Stephen Whitaker

List of Publications by Year
in descending order

109 papers	12,503 citations	50276 46 h-index	38395 95 g-index
109 all docs	109 docs citations	109 times ranked	5603 citing authors

#	Article	IF	Citations
1	Upscaling Reactive Transport Under Hydrodynamic Slip Conditions in Homogeneous Porous Media. Water Resources Research, 2020, 56, e2019WR025954.	4.2	2
2	Diffusion and Heterogeneous Reaction in Porous Media: The Macroscale Model Revisited. International Journal of Chemical Reactor Engineering, 2017, 15, .	1.1	15
3	Mechanics and thermodynamics of diffusion. Chemical Engineering Science, 2012, 68, 362-375.	3.8	10
4	Local, global, and elementary stoichiometry. AICHE Journal, 2012, 58, 538-552.	3.6	0
5	Conservation Equations. , 2006, , 71-120.		2
6	The Art and Science of Upscaling. , 2005, , 1-39.		3
7	Coupled, Nonlinear Mass Transfer and Heterogeneous Reaction in Porous Media. , 2005, , 3-37.		5
8	Estimation of adsorption rate coefficients based on the Smoluchowski equation. Chemical Engineering Science, 2004, 59, 1905-1921.	3.8	16
9	New equations for binary gas transport in porous media, Part 2: experimental validation. Advances in Water Resources, 2003, 26, 717-723.	3.8	8
10	New equations for binary gas transport in porous media,. Advances in Water Resources, 2003, 26, 695-715.	3.8	16
11	Volume averaging for determining the effective dispersion tensor: Closure using periodic unit cells and comparison with ensemble averaging. Water Resources Research, 2003, 39, .	4.2	58
12	Mechanics of Composite Solids. Journal of Engineering Mechanics - ASCE, 2002, 128, 823-828.	2.9	4
13	Calculation of effective diffusivities for biofilms and tissues. Biotechnology and Bioengineering, 2002, 77, 495-516.	3.3	93
14	The Thermodynamic Significance of the Local Volume Averaged Temperature. Transport in Porous Media, 2002, 46, 19-35.	2.6	10
15	Reply to the Comment by S. J. Kowalski, TIPM 40, 113, 2000. Transport in Porous Media, 2002, 46, 103-105.	2.6	0
16	Dispersion in Heterogeneous Porous Media: One-Equation Non-equilibrium Model. Transport in Porous Media, 2001, 44, 181-203.	2.6	29
17	Theoretical Analysis of Transport in Porous Media. , 2000, , 1-52.		25
18	Jump conditions at non-uniform boundaries: the catalytic surface. Chemical Engineering Science, 2000, 55, 5231-5245.	3.8	31

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19	Multi-species diffusion and reaction in biofilms and cellular media. Chemical Engineering Science, 2000, 55, 3397-3418.	3.8	52
20	Steam drying a bed of porous spheres: Theory and experiment. Chemical Engineering Science, 2000, 55, 1675-1698.	3.8	27
21	Vaporâ€“Liquid Jump Conditions within a Porous Medium: Results for Mass and Energy. Transport in Porous Media, 2000, 40, 73-111.	2.6	11
22	Cellular growth in biofilms. , 1999, 64, 656-670.		40
23	The Method of Volume Averaging. Theory and Applications of Transport in Porous Media, 1999, , .	0.4	768
24	Dissolution of an Immobile Phase during Flow in Porous Media. Industrial & Engineering Chemistry Research, 1999, 38, 833-844.	3.7	36
25	Diffusion and reaction in biofilms. Chemical Engineering Science, 1998, 53, 397-425.	3.8	105
26	Transport in chemically and mechanically heterogeneous porous mediaâ€"III. Large-scale mechanical equilibrium and the regional form of Darcy's law. Advances in Water Resources, 1998, 21, 617-629.	3.8	30
27	Transport in chemically and mechanically heterogeneous porous media. Advances in Water Resources, 1998, 22, 59-86.	3.8	73
28	Transport in chemically and mechanically heterogeneous porous media IV: large-scale mass equilibrium for solute transport with adsorption. Advances in Water Resources, 1998, 22, 33-57.	3.8	46
29	Coupled Transport in Multiphase Systems: A Theory of Drying. Advances in Heat Transfer, 1998, , 1-104.	0.9	95
30	Heat Transfer at the Boundary Between a Porous Medium and a Homogeneous Fluid: The One-Equation Model. Journal of Porous Media, 1998, 1, 31-46.	1.9	41
31	Heat transfer at the boundary between a porous medium and a homogeneous fluid. International Journal of Heat and Mass Transfer, 1997, 40, 2691-2707.	4.8	125
32	Transport in chemically and mechanically heterogeneous porous media. I: Theoretical development of region-averaged equations for slightly compressible single-phase flow. Advances in Water Resources, 1996, 19, 29-47.	3.8	97
33	Transport in chemically and mechanically heterogeneous porous media. II: Comparison with numerical experiments for slightly compressible single-phase flow. Advances in Water Resources, 1996, 19, 49-60.	3.8	40
34	Determination of permeability tensors for two-phase flow in homogeneous porous media: Theory. Transport in Porous Media, 1996, 24, 107-137.	2.6	47
35	The Forchheimer equation: A theoretical development. Transport in Porous Media, 1996, 25, 27-61.	2.6	572
36	Local thermal equilibrium for transient heat conduction: theory and comparison with numerical experiments. International Journal of Heat and Mass Transfer, 1995, 38, 2779-2796.	4.8	160

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37	Momentum transfer at the boundary between a porous medium and a homogeneous fluidâ€"I. Theoretical development. International Journal of Heat and Mass Transfer, 1995, 38, 2635-2646.	4.8	782
38	Momentum transfer at the boundary between a porous medium and a homogeneous fluidâ€"II. Comparison with experiment. International Journal of Heat and Mass Transfer, 1995, 38, 2647-2655.	4.8	461
39	The mass flux boundary condition at a moving fluid-fluid interface. Industrial & Engineering Chemistry Research, 1995, 34, 3508-3513.	3.7	5
40	Aerosol filtration: An analysis using the method of volume averaging. Journal of Aerosol Science, 1995, 26, 1227-1255.	3.8	18
41	Diffusive transport in two-phase media: spatially periodic models and maxwell's theory for isotropic and anisotropic systems. Chemical Engineering Science, 1994, 49, 709-726.	3.8	80
42	The closure problem for two-phase flow in homogeneous porous media. Chemical Engineering Science, 1994, 49, 765-780.	3.8	27
43	Transport in ordered and disordered porous media I: The cellular average and the use of weighting functions. Transport in Porous Media, 1994, 14, 163-177.	2.6	162
44	Transport in ordered and disordered porous media II: Generalized volume averaging. Transport in Porous Media, 1994, 14, 179-206.	2.6	211
45	Transport in ordered and disordered porous media V: Geometrical results for two-dimensional systems. Transport in Porous Media, 1994, 15, 183-196.	2.6	55
46	Transport in ordered and disordered porous media III: Closure and comparison between theory and experiment. Transport in Porous Media, 1994, 15, 31-49.	2.6	89
47	Transport in ordered and disordered porous media IV: Computer generated porous media for three-dimensional systems. Transport in Porous Media, 1994, 15, 51-70.	2.6	56
48	Convection, dispersion, and interfacial transport of contaminants: Homogeneous porous media. Advances in Water Resources, 1994, 17, 221-239.	3.8	149
49	Heat transfer in packed beds: interpretation of experiments in terms of one- and two-equation models. , 1994, , .		11
50	Bulk and surface diffusion in porous media: An application of the surface-averaging theorem. Chemical Engineering Science, 1993, 48, 2061-2082.	3.8	53
51	Transport in ordered and disordered porous media: volume-averaged equations, closure problems, and comparison with experiment. Chemical Engineering Science, 1993, 48, 2537-2564.	3.8	189
52	One- and Two-Equation Models for Transient Diffusion Processes in Two-Phase Systems. Advances in Heat Transfer, 1993, 23, 369-464.	0.9	275
53	On the closure problem for Darcy's law. Transport in Porous Media, 1992, 7, 209-222.	2.6	57
54	The species mass jump condition at a singular surface. Chemical Engineering Science, 1992, 47, 1677-1685.	3.8	46

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55	Diffusion Deposition on a Fiber in Nontransverse Flow. Aerosol Science and Technology, 1991, 14, 224-232.	3.1	5
56	Role of the species momentum equation in the analysis of the Stefan diffusion tube. Industrial & Engineering Chemistry Research, 1991, 30, 978-983.	3.7	42
57	Improved constraints for the principle of local thermal equilibrium. Industrial & Engineering Chemistry Research, 1991, 30, 983-997.	3.7	117
58	Facilitated transport in porous media. Chemical Engineering Science, 1991, 46, 477-496.	3.8	15
59	Two-phase flow in heterogeneous porous media II: Numerical experiments for flow perpendicular to a stratified system. Transport in Porous Media, 1990, 5, 429-472.	2.6	29
60	Two-phase flow in heterogeneous porous media I: The influence of large spatial and temporal gradients. Transport in Porous Media, 1990, 5, 341-379.	2.6	79
61	Two-phase flow in heterogeneous porous media III: Laboratory experiments for flow parallel to a stratified system. Transport in Porous Media, 1990, 5, 543.	2.6	22
62	The Development of Fluid Mechanics in Chemical Engineering. , 1989, , 47-109.		6
63	Diffusion in packed beds of porous particles. AIChE Journal, 1988, 34, 679-683.	3.6	18
64	Two-phase flow in heterogeneous porous media: The method of large-scale averaging. Transport in Porous Media, 1988, 3, 357-413.	2.6	163
65	COMMENTS AND CORRECTIONS CONCERNING THE VOLUME-AVERAGED TEMPERATURE AND ITS SPATIAL DEVIATION. Chemical Engineering Communications, 1988, 70, 15-18.	2.6	6
66	THE ROLE OF THE VOLUME-AVERAGED TEMPERATURE IN THE ANALYSIS OF NONISOTHERMAL, MULTIPHASE TRANSPORT PHENOMENA. Chemical Engineering Communications, 1987, 58, 171-183.	2.6	11
67	Mass transport and reaction in catalyst pellets. Transport in Porous Media, 1987, 2, 269.	2.6	28
68	Diffusion in anisotropic porous media. Transport in Porous Media, 1987, 2, 327.	2.6	111
69	Transient diffusion, adsorption and reaction in porous catalysts: The reaction controlled, quasi-steady catalytic surface. Chemical Engineering Science, 1986, 41, 3015-3022.	3.8	34
70	Local thermal equilibrium: An application to packed bed catalytic reactor design. Chemical Engineering Science, 1986, 41, 2029-2039.	3.8	55
71	The recirculation zone at the entrance of a falling liquid film: Consequences for the surfactant adsorption problem. Journal of Colloid and Interface Science, 1986, 110, 389-397.	9.4	4
72	Flow in porous media II: The governing equations for immiscible, two-phase flow. Transport in Porous Media, 1986, 1, 105-125.	2.6	284

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73	Flow in porous media III: Deformable media. Transport in Porous Media, 1986, 1, 127-154.	2.6	51
74	Flow in porous media I: A theoretical derivation of Darcy's law. Transport in Porous Media, 1986, 1, 3-25.	2.6	1,440
75	Diffusion and reaction in cellular media. Chemical Engineering Science, 1986, 41, 2999-3013.	3.8	67
76	The spatial averaging theorem revisited. Chemical Engineering Science, 1985, 40, 1387-1392.	3.8	247
77	Moisture Transport Mechanisms during the Drying of Granular Porous Media. , 1985, , 21-32.		16
78	Heat and Mass Transfer in Porous Media. , 1984, , 121-198.		155
79	Radiant Energy Transport in Porous Media. Industrial & Engineering Chemistry Fundamentals, 1980, 19, 210-218.	0.7	23
80	Some experimental observations of the surface elasticity of surfactant solutions. Journal of Colloid and Interface Science, 1978, 63, 129-135.	9.4	10
81	Some Theoretical and Experimental Observations of the Wave Structure of Falling Liquid Films. Industrial & Engineering Chemistry Fundamentals, 1977, 16, 401-408.	0.7	103
82	Simultaneous Heat, Mass, and Momentum Transfer in Porous Media: A Theory of Drying. Advances in Heat Transfer, 1977, 13, 119-203.	0.9	775
83	Gas dynamics, Vol. I, by M. J. Zucrow and J. D. Hoffman, John Wiley & Sons, 1976, 772 pages.$26.95. AIChE Journal, 1977, 23, 213-213.	3.6	2
84	Macroscopic Balances. , 1977, , 304-373.		10
85	Studies of the drop-weight method for surfactant solutions. Journal of Colloid and Interface Science, 1976, 54, 203-218.	9.4	35
86	Studies of the drop-weight method for surfactant solutions. Journal of Colloid and Interface Science, 1976, 54, 219-230.	9.4	26
87	Studies of the drop-weight method for surfactant solutions. Journal of Colloid and Interface Science, 1976, 54, 231-248.	9.4	34
88	Macroscopic Balances. , 1976, , 180-249.		2
89	Downstream boundary conditions for numerical analysis of scalar transport processes. Computers and Fluids, 1975, 3, 321-334.	2.5	5
90	The transport equations for multi-phase systems. Chemical Engineering Science, 1973, 28, 139-147.	3.8	264

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91	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, 1972, 18, 361-371.	3.6	1,047
92	Surface boundary conditions for small amplitude waves on a falling liquid film. AICHE Journal, 1972, 18, 1261-1262.	3.6	0
93	The effect of surfactants on the hydrodynamic development of thin liquid films. Journal of Colloid and Interface Science, 1971, 37, 33-51.	9.4	24
94	Entrance region flows with a free surface: the falling liquid film. Chemical Engineering Science, 1971, 26, 785-798.	3.8	52
95	Stability of falling liquid films. Chemical Engineering Science, 1971, 26, 742-745.	3.8	28
96	On the functional dependence of the dispersion vector for scalar transport in porous media. Chemical Engineering Science, 1971, 26, 1893-1899.	3.8	11
97	The effect of surfactants on the flow characteristics of falling liquid films. AICHE Journal, 1971, 17, 997-997.	3.6	2
98	The effect of surfactants on the flow characteristics of falling liquid films. AICHE Journal, 1969, 15, 527-532.	3.6	61
99	ADVANCES IN THEORY OF FLUID MOTION IN POROUS MEDIA. Industrial and Engineering Chemistry, 1969, 61, 14-28.	0.5	519
100	Velocity Profile in Stefan Diffusion Tube. Industrial & Engineering Chemistry Fundamentals, 1967, 6, 476-476.	0.7	10
101	Diffusion and dispersion in porous media. AICHE Journal, 1967, 13, 420-427.	3.6	669
102	Gravitational Thinning of Films. Effect of Surface Viscosity and Surface Elasticity. Industrial & Engineering Chemistry Fundamentals, 1966, 5, 379-388.	0.7	13
103	Stability of falling liquid films. Effect of interface and interfacial mass transport. AICHE Journal, 1966, 12, 421-431.	3.6	59
104	An experimental study of falling liquid films. AICHE Journal, 1966, 12, 525-529.	3.6	94
105	Response of a gas-liquid interface to concentration pulses. AICHE Journal, 1966, 12, 741-746.	3.6	9
106	Confined wakes: A numerical solution of the Navier-Stokes equations. AICHE Journal, 1965, 11, 1033-1041.	3.6	13
107	Effect of Surface Active Agents on the Stability of Falling Liquid Films. Industrial & Engineering Chemistry Fundamentals, 1964, 3, 132-142.	0.7	133
108	An Approach to Numerical Differentiation of Experimental Data. Industrial and Engineering Chemistry, 1960, 52, 185-187.	0.5	27

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109	Thermal Diffusion in Liquids. Industrial and Engineering Chemistry, 1958, 50, 1026-1032.	0.5	20