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	Flow in porous media I: A theoretical derivation of Darcy's law. Transport in Porous Media, 1986, 1, 3-25.	2.6	1,440
2	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
3	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
4	Simultaneous Heat, Mass, and Momentum Transfer in Porous Media: A Theory of Drying. Advances in Heat Transfer, 1977, 13, 119-203.	0.9	775
5	The Method of Volume Averaging. Theory and Applications of Transport in Porous Media, 1999, , .	0.4	768
6	Diffusion and dispersion in porous media. AICHE Journal, 1967, 13, 420-427.	3.6	669
7	The Forchheimer equation: A theoretical development. Transport in Porous Media, 1996, 25, 27-61.	2.6	572
8	ADVANCES IN THEORY OF FLUID MOTION IN POROUS MEDIA. Industrial and Engineering Chemistry, 1969, 61, 14-28.	0.5	519
9	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
10	Flow in porous media II: The governing equations for immiscible, two-phase flow. Transport in Porous Media, 1986, 1, 105-125.	2.6	284
11	One- and Two-Equation Models for Transient Diffusion Processes in Two-Phase Systems. Advances in Heat Transfer, 1993, 23, 369-464.	0.9	275
12	The transport equations for multi-phase systems. Chemical Engineering Science, 1973, 28, 139-147.	3.8	264
13	The spatial averaging theorem revisited. Chemical Engineering Science, 1985, 40, 1387-1392.	3.8	247
14	Transport in ordered and disordered porous media II: Generalized volume averaging. Transport in Porous Media, 1994, 14, 179-206.	2.6	211
15	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
16	Two-phase flow in heterogeneous porous media: The method of large-scale averaging. Transport in Porous Media, 1988, 3, 357-413.	2.6	163
17	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
18	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

#	Article	IF	Citations
19	Heat and Mass Transfer in Porous Media. , 1984, , 121-198.		155
20	Convection, dispersion, and interfacial transport of contaminants: Homogeneous porous media. Advances in Water Resources, 1994, 17, 221-239.	3.8	149
21	Effect of Surface Active Agents on the Stability of Falling Liquid Films. Industrial & Engineering Chemistry Fundamentals, 1964, 3, 132-142.	0.7	133
22	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
23	Improved constraints for the principle of local thermal equilibrium. Industrial & Engineering Chemistry Research, 1991, 30, 983-997.	3.7	117
24	Diffusion in anisotropic porous media. Transport in Porous Media, 1987, 2, 327.	2.6	111
25	Diffusion and reaction in biofilms. Chemical Engineering Science, 1998, 53, 397-425.	3.8	105
26	Some Theoretical and Experimental Observations of the Wave Structure of Falling Liquid Films. Industrial & Engineering Chemistry Fundamentals, 1977, 16, 401-408.	0.7	103
27	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
28	Coupled Transport in Multiphase Systems: A Theory of Drying. Advances in Heat Transfer, 1998, , 1-104.	0.9	95
29	An experimental study of falling liquid films. AICHE Journal, 1966, 12, 525-529.	3.6	94
30	Calculation of effective diffusivities for biofilms and tissues. Biotechnology and Bioengineering, 2002, 77, 495-516.	3.3	93
31	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
32	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
33	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
34	Transport in chemically and mechanically heterogeneous porous media. Advances in Water Resources, 1998, 22, 59-86.	3.8	73
35	Diffusion and reaction in cellular media. Chemical Engineering Science, 1986, 41, 2999-3013.	3.8	67
36	The effect of surfactants on the flow characteristics of falling liquid films. AICHE Journal, 1969, 15, 527-532.	3.6	61

#	Article	IF	Citations
37	Stability of falling liquid films. Effect of interface and interfacial mass transport. AICHE Journal, 1966, 12, 421-431.	3.6	59
38	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
39	On the closure problem for Darcy's law. Transport in Porous Media, 1992, 7, 209-222.	2.6	57
40	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
41	Local thermal equilibrium: An application to packed bed catalytic reactor design. Chemical Engineering Science, 1986, 41, 2029-2039.	3.8	55
42	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
43	Bulk and surface diffusion in porous media: An application of the surface-averaging theorem. Chemical Engineering Science, 1993, 48, 2061-2082.	3.8	53
44	Entrance region flows with a free surface: the falling liquid film. Chemical Engineering Science, 1971, 26, 785-798.	3.8	52
45	Multi-species diffusion and reaction in biofilms and cellular media. Chemical Engineering Science, 2000, 55, 3397-3418.	3.8	52
46	Flow in porous media III: Deformable media. Transport in Porous Media, 1986, 1, 127-154.	2.6	51
47	Determination of permeability tensors for two-phase flow in homogeneous porous media: Theory. Transport in Porous Media, 1996, 24, 107-137.	2.6	47
48	The species mass jump condition at a singular surface. Chemical Engineering Science, 1992, 47, 1677-1685.	3.8	46
49	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
50	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
51	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
52	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
53	Cellular growth in biofilms. , 1999, 64, 656-670.		40
54	Dissolution of an Immobile Phase during Flow in Porous Media. Industrial & Engineering Chemistry Research, 1999, 38, 833-844.	3.7	36

#	Article	IF	Citations
55	Studies of the drop-weight method for surfactant solutions. Journal of Colloid and Interface Science, 1976, 54, 203-218.	9.4	35
56	Studies of the drop-weight method for surfactant solutions. Journal of Colloid and Interface Science, 1976, 54, 231-248.	9.4	34
57	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
58	Jump conditions at non-uniform boundaries: the catalytic surface. Chemical Engineering Science, 2000, 55, 5231-5245.	3.8	31
59	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
60	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
61	Dispersion in Heterogeneous Porous Media: One-Equation Non-equilibrium Model. Transport in Porous Media, 2001, 44, 181-203.	2.6	29
62	Stability of falling liquid films. Chemical Engineering Science, 1971, 26, 742-745.	3.8	28
63	Mass transport and reaction in catalyst pellets. Transport in Porous Media, 1987, 2, 269.	2.6	28
64	An Approach to Numerical Differentiation of Experimental Data. Industrial and Engineering Chemistry, 1960, 52, 185-187.	0.5	27
65	The closure problem for two-phase flow in homogeneous porous media. Chemical Engineering Science, 1994, 49, 765-780.	3.8	27
66	Steam drying a bed of porous spheres: Theory and experiment. Chemical Engineering Science, 2000, 55, 1675-1698.	3.8	27
67	Studies of the drop-weight method for surfactant solutions. Journal of Colloid and Interface Science, 1976, 54, 219-230.	9.4	26
68	Theoretical Analysis of Transport in Porous Media. , 2000, , 1-52.		25
69	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
70	Radiant Energy Transport in Porous Media. Industrial & Engineering Chemistry Fundamentals, 1980, 19, 210-218.	0.7	23
71	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
72	Thermal Diffusion in Liquids. Industrial and Engineering Chemistry, 1958, 50, 1026-1032.	0.5	20

#	Article	IF	Citations
73	Diffusion in packed beds of porous particles. AICHE Journal, 1988, 34, 679-683.	3.6	18
74	Aerosol filtration: An analysis using the method of volume averaging. Journal of Aerosol Science, 1995, 26, 1227-1255.	3.8	18
75	New equations for binary gas transport in porous media,. Advances in Water Resources, 2003, 26, 695-715.	3.8	16
76	Estimation of adsorption rate coefficients based on the Smoluchowski equation. Chemical Engineering Science, 2004, 59, 1905-1921.	3.8	16
77	Moisture Transport Mechanisms during the Drying of Granular Porous Media. , 1985, , 21-32.		16
78	Facilitated transport in porous media. Chemical Engineering Science, 1991, 46, 477-496.	3.8	15
79	Diffusion and Heterogeneous Reaction in Porous Media: The Macroscale Model Revisited. International Journal of Chemical Reactor Engineering, 2017, 15, .	1.1	15
80	Confined wakes: A numerical solution of the Navier-Stokes equations. AICHE Journal, 1965, 11, 1033-1041.	3.6	13
81	Gravitational Thinning of Films. Effect of Surface Viscosity and Surface Elasticity. Industrial & Engineering Chemistry Fundamentals, 1966, 5, 379-388.	0.7	13
82	On the functional dependence of the dispersion vector for scalar transport in porous media. Chemical Engineering Science, 1971, 26, 1893-1899.	3.8	11
83	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
84	Vaporâ€“Liquid Jump Conditions within a Porous Medium: Results for Mass and Energy. Transport in Porous Media, 2000, 40, 73-111.	2.6	11
85	Heat transfer in packed beds: interpretation of experiments in terms of one- and two-equation models. , 1994, , .		11
86	Velocity Profile in Stefan Diffusion Tube. Industrial & Engineering Chemistry Fundamentals, 1967, 6, 476-476.	0.7	10
87	Some experimental observations of the surface elasticity of surfactant solutions. Journal of Colloid and Interface Science, 1978, 63, 129-135.	9.4	10
88	The Thermodynamic Significance of the Local Volume Averaged Temperature. Transport in Porous Media, 2002, 46, 19-35.	2.6	10
89	Mechanics and thermodynamics of diffusion. Chemical Engineering Science, 2012, 68, 362-375.	3.8	10
90	Macroscopic Balances. , 1977, , 304-373.		10

#	Article	IF	Citations
91	Response of a gas-liquid interface to concentration pulses. AICHE Journal, 1966, 12, 741-746.	3.6	9
92	New equations for binary gas transport in porous media, Part 2: experimental validation. Advances in Water Resources, 2003, 26, 717-723.	3.8	8
93	COMMENTS AND CORRECTIONS CONCERNING THE VOLUME-AVERAGED TEMPERATURE AND ITS SPATIAL DEVIATION. Chemical Engineering Communications, 1988, 70, 15-18.	2.6	6
94	The Development of Fluid Mechanics in Chemical Engineering. , 1989, , 47-109.		6
95	Downstream boundary conditions for numerical analysis of scalar transport processes. Computers and Fluids, 1975, 3, 321-334.	2.5	5
96	Diffusion Deposition on a Fiber in Nontransverse Flow. Aerosol Science and Technology, 1991, 14, 224-232.	3.1	5
97	The mass flux boundary condition at a moving fluid-fluid interface. Industrial & Engineering Chemistry Research, 1995, 34, 3508-3513.	3.7	5
98	Coupled, Nonlinear Mass Transfer and Heterogeneous Reaction in Porous Media. , 2005, , 3-37.		5
99	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
100	Mechanics of Composite Solids. Journal of Engineering Mechanics - ASCE, 2002, 128, 823-828.	2.9	4
101	The Art and Science of Upscaling. , 2005, , 1-39.		3
102	The effect of surfactants on the flow characteristics of falling liquid films. AICHE Journal, 1971, 17, 997-997.	3.6	2
103	Macroscopic Balances. , 1976, , 180-249.		2
104	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
105	Upscaling Reactive Transport Under Hydrodynamic Slip Conditions in Homogeneous Porous Media. Water Resources Research, 2020, 56, e2019WR025954.	4.2	2
106	Conservation Equations. , 2006, , 71-120.		2
107	Surface boundary conditions for small amplitude waves on a falling liquid film. AICHE Journal, 1972, 18, 1261-1262.	3.6	0
108	Reply to the Comment by S. J. Kowalski, TIPM 40, 113, 2000. Transport in Porous Media, 2002, 46, 103-105.	2.6	0

#	Article	IF	Citations
109	Local, global, and elementary stoichiometry. AICHE Journal, 2012, 58, 538-552.	3.6	0