"  
Research: "Surface Diffusion in Porous Media"

Visiting Scientist, Laboratoire Energétique et Phénomènes de Transfert  
Université de Bordeaux I (April-September, 1992)  
Research: "One and Two-Equation Models of Heat Transfer in Porous Media"

Visiting Scientist, Laboratorio de Energía Solar  
Instituto de Investigaciones en Materiales, UNAM  
Temixco, México (August 1993)  
Research: "Electromagnetic Properties of Composites"

Visiting Scientist, School of Mathematics  
Queensland University of Technology  
Brisbane, Australia (December, 1993)  
Research: "Distribution of Heterogeneous Thermal Sources in Two-Equation Models of Heat Conduction in Two-Phase Systems."

Visiting Lecturer, Department of Chemical Engineering  
Eindhoven University of Technology  
Eindhoven, The Netherlands (June 1994)  
Graduate Course: "Transport Phenomena in Porous Media: The Method of Volume Averaging."

Visiting Scientist, Laboratoire Energétique et Phénomènes de Transfert  
Université de Bordeaux I (July and August, 1994)  
Research: "Local Thermal Equilibrium for Transient Heat Conduction", "Aerosol Filtration",  
"Two-Phase Flow in Homogeneous Porous Media."

Visiting Scientist, Area de Ingeniería Química  
Universidad Autonoma Metropolitana, México (August, 1995)  
Research: "Conditions at the Boundary Between Porous Media and Homogeneous Fluids."

Visiting Scientist, Laboratorio de Energía Solar  
Instituto de Investigaciones en Materiales, UNAM  
Temixco, México (August 1995)  
Research: "Electromagnetic Properties of Composites"

Visiting Lecturer, Research Institute for Agrobiolgy and Soil Fertility  
Wageningen Agricultural University  
Wageningen, The Netherlands (March 1996)  
Graduate Course: "Transport Phenomena in Porous Media: The Method of Volume Averaging."

Visiting Scientist, Laboratoire Energétique et Phénomènes de Transfert  
Université de Bordeaux I (July, 1996)  
Research: "Transport in Chemically and Mechanically Heterogeneous Porous Media."

Visiting Lecturer, Center for Nonlinear Studies  
Los Alamos National Laboratory  
Los Alamos, New Mexico (July 1998)  
Graduate Course: "Volume Averaging Techniques for Flow in Porous Media."

Visiting Scientist, Pacific Northwest National Laboratory  
Hanford, Washington (August, 1998)  
Research: "Bio-remediation."

Visiting Scientist, Institut de Mécanique des Fluides de Toulouse  
Toulouse, France (August, 1999)  
Funded by Pacific Northwest National Laboratory  
Research: "Comparison between Ensemble Averaging and Volume Averaging."

Visiting Scientist, Institut de Mécanique des Fluides de Toulouse  
Toulouse, France (September, 2001)  
Funded by Pacific Northwest National Laboratory  
Research: "Spatially Smoothed Boundary Conditions for Microbial Systems."

Visiting Scientist, Laboratorio de Energía Solar  
Instituto de Investigaciones en Materiales, UNAM  
Temixco, México (September 2005)  
Research: "Constraints for Local Electrodynamic Equilibrium in Composite Systems."

#### BOOKS:

*Elementary Heat Transfer Analysis*  
Pergamon Press, 1976

*Introduction to Fluid Mechanics*  
R.E. Krieger Publishing Co., Inc., 1981

*Fundamental Principles of Heat Transfer*  
R.E. Krieger Publishing Co., Inc., 1983

*Concepts and Design of Chemical Reactors*  
edited with A.E. Cassano, Gordon and Breach Publishing Company, 1986

*The Method of Volume Averaging*  
Kluwer Academic Publishers, 1999

#### AWARDS & HONORS:

##### General

Outstanding Senior Award (AIChE), 1954  
University of California at Berkeley

National Science Foundation Graduate Fellowships, 1955-1958  
University of Delaware

Fulbright Research Scholar, 1985  
Université de Bordeaux I, France

Chercheur Associé du C.N.R.S., 1987  
Université de Bordeaux I, France

Merck Sharp & Dohme Lecturer, 1988  
Department of Chemical Engineering  
University of Puerto Rico

Professeur Associé à l'Université, 1989  
Université de Bordeaux I, France

Fulbright Research Scholar, 1989  
Université de Bordeaux I, France

National Science Council Lectureship, 1990  
Taiwan, Republic of China

#### Teaching and Education

Outstanding Teacher Award, 1975  
Department of Chemical Engineering, U.C. Davis

Outstanding Teacher Award, 1981  
Department of Chemical Engineering, U.C. Davis

Tau Beta Pi Outstanding Teacher Award, 1982  
College of Engineering, U.C. Davis

Magnar Ronning Award for Teaching Excellence, 1982  
University of California at Davis

Warren K. Lewis Award, 1989  
for Contributions to Chemical Engineering Education  
American Institute of Chemical Engineers

Distinguished Teaching Award, 1991  
University of California at Davis

Outstanding Teacher Award, 1998  
Department of Chemical Engineering  
and Material Science, U.C. Davis

Engineering Alumni Distinguished  
Teaching Award, 1999  
University of California at Davis

#### Special Honor

Jeff and Dianne Child/Steve Whitaker Fund for Distinguished Teaching and Scholarship.

Funded with a \$100,000 irrevocable gift to be used in the following sense (quote from Jeff and Dianne Child):  
“We would like to establish an endowed fund for young (assistant or associate) faculty members with an irrevocable gift of \$100,000. We would like this fund to be known as the Jeff and Dianne Child/Steve Whitaker Distinguished Teacher Scholar. The Chair of the department will nominate a recipient on the basis of his or her accomplishments and promise as an instructor and scholar. The purpose of this gift is to recognize excellence, especially in teaching, and to provide supplemental financial support for the honored individual’s educational and research activities. In choosing the name of this fund, we intend to honor professor Steven Whitaker, who is widely regarded as one of the department's finest professors and who influenced Jeff in countless positive ways while he was an undergraduate engineering student at UC Davis.”

INDUSTRIAL EXPERIENCE:

Research Engineer (fluid mechanics), Engineering Research Laboratory  
E.I. du Pont de Nemours Co.  
Wilmington, Delaware, 1958-1961

CONSULTANT:

Owens/Corning Fiberglass Corporation, 1978  
(convective drying of moving fibrous beds)

U.S. Borax and Chem. Corporation, 1979  
(moisture transport in clay-lined solar evaporation ponds)

Rotodyne Corporation, 1980-1982  
(boiling heat transfer in rotating systems)

Bechtel Corporation, 1980-1982  
(drying coal slurries)

California Water Quality Control Board, 1982-1993  
(transport of TCE in groundwater, design of air stripping equipment)

Coriolis Corporation, 1982-1992  
(heat exchange processes in electronic devices)

Rockwell Hanford Operations, 1985  
(review of research program on nuclear waste transport in soils)

Battelle, Pacific Northwest Laboratories, 1988  
(multiphase fluid dynamics in subsurface systems)

Department of Energy, 1989  
(Subsurface Science Program Review)

PATENTS:

Liquid Cooled Anode X-Ray Tubes (with A.H. Iversen)  
International Pub. No. W083/02850, 18 August 1983

Liquid Cooled Anode X-Ray Tubes (with A.H. Iversen)  
U.S. Patent No. 4,622,687, 11 November 1986

Means for Temperature Control of Heated Surfaces (with A.H. Iversen)  
U.S. Patent No. 4,799,543, 24 January 1989

Liquid Cooled Rotating Anodes (with A.H. Iversen)  
U.S. Patent No. 5,018,181, 21 May 1991.

Enhanced Heat Transfer Rotating Anode (with A.H. Iversen)  
U.S. Patent No. 5,056,127, 8 October 1991.

## PUBLICATIONS

1. 1958 Whitaker, S. and Pigford, R.L. Thermal diffusion in liquids. Measurements and a molecular model, *Industrial and Engineering Chemistry* **50**, 1026-1032.
2. 1960 Whitaker, S. and Pigford, R.L. Numerical differentiation of experimental data, *Industrial and Engineering Chemistry* **52**, 185-187.
3. 1962 Wendel, M.M. and Whitaker, S. The finite difference analysis of plane Poiseuille and Couette flow developments, *Applied Science Research* **11**, 313-317.
4. 1963 Whitaker, S. and Wendel, M.M. Numerical solution of the equations of motion for flow around objects in channels at low Reynolds numbers, *Applied Science Research* **12**, 91-104.
5. 1964 Whitaker, S. Effect of surface active agents on the stability of falling liquid films, *Industrial and Engineering Chemistry Fundamentals* **3**, 132-142.
6. 1964 Whitaker, S. Comments on the laminar entry problem in porous tubes, *Physics of Fluids* **7**, 1881-1882.
7. 1965 Johannes, W. and Whitaker, S. Thinning of soap films: The effect of surface viscosity, *Journal of Physical Chemistry* **69**, 1471-1477.
8. 1965 Paris, J. and Whitaker, S. Confined wakes: A numerical solution of the Navier-Stokes equations, *AIChE Journal* **11**, 1033-1041.
9. 1966 Whitaker, S. The equations of motion in porous media, *Chemical Engineering Science* **21**, 291-300.
10. 1966 Jennings, W.G., Whitaker, S. and Hamilton, W.C. Interfacial mechanism of soil removal, *Journal of American Oil Chemists Society* **43**, 130-132.
11. 1966 Whitaker, S. and Jones, L.O. Stability of falling liquid films, Effect of interface and interfacial mass transport. *AIChE Journal* **12**, 421-431.
12. 1966 Jones, L.O. and Whitaker, S. An experimental study of falling liquid films, *AIChE Journal* **12**, 525-529.
13. 1966 Whitaker, S. Gravitational thinning of films: Effect of surface viscosity and surface elasticity, *Industrial and Engineering Chemistry Fundamentals* **5**, 379-388.
14. 1966 Whitaker, S. and Pigford, R.L. Response of a gas-liquid interface to concentration pulses, *AIChE Journal* **12**, 741-746.
15. 1967 Whitaker, S. Diffusion and dispersion in porous media, *AIChE Journal* **13**, 420-427.
16. 1967 Whitaker, S. Velocity profile in the Stefan diffusion tube, *Industrial and Engineering Chemistry Fundamentals* **6**, 476.
17. 1968 Whitaker, S. *Introduction to Fluid Mechanics*, Prentice-Hall, Inc.

18. 1969 Strobel, W.J. and Whitaker, S. The effect of surfactants on the flow characteristics of falling liquid films, *AICHE Journal* **15**, 527-532.
19. 1969 Talley, W.K. and Whitaker, S. Monte Carlo analysis of knudsen flow, *Journal of Computational Physics* **4**, 389-410.
20. 1969 Whitaker, S. Advances in the theory of fluid motion in porous media, *Industrial and Engineering Chemistry* **61**, 14-28.
21. 1970 Whitaker, S. On a unified approach to the study of transfer processes, *Industrial and Engineering Chemistry* **62**, 34-35.
22. 1970 Whitaker, S. Advances in the theory of fluid motion in porous media, Chap. 2 in *Flow Through Porous Media*, edited by R.J. Nunge, American Chemical Society, Washington, D.C.
23. 1971 Whitaker, S. The effect of surfactants on the flow characteristics of falling liquid films, *AICHE Journal* **17**, 997.
24. 1971 Cerro, R.L. and Whitaker, S. Stability of falling liquid films, *Chemical Engineering Science* **26**, 742-745.
25. 1971 Cerro, R.L. and Whitaker, S. Entrance region flows with a free surface: The falling liquid film, *Chemical Engineering Science* **26**, 785-798.
26. 1971 Cerro, R.L. and Whitaker, S. The effect of surfactants on the hydrodynamic development of thin liquid films, *Journal of Colloid and Interface Science* **37**, 33-51.
27. 1971 Whitaker, S. On the functional dependence of the dispersion vector for scalar transport in porous media, *Chemical Engineering Science* **26**, 1893-1899.
28. 1972 Whitaker, S. Forced convection heat transfer correlations for flow in pipes, past flat plates, single cylinders, single spheres, and for flow in packed beds and tube bundles, *AICHE Journal* **18**, 361-371.
29. 1972 Whitaker, S. Surface boundary conditions for small amplitude waves on a falling liquid film, *AICHE Journal* **18**, 1261-1262.
30. 1973 Whitaker, S. The transport equations for multi-phase systems, *Chemical Engineering Science* **28**, 139-147.
31. 1974 Whitaker, S. and Cerro, R.L. Some comments on the hydrodynamics of thin liquid films, *Chemical Engineering Science* **29**, 963-965.
32. 1975 Cerro, R.L. and Whitaker, S. Downstream boundary conditions for numerical analysis of scalar transport processes, *Computers and Fluids* **3**, 321-334.
33. 1976 Pierson, F.W. and Whitaker, S. Studies of the drop weight method for surfactant solutions. I. Mathematical analysis of the adsorption of surfactants at the surface of a growing drop, *Journal of Colloid and Interfacial Science* **54**, 203-218.



34. 1976 Pierson, F.W. and Whitaker, S. Studies of the drop-weight method for surfactant solutions II: Experimental results for water and surfactant solutions, *Journal of Colloid and Interfacial Science* **54**, 219-230.
35. 1976 Whitaker, S. Studies of the drop-weight method for surfactant solutions III: Drop stability, the effect of surfactants on the stability of a column of liquid, *Journal of Colloid and Interfacial Science* **54**, 231-248.
36. 1976 Whitaker, S. *Elementary Heat Transfer Analysis*, Pergamon Press, Elmsford, NY.
37. 1977 Whitaker, S. *Fundamental Principles of Heat Transfer*, Pergamon Press, Elmsford, NY.
38. 1977 Whitaker, S. Simultaneous heat, mass and momentum transfer in porous media: A theory of drying, *Advances in Heat Transfer*, Vol. 13, pages 119-203, Academic Press, New York.
39. 1977 Whitaker, S. Drying in porous media, Second Australasian Conference on Heat and Mass Transfer; pages 409-420. The University of Sydney.
40. 1977 Whitaker, S. A comment on the chlorine-sulfur dioxide reaction in aqueous solution, *Industrial and Engineering Chemistry Fundamentals* **16**, 391.
41. 1977 Whitaker, S. Toward a diffusion theory of drying, *Industrial Engineering Chemistry Fundamentals* **16**, 408-414.
42. 1977 Pierson, F.W. and Whitaker, S. Some theoretical and experimental observations of the wave structure of falling liquid films, *Industrial and Engineering Chemistry Fundamentals* **16**, 401-408.
43. 1978 Pierson, F.W. and Whitaker, S. Some experimental observations of the surface elasticity of surfactant solutions, *Journal of Colloid and Interfacial Science* **63**, 129-135.
44. 1978 Berker, A. and Whitaker, S. A two-dimensional model of second order rapid reactions in turbulent tubular reactors, *Chemical Engineering Science* **33**, 889-895.
45. 1978 Whitaker, S. and Carbonell, R.G. A course in transport phenomena in multicomponent, multiphase, reacting systems, *Chemical Engineering Education*, Fall Edition, 182-187.
46. 1979 Whitaker, S. Mass transfer and adsorption of surfactants at moving interfaces, NSF Workshop on Fundamentals of Interfacial Phenomena. John Berg, Editor, pages 1-18.
47. 1979 Kohler, J. P., Gorin, A.B. and Whitaker, S. A model for protein transport across the endothelial membrane, *Computers in Biology and Medicine* **9**, 179-189.
48. 1980 Whitaker, S. Radiant energy transport in porous media, *Industrial and Engineering Chemistry Fundamentals* **19**, 210-218.
49. 1980 Whitaker, S. Heat and mass transfer in granular porous media, *Advances in Drying*, Vol. 1, pages 23-61, Hemisphere Publishing Corporation, New York.
50. 1980 Tan, C.S., Berker, A. and Whitaker, S. Design of dechlorination units for power plant cooling streams, *Journal of Water Pollution Control* **52**, 299-309.
51. 1980 Ryan, D., Carbonell, R.G. and Whitaker, S. Effective diffusivities for catalyst pellets under reactive conditions, *Chemical Engineering Science* **35**, 10-16.

52. 1981 Ryan, D., Carbonell, R.G. and Whitaker, S. A theory of diffusion and reaction in porous media, American Institute of Chemical Engineers Symposium Series, #202, Vol. 71, pages 46-62.
53. 1982 Chou, W.T-H. and Whitaker, S. Drying granular porous media: A comparison between theory and experiment, Proc. of the Third International Drying Symposium, Vol. 1, 135-148, edited by J.C. Ashworth, Drying Research Limited, Wolverhampton, England.
54. 1982 Whitaker, S. Laws of continuum physics for single-phase, single-component systems, *Handbook of Multiphase Systems*, edited by G. Hetsroni, Hemisphere Publishing Corporation, New York, 1-5 to 1-35.
55. 1982 Crapiste, G.H., Rotstein, E. and Whitaker, S. Secado de alimentos antes de la desintegracion de la membrana celular, Proc. of the First Latin American Congress on Heat and Mass Transfer, pages 536-560, La Plata, Argentina, October, 1982.
56. 1983 Whitaker, S. and Chou, W.T-H.. Drying granular porous media - theory and experiment, *Drying Technology* **1**, 3-33.
57. 1983 Paine, M.A., Carbonell, R.G. and Whitaker, S. Dispersion in pulsed systems I: Heterogeneous reaction and reversible adsorption in capillary tubes, *Chemical Engineering Science* **38**, 1781-1793.
58. 1983 Carbonell, R.G. and Whitaker, S. Dispersion in pulsed systems II: Theoretical developments for passive dispersion in porous media, *Chemical Engineering Science* **38**, 1795-1802.
59. 1983 Eidsath, A., Carbonell R.G., Whitaker, S. and Herrmann, L.R. Dispersion in pulsed systems III: Comparison between theory and experiments for packed beds, *Chemical Engineering Science* **38**, 1803-1816.
60. 1983 Whitaker, S. Diffusion and reaction in a micropore-macropore model of a porous medium, *Latin American Journal of Chemical Engineering and Applied Chemistry* **13**, 143-183.
61. 1984 Whitaker, S. Thermal analysis of solid, rotating, x-ray tube anodes: New results and comparison with prior studies, *Proc. SPIE* **454**, 285-293.
62. 1984 Torres, F.E. and Whitaker, S. Numerical analysis of the temperature distribution in a liquid-cooled rotating x-ray anode, *Proc. SPIE* **454**, 294-303.
63. 1984 Iversen, A.H. and Whitaker, S. A new high heat load x-ray tube, *Proc. SPIE* **454**, 304-310.
64. 1984 Crapiste, G.H., Rotstein, E. and Whitaker, S. Fundamentals of drying foodstuffs, Proc. Fourth Int. Drying Symposium, Vol. 1, 279-284, Kyoto, Japan.
65. 1984 Whitaker, S. Moisture transport mechanisms during the drying of granular porous media, Proc. Fourth Int. Drying Symposium, Vol. 1, pages 31-42, Kyoto, Japan.
66. 1984 Carbonell, R.G. and Whitaker, S. Adsorption and reaction at a catalytic surface: The quasi-steady condition, *Chemical Engineering Science* **39**, 1319-1321.
67. 1984 Carbonell, R.G. and Whitaker, S. Heat and mass transfer in porous media, pages 121-198 in *Fundamentals of Transport Phenomena in Porous Media*, edited by J. Bear and M.Y. Corapcioglu, Martinus Nijhoff Publishers, Dordrecht, The Netherlands.

68. 1985 Whitaker, S. A simple geometrical derivation of the spatial averaging theorem, *Chemical Engineering Education*, Winter, pages 18-21 and 50-52.
69. 1985 Nozad, I., Carbonell, R.G. and Whitaker, S. Heat conduction in multiphase systems I: Theory and experiment for two-phase systems, *Chemical Engineering Science* **40**, 843-855.
70. 1985 Nozad, I., Carbonell, R.G. and Whitaker, S. Heat conduction in multiphase systems II: Experimental method and results for three-phase systems, *Chemical Engineering Science* **40**, 857-863.
71. 1985 Howes, F.A. and Whitaker, S. The spatial averaging theorem revisited, *Chemical Engineering Science* **40**, 1387-1392.
72. 1985 Whitaker, S. Heat Conduction in porous media with homogeneous and heterogeneous thermal sources, *Proc. Euromech* **194**, 39-44, Nancy, France.
73. 1985 Whitaker, S. Moisture transport mechanisms during the drying of granular porous media, pages 21-32 in *Drying '85*, edited by R. Toei and A.S. Mujumdar, Hemisphere Publishing Corporation.
74. 1985 Crapiste, G.H., Whitaker, S. and Rotstein, E. Fundamentals of drying foodstuffs, pages 297-302 in *Drying '85*, edited by R. Toei and A.S. Mujumdar, Hemisphere Publishing Corporation.
75. 1986 Crapiste, G.H., Rotstein, E. and Whitaker S. A general closure scheme for the method of volume averaging, *Chemical Engineering Science* **41**, 227-235.
76. 1986 Vafai, K. and Whitaker, S. Heat and mass transfer accompanied by phase change in porous media, *Journal of Heat Transfer* **108**, 132-140.
77. 1986 Wu, A. and Whitaker, S. The recirculation zone at the entrance of a falling liquid film: Consequences for the surfactant adsorption problem, *Journal of Colloid and Interfacial Science* **110**, 389-397.
78. 1986 Whitaker, S. Flow in porous media I: A theoretical derivation of Darcy's law, *Transport in Porous Media* **1**, 3-25.
79. 1986 Whitaker, S. The use of weighting functions with the method of volume averaging, *SIAM Workshop on Multiphase Flow*, June 1986, pages 105-114.
80. 1986 Whitaker, S. Flow in porous media II: The governing equations for immiscible two-phase flow, *Transport in Porous Media* **1**, 105-125.
81. 1986 Whitaker, S. Flow in porous media III: Deformable media, *Transport in Porous Media* **1**, 127-154.
82. 1986 Chen, S. and Whitaker, S. Moisture distribution during the constant rate drying period for unconsolidated porous media: Failure of the diffusion theory, *Drying '86*, Vol. 1, pages 39-48, Hemisphere Publishing Corporation, New York.
83. 1986 Whitaker, S. Local thermal equilibrium: An application to packed bed catalytic reactor design, *Chemical Engineering Science* **41**, 2029-2039.
84. 1986 Ochoa, J.A., Stroeve, P. and Whitaker, S. Diffusion and reaction in cellular media, *Chemical Engineering Science* **41**, 2999-3013.

85. 1986 Whitaker, S. Transient diffusion, adsorption and reaction in porous catalysts: The reaction controlled, quasi-steady catalytic surface, *Chemical Engineering Science* **41**, 3015-3022.
86. 1986 Whitaker, S. Multiphase transport phenomena: Matching theory and experiment, in *Advances in Multiphase Flow and Related Problems*, edited by G. Papanicolaou, Society for Industrial and Applied Mathematics, Philadelphia.
87. 1986 Pironti, F. and Whitaker, S. Aplicación del Método de Escalas Múltiples al Proceso de Difusión con Reacción en Catalizadores Bimodales, *Acta Científica Venezolana* **37**, 394-405.
88. 1986 Whitaker, S. and Cassano, A.E. (editors) *Concepts and Design of Chemical Reactors*, Gordon and Breach, New York.
89. 1986 Whitaker, S. Transport processes with heterogeneous reaction, pages 1-94 in *Concepts and Design of Chemical Reactors*, edited by S. Whitaker and A.E. Cassano, Gordon and Breach, New York.
90. 1987 Whitaker, S. Mass transport and reaction in catalyst pellets, *Transport in Porous Media*, **2**, 269-299.
91. 1987 Kim, J-H, Ochoa, J.A. and Whitaker, S. Diffusion in anisotropic porous media, *Transport in Porous Media* **2**, 327-356.
92. 1987 Whitaker, S. Comments on "Closure of the Governing Equations for Immiscible, Two-Phase Flow: A Research Comment," *Transport in Porous Media*, **2**, 395.
93. 1987 Whitaker, S. Fluid flow principles, in *McGraw-Hill Encyclopedia of Science and Technology*, pages 186-193, 6th edition, McGraw-Hill Book Co., New York.
94. 1987 Ochoa, J.A., Whitaker, S. and Stroeve, P. Determination of cell membrane permeability in concentrated cell ensembles, *Biophysical Journal* **52**, 763-774.
95. 1987 Quintard, M. and Whitaker, S. Ecoulement monophasique en milieu poreux: Effet des hétérogénéités locales, *Journal de Mécanique théorique et appliquée* **6**, 691-726.
96. 1987 Whitaker, S. The role of the volume-averaged temperature in the analysis of nonisothermal, multiphase transport phenomena, *Chemical Engineering Communications* **58**, 171-183.
97. 1987 Quintard, M. and Whitaker, S. Mécanismes de Transport dans des Milieux Poreux Hétérogènes à Grande Echelle: Application au Cas des Déplacements Monophasique, GRECO 72 CNRS, Symposium sur Séchage et Mécanismes de Transport dans les Milieux Poreux Non-Saturés
98. 1987 Quintard, M. and Whitaker, S. Single phase flow in porous media: The effect of local heterogeneities, pages 473-486 in *Migration of Hydrocarbons in Sedimentary Basins*, edited by B. Doligez, Editions Technip, Paris.
99. 1987 Plumb, O.A. and Whitaker, S. Dispersion in heterogeneous porous media, pages 487-511 in *Migration of Hydrocarbons in Sedimentary Basins*, edited by B. Doligez, Editions Technip, Paris
100. 1988 Bourgeat, A., Quintard, M. and Whitaker, S. Eléments de comparaison entre la méthode d'homogénéisation et la méthode prise de moyenne avec fermeture, *C.R. Acad. Sci. Paris*, **t.306**, Série II, 463-466.

101. 1988 Whitaker, S. Diffusion in packed beds of porous particles, *AIChE Journal* **34**, 679-683.
102. 1988 Whitaker, S. Levels of simplification: The use of assumptions, restrictions and constraints in engineering analysis, *Chemical Engineering Education* **22**, 104-108.
103. 1988 Iversen, A. and Whitaker, S. Progress in the development of a new high heat load x-ray tube, *Proc. SPIE* **914**, 219-229.
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65 single author publications as of 2009

#### PRESENTATIONS

- 1956 “Thermal diffusion in liquids: Measurements and a molecular model”, Cleveland ACS Meeting, February.
- 1958 through 1963 records are lost. Active participation in AIChE and ACS meetings.
- 1964 “Unknown”, Boston AIChE Meeting, December.
- 1965 “Unknown”, Houston AIChE Meeting, February.
- 1965 “Unknown”, San Francisco AIChE Meeting, May.
- 1965 “Unknown”, Potzdam ACS Meeting, June.
- 1965 “Unknown” Quebec Canadian Institute of Chemical Engineering Meeting, October.
- 1965 “Unknown” Department of Chemical Engineering, Illinois Institute of Technology, October.
- 1965 “Unknown”, Department of Chemical Engineering, California Institute of Technology, December.
- 1966 Participant, NSF Workshop on Molecular Processes in Chemical Engineering, Rochester University, January.
- 1966 “Unknown” Columbus AIChE Meeting, May.
- 1967 “Current Chemical Engineering Education” Sacramento Valley Section of the AIChE, April.
- 1968 “The Effect of Surfactants on the Flow Characteristics of Falling Liquid Films”, Tampa AIChE Meeting, May.
- 1968 “The Role of Surface elasticity in Suppressing Wave Formation”, Atlantic City ACS Meeting, September.
- 1969 “Monte Carlo Analysis of Knudsen Flow”, Cleveland AIChE Meeting, May.
- 1969 “The Effect of Surfactants on the Flow Characteristics of Falling Liquid Films”, Department of Chemical Engineering, University of Illinois, May.
- 1969 “Advances in the Theory of Flow in Porous Media”, Washington, DC, ACS Summer Symposium, June.
- 1970 “Transport Processes in Porous Media”, Department of Chemical Engineering, Purdue University, April.
- 1970 Transport Processes in Multiphase Systems”, Department of Chemical Engineering, University of Florida, May.
- 1970 “The Effect of Surfactants on the Hydrodynamic Development of Thin Liquid Films”, Chicago ACS Meeting, September.
- 1970 “Transport Phenomena in Multiphase Systems”, Department of Chemical Engineering, Stanford University, April.

- 1971 "A Boundary Layer Analysis of Thin Liquid Films", Cincinnati AIChE Meeting, May.
- 1972 "On the Functional Dependence of the Dispersion Vector and Problems Associated with Laboratory Measurements of the Dispersion Coefficient", Dallas AIChE Meeting, February.
- 1974 "Wave Formation on Falling Liquid Films", Department of Chemical Engineering, Rice University, October.
- 1975 "Studies of the Drop-Weight Method for Surfactant Solutions", Boston AIChE Meeting, September.
- 1975 "Wave Formation on Falling Liquid Films: Some theoretical and Experimental results for Surfactant Solutions", Los Angeles AIChE Meeting, November.
- 1976 "Simultaneous Heat, Mass and Momentum Transfer in Porous Media: A Theory of Drying", Department of Chemical Engineering, University of California at Berkeley, April.
- 1976 "Axial Dispersion in Pulsed Systems with Reaction and Mass Transfer", AIChE Meeting, Chicago, November.
- 1977 "Teaching Transport Phenomena" Panel Discussion, Department of Chemical Engineering, University of California at Berkeley, May
- 1977 "Design of Dechlorination Units for Power Plant Cooling Strams: A study of Turbulent Mixing and Chemical Reaction", New York AIChE Meeting, November.
- 1978 "Heat and Mass Transfer in Porous Media" (Invited Speaker) First International Symposium on Drying, McGill University, Montreal, August.
- 1978 "Drying Granular Porous Media", Department of Chemical Engineering, University of Houston, October.
- 1978 "Drying Granular Porous Media", Department of Chemical Engineering, University of Texas at Austin, November.
- 1978 "Use of Order of Magnitude Analysis to Obtain Engineering Estimates", Department of Chemical Engineering, University of Houston, October.
- 1978 "On the Development of Dispersion Models: Taylor's Theory Revisited", Miami AIChE Meeting, November.
- 1979 "Heat and Mass Transfer in Granular Porous Media", Department of Mechanical Engineering, Washington State University, February.
- 1979 "Heat and Mass Transfer Across Moving Interfaces", (Plenary Lecture) National Science Foundation Workshop, Department of Chemical Engineering, University of Washington, February.
- 1979 "Heat and Mass Transfer in Porous Media", Department of Mechanical Engineering, University of California at Berkeley, June.
- 1979 "Radiant Energy Transport in Porous Media", San Diego National Heat Transfer Conference, August.
- 1980 "On the Origin of Some Unusual Partial Differential Equations," Davis Amer. Math. Soc. Meeting, April.

- 1980 "A Theory of Dispersion in Porous Media", Department of Chemical Engineering, Michigan Technological University, July.
- 1980 "The Role of Fluid Mechanics in Undergraduate Chemical Engineering Education", Department of Chemical Engineering, Michigan Technological University, July.
- 1980 "Effect of Particle Size Distribution on Dispersion", Department of Chemical Engineering, Stanford University, July.
- 1980 "A Theory of Dispersion in Porous Media and Comparison with Experimental Data," Department of Chemical Engineering, Purdue University, September.
- 1980 "Diffusion and Reaction in Porous Media," Chicago AIChE Meeting, November.
- 1981 "Diffusion and Dispersion in Porous Media," Department of Chemical Engineering, University of Florida, April.
- 1981 "Dispersion and Diffusion in Porous Media with Heterogeneous Chemical Reaction: A Partial Comparison Between Theory and Experiment," Department of Chemical Engineering, Northwestern University, May.
- 1981 "Dispersion and Diffusion in Porous Media with Heterogeneous Chemical Reaction: A Partial Comparison Between Theory and Experiment," Department of Chemical Engineering, Illinois Institute of Technology, May.
- 1981 "Dispersion and Diffusion in Porous Media with Heterogeneous Chemical Reaction: A Partial Comparison Between Theory and Experiment," Department of Chemical Engineering, Notre Dame University, May.
- 1981 "The Recirculation Zone at the Entrance of a Falling Liquid Film," (Invited Speaker), First International Fluid Mechanics Winter-Summer Seminar, INTEC-Universidad Nacional Del Litoral, Santa Fe, Argentina, August.
- 1981 "Una Teoria de Difusion con Reaccion Quimica en Medios Porosos," INTEC-Universidad Nacional Del Litoral, Santa Fe, Argentina, August.
- 1981 "Educacion de Posgrado en Ingenieria Quimica: Una Busqueda de Principios," INTEC-Universidad Nacional Del Litoral, Santa Fe, Argentina, August.
- 1981 "Una Teoria de Difusion con Reaccion Quimica en Medios Porosos," PLAPIQUI-Universidad Nacional Del Sur, Bahia Blanca, Argentina, September.
- 1981 "Recirculation Zone at the Entrance of a Falling Liquid Film: Consequences for Surfactant Adsorption," Department of Chemical Engineering, University of California at Davis, October.
- 1981 "Some Unexplained Results Concerning the Hydrodynamic Stability of Thin Liquid Films of Surfactant Solutions," American Physical Society-Division of Fluid Mechanics, Monterey, November.
- 1981 "The Recirculation Zone at the Entrance of a Falling Liquid Film," New Orleans AIChE Meeting, November.
- 1982 "A Finite Element Solution of the Navier-Stokes Equations for Flow in Spatially Periodic Porous Media," Department of Physics, University of California at Davis, January.

- 1982 "Chemical Engineering: From Aristotle to Newton and Beyond," Picnic Day Mini-Lecture, University of California at Davis, April.
- 1982 "Heat and Mass Transport in Porous Media," (Invited Lecture) NATO Advanced Study Institute on Mechanics of Fluids in Porous Media, Department of Civil Engineering, University of Delaware, July,
- 1982 "Drying Granular Porous Media: A Comparison Between Theory and Experiment," Third International Symposium on Drying, University of Birmingham, Birmingham, England, September.
- 1982 "Drying Granular Porous Media: A Comparison Between Theory and Experiment," Los Angeles AIChE Meeting, November.
- 1982 "Drying: Theory and Experiment," Sandia National Laboratories, Albuquerque, New Mexico, December.
- 1983 "Radiant Energy Transport in Porous Media," Departments of Mechanical and Chemical Engineering, University of Kentucky, March.
- 1983 "Dispersion in Porous Media: Local Volume Averaging and Large-Scale Averaging," Departments of Mechanical and Chemical Engineering, Ohio State University, March.
- 1983 "Volume Average Modelling/Conduction," (Invited Presentation) Panel Discussion of Porous Media Transport, 21st National Heat Transfer Conference, Seattle, July.
- 1983 "Drying Granular Porous Media - Theory and Experiment," (Keynote Lecture) 21st National Heat Transfer Conference, Seattle, July.
- 1983 "Transport Processes with Heterogeneous Reaction," (Invited Lecture) 25th Conicet Anniversary Reactor Design Conference, Santa Fe, Argentina, August.
- 1983 "Transferencia de Calor en Sistemas con Muchas Fases," PLAPIQUI-Universidad del Sur, Bahia Blanca, Argentina, September.
- 1983 "Transferencia de Calor en Sistemas con Muchas Fases," Universidad de Buenos Aires, Buenos Aires, Argentina, September.
- 1983 "Transferencia de Calor en Sistemas con Muchas Fases," Universidad Simon Bolivar, Caracas, Venezuela, October.
- 1983 "Heat Transfer in Two-Phase Systems: Theory and Experiment," Department of Chemical Engineering, University of California at Davis, November.
- 1983 "Heat Conduction in Two and Three-Phase Systems: Theory and Experiment," Department of Chemical Engineering, University of Massachusetts, November.
- 1983 "Heat Conduction in Two and Three-Phase Systems: Theory and Experiment," Department of Chemical Engineering, University of Washington, December.
- 1984 "Diffusion and Heat Conduction in Porous Media," Department of Chemical Engineering, University of California at Los Angeles, January.
- 1984 "Diffusion and Heat Conduction in Porous Media," Department of Applied Mechanical and Engineering Science, University of California at San Diego, February.



- 1984 "Thermal analysis of solid, rotating, x-ray tube anodes," SPIE San Diego meeting, February.
- 1984 "Heat Conduction in Multiphase Systems," Department of Chemical Engineering, University of Southern California, March.
- 1984 "Diffusion and Heat Conduction in Porous Media," Department of Chemical Engineering, Iowa State University, March.
- 1984 "Diffusion and Heat Conduction in Porous Media," (Keynote Lecture), AIAA 19th Thermophysics Conference, Snowmass, June.
- 1984 "Moisture Transport Mechanisms During the Drying of Granular Porous Media," (Keynote Lecture), Fourth International Drying Symposium, Kyoto, Japan, July.
- 1984 "Diffusion and Heat Conduction in Porous Media," Department of Chemical Engineering, National Taiwan University, Taiwan, July.
- 1984 "Moisture Transport Mechanisms During the Drying of Granular Porous Media," Department of Chemical Engineering, National Tsing Hua University, Taiwan, July.
- 1984 "Effective Thermal Conductivities for Active and Passive Multiphase Systems," Universidad de Buenos Aires, Buenos Aires, Argentina, September.
- 1984 "Use of the Method of Volume Averaging in the Analysis of Multiphase Heat Conduction," Applied Mathematics Colloquium, University of California at Davis, October.
- 1984 "Diffusion and Heat Conduction in Porous Media," Department of Mechanical Engineering, University of Illinois, November.
- 1984 "Diffusion and Heat Conduction in Porous Media," Department of Chemical Engineering, Carnegie-Mellon University, November.
- 1985 "Mecanisme de transport de l'eau dans un milieu poreux pendant le processus de séchage," Laboratoire Energetique et Phenomenes de transfert-ENSAM, Université de Bordeaux I, France, March.
- 1985 "Moisture Transport Mechanisms During the Drying of Granular Porous Media," Dipartimento di Energetica, Universita Delgi Studi De Firenze, Florence, Italy, April.
- 1985 "Moisture Transport Mechanisms During the Drying of Granular Porous Media," Istituto Di Impianti Chimici, Universita Di Bologna, Bologna, Italy, April.
- 1985 "Mecanisme de transport de l'eau dans un milieu poreux pendant le processus de séchage," Institut de Mecanique de Grenoble, Université Scientifique at Medicale de Grenoble, France, April.
- 1985 "Mecanisme de transport de l'eau dans un milieu poreux pendant le processus de séchage," Institut Français du Petrole, Rueil Malmaison, France, April.
- 1985 "Mecanisme de transport de l'eau dans un milieu poreux pendant le processus de séchage," (Invited Lecture) Journée d'Etude sur les changements d'échelle en milieu poreux, Centre de Géostatistique, Fontainebleau, France, May.

- 1985 "Mecanisme de transport de l'eau dans un milieu poreux pendant le processus de séchage." Laboratoire Genie Civil, Université des Sciences et Techniques du Languedoc, Montpellier, France, May.
- 1985 "Mecanisme de transport de l'eau dans un milieu poreux pendant le processus de séchage," Laboratoire de'Energetique et de Mecanique theorique et appliquée, Institut National Polytechnique de Lorraine, Nancy, France, June.
- 1985 "Transfert de chaleur dans un milieu poreux avec des sources thermique homogène et hétérogène," Laboratoire Energetique et Phenomenes de Transfert, Université de Bordeaux I, Bordeaux, France, June.
- 1985 "Mecanisme de transport de l'eau dans un milieu poreux pendant le processus de séchage," Institut de Mecanique des Fluides, Institut National Polytechnique de Toulouse, Toulouse, France, June.
- 1985 "Une derivation de la loi de Darcy et les equations pour l'écoulement diphasique dans un milieu poreux," Institut Français du Petrole, Rueil Malmaison, France, June.
- 1985 "Heat Conduction in Porous Media with Homogeneous and Heterogeneous Thermal Sources," (Invited Lecture) Euromech 194, Simultaneous Heat and Mass Transfer, Nancy, France, July.
- 1985 "Moisture Transport Mechanisms During the Drying of Granular Porous Media," Department of Chemistry and Chemical Technology, Edvard Kardelj University, Ljubljana, Yugoslavia, July.
- 1985 "Moisture Transport Mechanisms During Drying of Granular Porous Media," Department of Chemical Engineering, North Carolina State University, September.
- 1985 "Heat Conduction in Porous Media with Homogeneous and Heterogeneous Thermal Sources," Department of Chemical Engineering, Rice University, October.
- 1985 "Flow in Porous Media: The Governing Equations for Immiscible Two-Phase Flow," Chicago AIChE Meeting, November.
- 1985 "Diffusion and Chemical Reaction in Two-Phase Media," Chicago AIChE Meeting, November.
- 1985 "Mass Transport and Reaction in Catalyst Pellets," Chicago AIChE Meeting, November.
- 1985 "Moisture Transport Mechanisms During Drying Granular Porous Media," Department of Chemical Engineering, University of Houston, November.
- 1985 "A Theoretical Derivation of Darcy's Law and the Governing Equations for Two-Phase Flow," Department of Chemical Engineering, University of Tulsa, November.
- 1985 "Heat Conduction in Porous Media with Homogeneous and Heterogeneous Thermal Sources," Department of Chemical Engineering, Texas A&M University, November.
- 1985 "Diffusion and Reaction in a Micropore-Macropore Model of a Porous Medium" Shell Development Company, December.
- 1986 "Multiphase Transport Phenomena: Theory, Experiment and Prediction," Department of Chemical Engineering, University of California at Davis, January.
- 1986 "Taylor-Aris Dispersion in Capillary Tubes," Workshop on Taylor Dispersion in Fractured and Porous Media, Los Alamos National Laboratory, February.

- 1986 "Passive Dispersion in Porous Media," Workshop on Taylor Dispersion in Fractured and Porous Media, Los Alamos National Laboratory, February.
- 1986 "A Theoretical Study of Dispersion in Heterogeneous Media: The Method of Large Scale Averaging," Workshop on Taylor Dispersion in Fractured and Porous Media, Los Alamos National Laboratory, February.
- 1986 "The Use of Weighting Functions with the Method of Volume Averaging," (Invited Presentation) SIAM Workshop on Multiphase Flow, Virginia, June.
- 1986 "Moisture Distribution During the Constant Rate Drying Period for unconsolidated Porous Media: Failure of the Diffusion Theory," Fifth International Drying Symposium, Cambridge, Massachusetts, August.
- 1986 "Diffusion in Porous Media: The Effect of Homogeneous Reaction, Heterogeneous Reaction and Anisotropy," Department of Chemical Engineering, University of Colorado, October.
- 1986 "Diffusion in Anisotropic Porous Media," Miami AIChE Meeting, November.
- 1986 "Drying Porous Media: A Computational Study Using Adjustable Functions," Miami AIChE Meeting, November.
- 1986 "Single Phase Flow in Porous Media: The Effect of Local Heterogeneities," Miami AIChE Meeting, November.
- 1987 "Dispersion in Heterogeneous Porous Media: Local Volume Averaging and Large Scale Averaging" (Invited Presentation) International Conference on Migration of Hydrocarbons in Sedimentary Basins Maubuisson, France, June.
- 1987 "Dispersion in Heterogeneous Porous Media: Local Volume Averaging and Large Scale Averaging" (Invited Presentation) GRECO 72 SECHAGE, Reunion de Bordeaux, July.
- 1987 "Two-Phase Flow In Heterogeneous Porous Media: The Method of Large-Scale Averaging," Koninklyke Shell/Exploratie en Produktie Laboratorium, Den Haag, The Netherlands, August.
- 1987 "Effective Thermal Conductivity for a Point-Contact Porous Medium," 9th International Congress of Chemical Engineering (CHISA '87), Prague, September.
- 1987 "Dispersion in Heterogeneous Porous Media: Local Volume Averaging and Large Scale Averaging," Institut Français du Pétrole Rueil Malmaison, France, September.
- 1987 "Two-Phase Flow in Porous Media: The Effect of Local Heterogeneities," New York AIChE Meeting, November.
- 1988 "Drying Porous Media," Earth Sciences Department, Lawrence Livermore National Laboratory, April.
- 1988 "Two-Phase Flow in Heterogeneous Porous Media: The Method of Large-Scale Averaging," Amoco Research Laboratories, Tulsa, April
- 1988 "Dispersion in Heterogeneous Media: Local Volume Averaging and Large-Scale Averaging," Department of Chemical Engineering, University of Tulsa, April.

- 1988 "Diffusion in Porous Media: The Effect of Homogeneous Reaction, Heterogeneous Reaction and Anisotropy," Department of Chemical Engineering, University of Nevada-Reno, May.
- 1988 "Historical Development of Fluid Mechanics Within Chemical Engineering" (Invited Presentation) Toronto, ACS Meeting, June.
- 1988 "The Role of Irreversible Thermodynamics and the Onsager Relations in the Analysis of Drying Phenomena" (Keynote Lecture), Sixth International Drying Symposium, Versailles, France, September.
- 1988 "Dispersion and Adsorption in Heterogeneous Porous Media," L.E.P.T.-ENSAM, Université de Bordeaux I, France, September.
- 1988 "Diffusion, Dispersion and Adsorption in Heterogeneous Porous Media: Local Volume Averaging and Large-Scale Averaging" (Invited Presentation), American Geophysical Union, San Francisco, December.
- 1989 "Enhanced Heat Transfer for Space Nuclear Power Systems," Sixth Symposium on Space Nuclear Power Systems, Institute for Space Nuclear Power Studies, Albuquerque, New Mexico, January.
- 1989 "Uniform Temperature, Ultrahigh Flux Heat Sinks Using Curved Surface, Subcooled, Nucleate Boiling," Fifth Annual IEEE Semi-Therm Conference, San Diego, California, February.
- 1989 "Les Equations Macroscopique, les Fonctions de Ponderations, les Mésures, et les Prédications," L.E.P.T.-ENSAM, Université de Bordeaux I, March.
- 1989 "Two-Phase Flow in Heterogeneous Porous Media: A High Gradient Theory" (Invited Lecture) International Workshop on Mathematical Modeling for Flow and Transport Through Porous Media, Irsee, Bavaria, May.
- 1989 "The Foundations of Fluid Mechanics: An Historical Perspective Beginning with Euler," ASEE Annual Conference, Lincoln, Nebraska, June
- 1989 "Dispersion in Heterogeneous Porous Media: The Method of Large-Scale Averaging," Department of Mining and Petroleum Engineering, Delft University of Technology, The Netherlands, October.
- 1989 "Two-Phase Flow in Heterogeneous Porous Media: The Influence of Large Spatial and Temporal Gradients," Department of Mining and Petroleum Engineering, Delft University of Technology, The Netherlands, October.
- 1989 "Transport in Spatially Periodic Porous Media: Darcy's Law and Passive Dispersion," Department of Mathematics, Delft University of Technology, The Netherlands, October.
- 1990 "Diffusion and Heat Conduction in Isotropic and Anisotropic Porous Media," Department of Chemical Engineering, U.C. Santa Barbara, January.
- 1990 "Dispersion in Heterogeneous Porous Media: The Method of Large-Scale Averaging," Department of Chemical Engineering, National Taiwan University, March.
- 1990 "Diffusion and Heat Conduction in Isotropic and Anisotropic Porous Media: A Comparison Between Theory and Experiment," Union Chemical Laboratory, Hsinchu, Taiwan, March.
- 1990 "Heat and Mass Transfer in Porous Media; The Use of One and Two-Equation Models," Department of Chemical Engineering, National Central University, Chung-Li, Taiwan, March.

- 1990 "Stokes Flow in Ordered and Disordered Porous Media," Departments of Agronomy, Mathematics, and Chemical Engineering, Purdue University, April.
- 1990 "Two-Phase Flow in Heterogeneous Porous Media: Laboratory and Numerical Experiments for Stratified Systems," (Invited Presentation) American Geophysical Union meeting, Baltimore, May.
- 1990 "The Role of the Species Momentum Equation in the Drying Process," Seventh International Drying Symposium, Prague, Czechoslovakia, August.
- 1990 "The Use of NMR to Determine Moisture Distribution During Drying," Seventh International Drying Symposium, Prague, Czechoslovakia, August.
- 1990 "Dispersion in Heterogeneous Porous Media," Department of Civil Engineering, Aristotle University of Thessaloniki, Thessaloniki, Greece, September.
- 1990 "A History of Fluid Mechanics: From Euler to Lamb and Beyond," Department of Mechanical Engineering, University of California at Davis, November.
- 1990 "Drying Gels: A Continuum Mechanical Model," AIChE Meeting, Chicago, November.
- 1990 "Single-Phase Flow in Heterogeneous Porous Media: Governing Equations for Region Average Velocities" (Invited Presentation), American Geophysical Union meeting, San Francisco, December.
- 1991 "El Proceso de Secado," Instituto Tecnológico de Celaya, Celaya, México, January.
- 1991 "Transport Processes in Ordered and Disordered Porous Media" (Keynote Lecture), International Center for Heat and Mass Transfer, Symposium on Heat and Mass Transfer in Porous Media, Dubrovnik, Yugoslavia, May.
- 1991 "Reflexiones Sobre el Método del Promedio Volumetrico," Departamento de Ingeniería Química, Instituto Tecnológica de Celaya, Celaya, México, August.
- 1992 "On Making Tools: Reflections on the Principle of Lost Work," Distinguished Teaching Award Lecture, University of California at Davis, February.
- 1992 "Transport en Milieux Poreux Hétérogènes: La Méthode de Prise de Moyenne à Grande Echelle", (Invited Lecture) Ier Seminaire International, Federation de Mécanique de Grenoble, Grenoble, France, May.
- 1992 "Diffusion Volumique et Diffusion de Surface en Milieu Poreux: Une Application du Theorème de Moyenne Surfaccique," Institut de Mecanique des Fluides de Toulouse, Toulouse, France, May.
- 1992 "Transport in Ordered and Disordered Media: Volume Averaged Equations, Closure Problems, and Comparison with Experiment" (Invited Lecture) Forum for Young Chemical Engineers, Torino, Italy, July.
- 1992 "One and Two-Equation Models for Transient Heat Conduction in Two-Phase Systems," Dipartimento di Ingegneria Chimica e di Processo, Universita Degli Studi di Bologna, Italy, July.
- 1992 "Bulk and Surface Diffusion in Porous Media: An Application of the Surface Averaging Theorem," Society of Engineering Science, La Jolla, September.

- 1992 "Transport in Ordered and Disordered Porous Media: Volume Averaged Equations, Closure Problems, and Comparison with Experiment," Department of Chemical Engineering, Florida State University, October.
- 1992 "Transport in Heterogeneous Porous Media: The Method of Large-Scale Averaging," Department of Computational and Applied Mathematics, Rice University, October.
- 1992 "Bulk and Surface Diffusion in Porous Media: An Application of the Surface Averaging Theorem," Miami AIChE Meeting, November.
- 1993 "Transport in Heterogeneous Porous Media: The Method of Large-Scale Averaging," Department of Chemical Engineering, Texas A&M University, April.
- 1993 "Transport in Heterogeneous Porous Media: The Method of Large-Scale Averaging," (Invited Lecture), International Conference on Porous Media and the Environment, University of Manitoba, Winnipeg, Canada, May.
- 1993 "Transport in Chemically and Mechanically Heterogeneous Porous Media: The Development of Region Averaged Equations," (Invited Presentation), American Geophysical Meeting, Baltimore, May.
- 1993 "Modelos de Una y Dos Ecuaciones de Procesos de Difusion en Sistemas de Dos Fases", Departamento de Ingeniería Química, Instituto Tecnológico de Celaya, México, August.
- 1993 "Modelos de Una y Dos Ecuaciones de Procesos de Difusion en Sistemas de Dos Fases", Laboratorio de Energía Solar, Instituto de Investigaciones en Materiales, UNAM Temixco, México, August
- 1993 "Heat, Mass, and Momentum Transfer in Ordered and Disordered Porous Media: The Method of Volume Averaging," (Keynote Lecture), Fifth Australasian Heat and Mass Transfer Conference, Brisbane, Australia, December.
- 1993 "One and Two-Equation Models for Transient Diffusion Processes in Two-Phase Systems", Fifth Australasian Heat and Mass Transfer Conference, Brisbane, Australia, December.
- 1993 "Heat and Mass Transfer in Porous Media", Panel Discussion, Fifth Australasian Heat and Mass Transfer Conference, Brisbane, Australia, December.
- 1993 "Transport in Heterogeneous Porous Media: The Method of Large-Scale Averaging", Department of Chemical Engineering, Queensland University, Brisbane, Australia, December.
- 1993 "One and Two-Equation Models for Transient Diffusion Processes in Two-Phase Systems", School of Mathematics, Queensland University of Technology, Brisbane, Australia, December.
- 1994 "Flow in Heterogeneous Porous Media: The Method of Large-Scale Averaging", Division of Hydrologic Science, University of California at Davis, May.
- 1994 Eindhoven Seminars
- "The Basic Equations of Drying Porous Media"
  - "The Role of the Irreducible Saturation in Drying Processes"
  - "Diffusion in Partially Saturated Porous Media"
  - "Diffusion and Adsorption in Porous Media"
- Department of Chemical Engineering, Eindhoven University of Technology, June.

- 1994 “Bulk and Surface Diffusion in Porous Media: An Application of the Surface Averaging Theorem”, Koninklyke Shell/Exploratie en Produktie Laboratorium, Den Haag, The Netherlands, June.
- 1994 “Flow in Heterogeneous Porous Media: The Method of Large-Scale Averaging”, Wageningen Agricultural University, Wageningen, The Netherlands, June.
- 1994 “Transport in Porous Media”, (Keynote Lecture), XXII ENEMP-Encontro Nacional em Meios Porosos, Universidade Federal de Santa Catarina, Florianópolis, Brazil, October.
- 1995 “Transport in Homogeneous and Heterogeneous Porous Media: The Aerosol Filtration Problem”, (Invited Lecture), 20th Anniversary Celebration of Universidad Autonoma Metropolitana, México, January.
- 1995 “An Analysis of Filtration Using the Method of Volume Averaging”, American Filtration & Separation Society, Nashville, TN, April.
- 1995 “Fundamentals of Transport Equation Formulation for Two-Phase Flow in Homogeneous and Heterogeneous Porous Media”, (Invited Lecture), Kearney Foundation of Soil Science International Conference on Vadose Zone Hydrology: Cutting Across Disciplines, Univeristy of California at Davis, September.
- 1995 “Transport in Chemically and Mechanically Heterogeneous Porous Media” Department of Chemical Engineering, University of Michigan, November.
- 1996 “Momentum and Energy Conditions at the Boundary Between a Porous Medium and a Homogeneous Fluid”, (Invited Lecture), International Conference on Porous Media and Its Applications in Science, Engineering and Industry, Kona, Hawaii, June.
- 1996 “Mass Transport in Chemically and Mechanically Heterogeneous Porous Media”, Division of Hydrologic Science, University of California at Davis, November.
- 1997 “Transport in Chemically and Mechanically Heterogeneous Porous Media” Center for Environmental and Applied Fluid Mechanics, Johns Hopkins University, March.
- 1997 “Diffusion and Reaction in Biofilms” Department of Chemical Engineering, Johns Hopkins University, March.
- 1997 “Diffusion and Reaction in Biofilms”, SIAM meeting, Albuquerque, NM, June.
- 1997 “Disontinuities in Chemical Engineering Education”, (Keynote Lecture) VII Encontro Brasileiro sobre Ensino de Engenharia Química, Caxambu, Brazil, September
- 1997 “Diffusion and Reaction in Biofilms”, Departamento de Engenharia Química, Universidade Federal do Rio Grande do Sul, Porto Alegre, Brazil, September.
- 1997 “Diffusion and Reaction in Biofilms”, Departamento de Engenharia Química, Universidade Federal de Santa Catarina Florianópolis, Brazil, September.
- 1997 “Diffusion and Reaction in Biofilms”, Department of Chemical Engineering, University of Arizona, October.
- 1998 “Two-Phase Flow in Homogeneous and Heterogeneous Porous Media”, Center for Nonlinear Studies, Los Alamos National Laboratory, March.

- 1998 “Two-Phase Flow in Homogeneous and Heterogeneous Porous Media” (Invited Lecture), Johns Hopkins Conference on Environmental Fluid Mechanics, Johns Hopkins University, April.
- 1998 “Discontinuities in Chemical Engineering Education” (Invited Lecture), Academia Mexicana de Investigación y Docencia en Ingeniería Química, Ixtapa, México, May.
- 1998 “Coupled Multiphase Transport Processes”, Academia Mexicana de Investigación y Docencia en Ingeniería Química, Ixtapa, México, May.
- 1998 “The Dusty Gas”, New Technologies Engineering Division, Lawrence Livermore National Laboratory, September.
- 1999 “Conditions aux Limites Hétérogène” Ecole des Mines d’Albi, France, July.
- 2000 “Jump Conditions at Non-Uniform Boundaries: The Catalytic Surface”, *Sigel Lecture Series*, Michigan Technological University, March.
- 2001 “Coupled Transport During Drying Porous Media”, Department of Mathematics, Simon Fraser University, Canada, January.
- 2001 “Jump Conditions at Non-Uniform Boundaries: The Catalytic Surface”, (Invited Lecture) Academia Mexicana de Investigación y Docencia en Ingeniería Química, Mazatlán, México, May.
- 2001 “Mass Exchange Coefficients for Flow in Porous Media: Results for a Bundle of Capillary Tubes”, (Invited Presentation) American Geophysical Union, Boston, May.
- 2001 “Mechanical Behavior of Composite Systems”, ASME Mechanics and Materials Summer Conference” (Invited Presentation) San Diego, June.
- 2001 “Transport Phenomena”, (Invited Lecture) International Seminar on Advances in Chemical Engineering, Universidad de Salamanca, Spain, June.
- 2001 “Maxwell’s Equations for Two-Phase Systems: The Concept of Local Electrodynamic Equilibrium and Its Failure”, Department of Mathematics, University of California at Davis, November.
- 2002 “Maxwell’s Equations for Two-Phase Systems: The Concept of Local Electrodynamic Equilibrium, Boundary Conditions, and Closure”, (Plenary Speaker) Second Symposium on Computational Modeling of Multi-Scale Phenomena, Rio de Janeiro, Brazil, August.
- 2004 “The Art and Science of Upscaling” (Invited Speaker) International Seminar on Trends and Developments in Chemical Engineering, Salamanca, Spain, February.
- 2005 “Transport Phenomena in Composite Media: The Concept of Local Equilibrium” Centro de Investigación en Energía, Temixco, México, September
- 2005 “Thoughts on the Past and Suggestions for the Future of Dispersion Research” (Invited Speaker), AGU Meeting, San Francisco, December.
- 2007 “Stoichiometry: The Unknown Component of Chemical Engineering” (Plenary Speaker), Academia Mexicana de Investigación y Docencia en Ingeniería Química, AMIDIQ, May 2007, Manzanillo, México.



- 2008 "Chemical Engineering Education: Making Connections at Interfaces" (Plenary Speaker), Second International Seminar on Trends in Chemical Engineering, the XXI Century, Mexico City, January 2008.
- 2008 "Ruben Carbonell at UC Davis: Reflections on Connections" (Invited Speaker) Spring 2008 American Chemical Society Meeting, I&EC Division Award for 2008.
- 2009 "Analysis of the Stefan-Maxwell Equations", (Invited Lecture) Academia Mexicana de Investigación y Docencia en Ingeniería Química, Mazatlán, México, May, 2009.

#### RESEARCH SUPPORT SINCE 1984

- 1984 "Diffusion and Dispersion in Porous Media", NSF, \$110,000
- 1985 "Diffusion and Reaction in Heterogeneous Media", NSF, \$130,000
- 1986 "Moisture Transport in Unconsolidated Porous Media During Drying", NSF, \$50,000
- 1988 "Moisture Transport in Unconsolidated Porous Media During Drying: Use of Nuclear Magnetic Resonance Imaging as an Experimental Probe," (with M.J. McCarthy), NSF, CBT-881287, \$150,000.
- 1993 "Hierarchical Analysis of Filtration", Lawrence Livermore National Laboratory, \$27, 637.
- 1994 "Influence of Local Heterogeneities on Filtration Efficiency", Lawrence Livermore National Laboratory, \$25,508.
- 1997 "Electromagnetic Properties of Composites", UC MEXUS, \$10,000.

#### PROFESSIONAL ACTIVITIES SINCE 1970

- Member, AIChE Interfacial Phenomena Committee (Area 1c), 1970 -
- Chair, Symposium on Drying Theory and Fundamentals, Second International Symposium on Drying, Montreal, August, 1980.
- Subcommittee juror for the AIChE Professional Progress Award, 1981-82.
- Chair, Symposium on Modelling of Dryers, Third International Symposium on Drying, Birmingham, England, September, 1982.
- Co-chair, Symposium on Transport in Porous Media, Los Angeles AIChE Meeting, November, 1982.
- Co-Chair, 25th Conicet Anniversary Reactor Design Conference, Santa Fe, Argentina, August, 1983.
- Member, AIChE Awards Committee, 1983-1988
- Member, AIChE Wilhelm Award Committee, 1983-1984.

Chair, Symposium on Governing Conservation Equations, D.O.E. Workshop on Multiphase Thermal Hydraulics, Argon National Laboratories, March, 1984.

Member, International Advisory Committee for the Fourth International Drying Symposium, Kyoto, July 1984.

Chair, Symposium on the Physical Properties Related to Drying, Fourth International Drying Symposium, Kyoto, July 1984.

Chair, AIChE Walker Award Committee, 1984-1985.

Chair, Symposium on Sechage de Materiaux Divers, Euromech 194, Nancy, France, July, 1985.

Member, AIChE Colburn Award Committee, 1985-1986.

ABET Observer, accreditation of Oklahoma State University, November 1985.

Member, Advisory Panel for the Fifth International Drying Symposium, Cambridge, August 1986.

Chair, Session on Drying Fundamentals and Modelling, Fifth International Drying Symposium, Cambridge, Massachusetts, August 1986.

ABET Evaluator, accreditation of the University of Virginia, October 1986.

Member, AIChE Service to Society Award Committee, 1986-1987.

ABET Evaluator, accreditation of the University of Virginia, October 1986.

Member, AIChE Service to Society Award Committee, 1986-1987.

Participant (invited), DOE/EPRI Workshop on Two-Phase Flow Fundamentals, Rensselaer Polytechnic Institute, March 1987.

Co-Chair, the Physics of Flow in Porous Media and Migration, IFP Research Conference on Migration of Hydrocarbons in Sedimentary Basins, Bordeaux, France, June 1987.

Member, Jury for PhD thesis, Patrick Perré, "Le Sechage Convectif De Bois Resineaux: Choix, Validation et Utilisation D'Un Model, L'Université Paris VII, September 1987.

ABET Evaluator, accreditation of the University of Notre Dame, November, 1987.

Member, AIChE Colburn Award Committee, 1987-1988.

Chair, Subcommittee on Basic Heat Transfer Mechanisms (AIChE), 1988-1996.

Member, AIChE Energy Transport Research Field Committee, 1988-1996.

Member, Advisory Panel for the Sixth International Drying Symposium, Versailles, France, September 1988.

Chair, Symposium on Humidity and Moisture Measurement, Sixth International Drying Symposium, Versailles, France, September, 1988.

Chair, Keynote Session on Recent Advances in Modelization of Coupled Heat and Mass Transfer in Capillary-Porous Bodies, Sixth International Drying Symposium, Versailles, France, September, 1988.

ABET Evaluator, accreditation of Washington University, November, 1988.

Member, Jury for PhD Thesis, Marc Prat, "Modelisation des Transferts en milieux poreux: Changements d'échelle et conditions aux limites," L'Institut National Polytechnique de Toulouse, March 1989.

Member, Jury for PhD Thesis, Gilles Fras, "Macroscopisation des transferts en milieux dispersés multiphasique," Université des Sciences et Techniques du Languedoc, Montpellier, March 1989.

Chair, Symposium on Instruction in Fluid Mechanics, ASEE Annual Conference, Lincoln, Nebraska, June 1989

Member, Jury for PhD Thesis, Xhuliano Koci, "Etude de l'effet de la température sur LKS propriétés de transport polyphasique en milieu poreux," Université de Bordeaux I, October 1989.

Member, National Science Foundation Panel for Evaluation of Research Initiation Grants, March 1990.

Member, Advisor Board for the National Science Foundation Grant, "Graphical Computer Aids for Chemical Engineering Education" Principal Investigator: Bruce A. Finlayson, 1990 - 1992.

ABET Evaluator, accreditation of Georgia Institute of Technology, October, 1990.

Member, Panel discussion on "Dispersion of Materials at Different Hierarchical Scales of Groundwater Motion," International Conference on Transport and Mass Exchange Processes in Sand and Gravel Aquifers: Field and Modelling Studies, Ottawa, Canada, October, 1990.

Member, External Evaluation Committee, Graduate Program in Chemical Engineering, University of Notre Dame, December 1990.

Member, Organizing Committee, International Center for Heat and Mass Transfer (Belgrade), International Seminar on Heat and Mass Transfer in Porous Media, Dubrovnik, Yugoslavia, May, 1991.

Chair, Symposium on Averaging Methods, International Center for Heat and Mass Transfer, Dubrovnik, Yugoslavia, May, 1991.

External Examiner, PhD Thesis, Ian W. Turner, "The modeling of combined microwave and convective drying of a wet porous material," The University of Queensland, October, 1991.

Chair, Session on Conduction and Diffusion in Multiphase Systems, AIChE Los Angeles meeting, November, 1991.

Member, Jury for PhD Thesis, Henri Bertin, "Approche phénoménologique des écoulements polyphasiques en milieux poreux: de l'échelle du pore vers la prise en compte des hétérogénéités," L'Université de Bordeaux I, June 1992.

Member, Jury for PhD Thesis, Fabien Cherblanc, "Etude du transport miscible en milieux poreux hétérogènes: Prise en compte du non-equilibre", L'Université de Bordeaux I, June 1999.

Member, Scientific Committee, 12<sup>th</sup> International Drying Symposium, Noordwijkerhout, The Netherlands, August 28-31, 2000

President, PhD Thesis jury for Francisco Valdes-Parada, Departamento de Ingeniería de Procesos e Hidráulica, Universidad Autónoma Metropolitana – Iztapalapa, May 9, 2007.

Chair, Session on Basic Heat Transfer Mechanisms, AIChE St. Louis meeting, November, 1993.

Chair, Session on Basic Heat Transfer Mechanisms, AIChE San Francisco meeting, November, 1994.

Chair, Session on Basic Heat Transfer Mechanisms, AIChE Miami meeting, November, 1995.

Second Vice-Chair, Heat Transfer and Energy Conversion Division, AIChE, 1993

First Vice Chair, Heat Transfer and Energy Conversion Division, AIChE, 1994

Chair, Heat Transfer and Energy Conversion Division, AIChE, 1995

Past Chair, Heat Transfer and Energy Conversion Division, AIChE, 1996

Chair, Best Paper Award Committee, National Heat Transfer Conference, Houston, TX, 1996

Member: Donald Q. Kern Award Committee, 1996

Member: Max Jakob Award Committee, 1996

#### MEMBERSHIPS

American Geophysical Union

American Institute of Chemical Engineers

Sigma Xi

Tau Beta Pi

#### EDITORIAL ACTIVITIES SINCE 1978

1. Member, Editorial Board of the AIChE Journal, 1978-1982.
2. Member, Editorial Advisory Board for DRYING TECHNOLOGY, 1985-1995.
3. Member, Editorial Board of TRANSPORT IN POROUS MEDIA, 1985-2005.
4. Member, International Advisory Board for LATIN AMERICAN APPLIED RESEARCH, 1988-
5. Member, Editorial Board of JOURNAL OF POROUS MEDIA, 1996-about 2005.
6. Member, Editorial Board of REVISTA MEXICANA DE INGENIERIA QUIMICA, 2002-
7. Reviewer (~30 per year) for:
  - 1) National Science Foundation
  - 2) American Chemical Society (PRF)
  - 3) United States - Israel Binational Science Foundation
  - 4) National Bureau of Standards
  - 5) Lawrence Berkeley Laboratory
  - 6) McGraw-Hill Book Company
  - 7) Department of Energy
  - 8) AIChE Journal
  - 9) Chemical Engineering Science
  - 10) I & EC Fundamentals
  - 11) Journal of Fluid Mechanics
  - 12) Physics of Fluids
  - 13) International Journal of Multiphase Flow
  - 14) Solar Energy
  - 15) Chemical Engineering Communications
  - 16) Journal of Heat Transfer
  - 17) International Journal of Heat and Mass Transfer
  - 18) Drying Technology
  - 19) Transport in Porous Media
  - 20) Journal of Food Science
  - 21) Water Resources Research
  - 22) I&EC Process Design and Development
  - 23) AIChE/ASME Heat Transfer Meeting

- 24) Chemical Engineering Education
- 25) The Canadian Journal of Chemical Engineering
- 26) Nuclear Technology
- 27) Journal of Colloid and Interfacial Science
- 28) The Journal of Physico-Chemical Hydrodynamics
- 29) Journal of Food Processing and Engineering
- 30) Advances in Water Resources
- 31) SIAM Journal of Applied Mathematics
- 32) Applied Scientific Research
- 33) The Journal of the University of Kuwait
- 34) Latin American Journal of Heat and Mass Transfer
- 35) Society of Petroleum Engineering
- 36) International Symposium on Cooling Technology for Electronic Equipment
- 37) U.S. Geological Survey
- 38) Industrial and Engineering Chemistry Research
- 39) American Scientist
- 40) International Journal for Numerical Methods in Engineering
- 41) Journal of Catalysis
- 42) Universitywide Energy Research Group
- 43) California Water Resources Center
- 44) Biotechnology Progress
- 45) Advances in Water Resources
- 46) Heat Transfer Engineering
- 47) Computers & Chemical Engineering
- 48) International Journal of Engineering Science
- 49) ACS Symposium Series
- 50) American Institute of Aeronautics and Astronautics
- 51) Experimental Thermal and Fluid Science
- 52) Natural Sciences and Engineering Research Council of Canada
- 53) Solid State Communications
- 54) The Israel Science Foundation
- 55) Journal of Porous Media
- 56) Computational Geosciences
- 57) Biotechnology and Bioengineering
- 58) Journal of Thermophysics and Heat Transfer
- 59) Journal of Hydraulic Engineering
- 60) Journal of Fluids Engineering
- 61) Numerical Methods for Partial Differential Equations
- 62) Environmental Modelling and Software
- 63) Mathematical Geology
- 64) Zeitschrift für angewandte Mathematik und Physik
- 65) Separation Science and Technology
- 66) European Science Foundation
- 67) Earth and Life Sciences Council (The Netherlands)
- 68) European Science Foundation
- 69) Vadose Zone Journal
- 70) International Journal of Heat and Fluid Flow
- 71) Computer Methods in Applied Mechanics and Engineering
- 72) Geology
- 73) Geochimica and Cosmochimica Acta

UNIVERSITY SERVICE 1984/85 - 1997/98  
Committees

1. ADMINISTRATIVE COMMITTEES:

- 1992-93 Academic Planning Council
- 1990-91 Recruitment Advisory Committee for Vice Provost-Faculty Relations
- 1988-91 Executive Committee of the Graduate Group in Applied Mathematics
- 1986-88 Chair, Advisory Committee for the Institute for Theoretical Dynamics
- 1982-86 Executive Committee of the Graduate Group in Applied Mathematics

2. COLLEGE, DEPARTMENT, OR OTHER UNIVERSITY COMMITTEES:

- 1999-03 Member, Student Discipline Hearing Panel
- 1998-99 Member, Outstanding PhD Thesis Committee, College of Engineering
- 1998-00 Chair, College of Engineering Student Relations Committee
- 1998 Member, University Medalist Subcommittee
- 1998-99 Member, Departmental Undergraduate Studies Committee
- 1998 Chair, Departmental Undergraduate Studies Committee (Winter)
- 1995-97 Member, Executive Committee, Division of Hydrologic Science
- 1992-93 Chair, Committee on the Future (Chemical Engineering)
- 1992-96 Member, Awards Committee (Chemical Engineering)
- 1989-91 Chair, Library Committee (College of Engineering)
- 1988-89 Chair, Library Committee (College of Engineering)
- Search Committee for a Chair (Chemical Engineering)
- Undergraduate Scholarship Committee (Chemical Engineering)
- Graduate Fellowship Committee (Mathematics)
- Search Committee (Mathematics)
- Undergraduate Scholarship Committee (Chemical Engineering)
- 1987-88 Chair, Library Committee (College of Engineering)
- Chemical Engineering Undergraduate Fellowships and Prizes
- Fellowship Committee (Graduate Group in Applied Mathematics)
- 1986-87 Library Committee (College of Engineering)
- Fellowship Committee (Graduate Group in Applied Mathematics)
- 1984-85 Student Affirmative Action Committee (College of Engineering)
- Library Committee (College of Engineering)
- 1983-84 Student Affirmative Action Committee (College of Engineering)
- Committee on College Computing Facilities
- Library Committee (College of Engineering)
- Chemical Engineering Safety Committee (Chair)
- 1982-83 Chair, College of Engineering, Faculty
- Deans Advisory Committee
- 1981-82 Library Committee (College of Engineering)
- Steering Committee for Graduate Group in Applied Mathematics
- 1980-81 Engineering CAD Computer Committee

3. COMMITTEES OF THE ACADEMIC SENATE:

- 1993-96 Chair, Committee on Distinguished Teaching Awards
- 1992-93 Chair, Committee on Educational Policy
- Member, University Committee on Educational Policy
- Member, Executive Council

- Member, Senate Chair's Advisory Committee
- Member, Ad Hoc Committee for Program Reviews
- 1991-92 Member (ex officio), Library Committee
- Member, Committee on Educational Policy
- 1990-91 Member, Library Committee (Chair, Spring quarter)
- Member, Committee on Educational Policy
- Member, Selection Committee for Education Abroad (France)
- 1989-90 Member, Library Committee
- 1988-89 Chair, Library Committee
- Instructional Improvement Advisory Committee
- Selection Committee for Education Abroad Program (France)
- 1987-88 Committee on Undergraduate Scholarships, Honors and Prizes
- Instructional Improvement Advisory Committee
- Selection Committee for Education Abroad Program (France)
- Library Committee
- 1986-87 Review Committee-Mechanical Engineering Graduate Program (member) Instructional Improvement Advisory Committee
- 1983-84 Special Committee on General Education
- General Education Course Subcommittee: Nature and Environment Committee on Academic Planning and Budget Review
- Search and Candidate Review Committee for the President's Chair in Undergraduate Education.
- Regent's Scholarship Committee
- Liaison Committee for Planning the Formation of a Unit of Computer Science - College of Engineering.
- 1982-83 Executive Council
- General Education Program Subcommittee
- Regent's Scholarship Committee
- Computer Science Liaison Committee
- 1981-82 Graduate Program Review of Atmospheric Science (Chair)
- 1980-81 Honors Task Force Committee

#### 4. MISCELLANEOUS

- 1998-01 Departmental Representative, Academic Senate
- 1996-98 At-Large Representative, Academic Senate
- 1992-01 Sexual Harassment Advisor, College of Engineering
- 1988-00 Advisor, AIChE Student Chapter
- 1988-92 Advisor, Tau Beta Pi
- 1986-89 Graduate Advisor for the Graduate Group in Applied Mathematics
- 1985-89 EOP/SAA Advisor
- 1984-85 Senior Advisor for Chemical Engineering

#### COMMUNITY SERVICE

- Member, Board of Directors, Irish Beach Water District, October 1999 – March 2004
- President, Board of Directors, Irish Beach Water District, May 2004 –
- Chair, Safety Committee, IBWD, June 2003 –
- Member, Board of Directors, Redwood Coast Medical Services, June, 2005 –
- Treasurer, Board of Directors, RCMS, August 2007
- Chair, Finance Committee, RCMS, August 2007 –
- Member, Finance Committee, RCMS, September 2005 –
- Member, Facility/Equipment & Replacement Budget Subcommittee, November 2005 – August 2007

Member, Vision 2020, RCMS, September 2005 – August 2007  
Member, Audit Committee, August 2007 –