Peter Knabner

List of Publications by Year
in descending order

118 papers	2,332 citations	172457 29 h-index	276875 41 g-index
131 all docs	131 docs citations	131 times ranked	1226 citing authors

#	Article	IF	Citations
1	Mixed finite elements for the Richardsâ€™ equation: linearization procedure. Journal of Computational and Applied Mathematics, 2004, 168, 365-373.	2.0	129
2	Order of Convergence Estimates for an Euler Implicit, Mixed Finite Element Discretization of Richards' Equation. SIAM Journal on Numerical Analysis, 2004, 42, 1452-1478.	2.3	79
3	Beyond Kozenyâ€“Carman: Predicting the Permeability in Porous Media. Transport in Porous Media, 2019, 130, 487-512.	2.6	69
4	Error estimates for a mixed finite element discretization of some degenerate parabolic equations. Numerische Mathematik, 2008, 109, 285-311.	1.9	66
5	Travelling waves in the transport of reactive solutes through porous media: Adsorption and binary ion exchange â€" Part 1. Transport in Porous Media, 1992, 8, 167-194.	2.6	65
6	Computation of variably saturated subsurface flow by adaptive mixed hybrid finite element methods. Advances in Water Resources, 2004, 27, 565-581.	3.8	62
7	An analysis of crystal dissolution fronts in flows through porous media. Part 1: Compatible boundary conditions. Advances in Water Resources, 1995, 18, 171-185.	3.8	61
8	The modeling of reactive solute transport with sorption to mobile and immobile sorbents: 1. Experimental evidence and model development. Water Resources Research, 1996, 32, 1611-1622.	4.2	61
9	A new numerical reduction scheme for fully coupled multicomponent transport-reaction problems in porous media. Water Resources Research, 2005, 41, .	4.2	55
10	A reduction scheme for coupled multicomponent transport-reaction problems in porous media: Generalization to problems with heterogeneous equilibrium reactions. Water Resources Research, 2007, 43, .	4.2	52
11	Comparison of numerical methods for simulating strongly nonlinear and heterogeneous reactive transport problemsâ€"the MoMaS benchmark case. Computational Geosciences, 2010, 14, 483-502.	2.4	50
12	Multiscale Approaches in Reactive Transport Modeling. Reviews in Mineralogy and Geochemistry, 2019, 85, 27-48.	4.8	45
13	Rigorous homogenization of a Stokesâ€“Nernstâ€“Planckâ€“Poisson system. Journal of Mathematical Analysis and Applications, 2012, 390, 374-393.	1.0	43
14	Multiscale Modeling of Colloid and Fluid Dynamics in Porous Media Including an Evolving Microstructure. Transport in Porous Media, 2012, 95, 669-696.	2.6	40
15	Finite Element Approximation of The Transport of Reactive Solutes in Porous Media. Part II: Error Estimates for Equilibrium Adsorption Processes. SIAM Journal on Numerical Analysis, 1997, 34, 455-479.	2.3	39
16	Modeling of Drug Release from Collagen Matrices. Journal of Pharmaceutical Sciences, 2002, 91, 964-972.	3.3	39
17	Homogenization of Reaction--Diffusion Processes in a Two-Component Porous Medium with Nonlinear Flux Conditions at the Interface. SIAM Journal on Applied Mathematics, 2016, 76, 1819-1843.	1.8	39
18	Finite Element Approximation of the Transport of Reactive Solutes in Porous Media. Part 1: Error Estimates for Nonequilibrium Adsorption Processes. SIAM Journal on Numerical Analysis, 1997, 34, 201-227.	2.3	38

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19	A model describing the effect of enzymatic degradation on drug release from collagen minirods. European Journal of Pharmaceutics and Biopharmaceutics, 2007, 67, 349-360.	4.3	37
20	Old and New Approaches Predicting the Diffusion in Porous Media. Transport in Porous Media, 2018, 124, 803-824.	2.6	37
21	A priori error estimates for a mixed finite element discretization of the Richardsâ€™ equation. Numerische Mathematik, 2004, 98, 353-370.	1.9	36
22	Reactive transport benchmark of MoMaS. Computational Geosciences, 2010, 14, 385-392.	2.4	36
23	An efficient method for solving an inverse problem for the Richards equation. Journal of Computational and Applied Mathematics, 2002, 147, 153-173.	2.0	35
24	The modeling of reactive solute transport with sorption to mobile and immobile sorbents: 2. Model discussion and numerical simulation. Water Resources Research, 1996, 32, 1623-1634.	4.2	34
25	Travelling waves in the transport of reactive solutes through porous media: Adsorption and binary ion exchange â€" Part 2. Transport in Porous Media, 1992, 8, 199-225.	2.6	32
26	Uniform Error Analysis for Lagrange--Galerkin Approximations of Convection-Dominated Problems. SIAM Journal on Numerical Analysis, 2002, 39, 1954-1984.	2.3	31
27	Drug release from collagen matrices including an evolving microstructure. ZAMM Zeitschrift Fur Angewandte Mathematik Und Mechanik, 2013, 93, 811-822.	1.6	31
28	A parallel global-implicit 2-D solver for reactive transport problems in porous media based on a reduction scheme and its application to the MoMaS benchmark problem. Computational Geosciences, 2010, 14, 421-433.	2.4	30
29	The optimal stability estimate for some ill-posed Cauchy problems for a parabolic equation. Mathematical Methods in the Applied Sciences, 1988, 10, 575-583.	2.3	29
30	Numerical simulation of contaminant biodegradation by higher order methods and adaptive time stepping. Computing and Visualization in Science, 2004, 7, 61-78.	1.2	27
31	Mathematical analysis of a discrete fracture model coupling Darcy flow in the matrix with Darcyâ€"Forchheimer flow in the fracture. ESAIM: Mathematical Modelling and Numerical Analysis, 2014, 48, 1451-1472.	1.9	27
32	FESTUNG: AÂMATLAB/GNUÂOctaveÂtoolbox for the discontinuous Galerkin method, Part I: Diffusion operator. Computers and Mathematics With Applications, 2015, 70, 11-46.	2.7	27
33	Stabilization of ill-posed Cauchy problems for parabolic equations. Annali Di Matematica Pura Ed Applicata, 1987, 149, 393-409.	1.0	26
34	Multiscale modeling of colloidal dynamics in porous media including aggregation and deposition. Advances in Water Resources, 2015, 86, 209-216.	3.8	25
35	Derivation and analysis of an effective model for biofilm growth in evolving porous media. Mathematical Methods in the Applied Sciences, 2017, 40, 2930-2948.	2.3	24
36	Strong solvability up to clogging of an effective diffusionâ€"precipitation model in an evolving porous medium. European Journal of Applied Mathematics, 2017, 28, 179-207.	2.9	24

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37	Inverse Estimation of the Unsaturated Soil Hydraulic Properties from Column Outflow Experiments Using Free-Form Parameterizations. Vadose Zone Journal, 2004, 3, 971-981.	2.2	23
38	Simulation of carrier-facilitated transport of phenanthrene in a layered soil profile. Journal of Contaminant Hydrology, 2002, 56, 209-225.	3.3	22
39	FESTUNG: AÂMATLAB/GNUÂOctaveÂtoolbox for the discontinuous Galerkin method, Part II: Advection operator and slope limiting. Computers and Mathematics With Applications, 2016, 72, 1896-1925.	2.7	21
40	Efficiency and Accuracy of Microâ€Macro Models for Mineral Dissolution. Water Resources Research, 2020, 56, e2020WR027585.	4.2	21
41	Solute transport in porous media with equilibrium and nonequilibrium multiple-site adsorption: uniqueness of weak solutions. Nonlinear Analysis: Theory, Methods & Applications, 2000, 42, 381-403.	1.1	20
42	A Fokkerâ€"Planck approach for probability distributions of species concentrations transported in heterogeneous media. Journal of Computational and Applied Mathematics, 2015, 289, 241-252.	2.0	19
43	Optimal order convergence of a modified BDM1 mixed finite element scheme for reactive transport in porous media. Advances in Water Resources, 2012, 35, 163-171.	3.8	18
44	A Two-Scale Method for the Computation of Solidâ€"Liquid Phase Transitions with Dendritic Microstructure. Journal of Computational Physics, 2002, 178, 58-80.	3.8	17
45	Numerical investigation of homogenized Stokesâ€"Nernstâ€"Planckâ€"Poisson systems. Computing and Visualization in Science, 2011, 14, 385-400.	1.2	17
46	A general reduction scheme for reactive transport in porous media. Computational Geosciences, 2012, 16, 1081-1099.	2.4	17
47	Mathematical Modeling. Springer Undergraduate Mathematics Series, 2017, , .	0.1	17
48	Control of stefan problems by means of linear-quadratic defect minimization. Numerische Mathematik, 1985, 46, 429-442.	1.9	16
49	An analysis of crystal dissolution fronts in flows through porous media part 2: incompatible boundary conditions. Advances in Water Resources, 1998, 22, 1-16.	3.8	16
50	An Improved Error Bound for a Lagrange--Galerkin Method for Contaminant Transport with Non-Lipschitzian Adsorption Kinetics. SIAM Journal on Numerical Analysis, 1998, 35, 1862-1882.	2.3	16
51	Memory effects induced by dependence on initial conditions and ergodicity of transport in heterogeneous media. Water Resources Research, 2008, 44, .	4.2	16
52	Effective interface conditions for processes through thin heterogeneous layers with nonlinear transmission at the microscopic bulk-layer interface. Networks and Heterogeneous Media, 2018, 13, 609-640.	1.1	16
53	Travelling waves during the transport of reactive solute in porous media: Combination of Langmuir and Freundlich isotherms. Advances in Water Resources, 1993, 16, 97-105.	3.8	15
54	A coupled finite elementâ€"global random walk approach to advection-dominated transport in porous media with random hydraulic conductivity. Journal of Computational and Applied Mathematics, 2013, 246, 27-37.	2.0	15

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55	Analysis of an Upwind-Mixed Hybrid Finite Element Method for Transport Problems. SIAM Journal on Numerical Analysis, 2014, 52, 83-102.	2.3	15
56	An Effective Model for Biofilm Growth Made by Chemotactical Bacteria in Evolving Porous Media. SIAM Journal on Applied Mathematics, 2017, 77, 1653-1677.	1.8	15
57	FESTUNG: AÂMATLAB/GNUÂOctaveÂtoolbox for the discontinuous Galerkin method. Part III: Hybridized discontinuous Galerkin (HDG) formulation. Computers and Mathematics With Applications, 2018, 75, 4505-4533.	2.7	15
58	Conditions for the invertibility of the isoparametric mapping for hexahedral finite elements. Finite Elements in Analysis and Design, 2003, 40, 159-172.	3.2	14
59	Persistent memory of diffusing particles. Physical Review E, 2009, 80, 061134.	2.1	14
60	Fully coupled generalized hybrid-mixed finite element approximation of two-phase two-component flow in porous media. Part I: formulation and properties of the mathematical model. Computational Geosciences, 2013, 17, 431-442.	2.4	14
61	Newtonâ€"Type Methods for the Mixed Finite Element Discretization of Some Degenerate Parabolic Equations. , 2006, , 1192-1200.		14
62	An error estimator for a finite volume discretization of density driven flow in porous media. Applied Numerical Mathematics, 1998, 26, 179-191.	2.1	13
63	The semismooth Newton method for the solution ofÂreactive transport problems including mineral precipitation-dissolution reactions. Computational Optimization and Applications, 2011, 50, 193-221.	1.6	13
64	Upscaling the Flow and Transport in an Evolving Porous Medium with General Interaction Potentials. SIAM Journal on Applied Mathematics, 2015, 75, 2170-2192.	1.8	13
65	Towards a filtered density function approach for reactive transport in groundwater. Advances in Water Resources, 2016, 90, 83-98.	3.8	13
66	Existence and uniqueness of a global weak solution of a Darcyâ€Nernstâ€Planckâ€Poisson system. GAMM Mitteilungen, 2012, 35, 191-208.	5.5	12
67	Fully coupled generalised hybrid-mixed finite element approximation of two-phase two-component flow in porous media. Part II: numerical scheme and numerical results. Computational Geosciences, 2012, 16, 691-708.	2.4	12
68	Convergence order estimates of the local discontinuous Galerkin method for instationary Darcy flow. Numerical Methods for Partial Differential Equations, 2017, 33, 1374-1394.	3.6	12
69	Analysis of a mixed discontinuous Galerkin method for instationary Darcy flow. Computational Geosciences, 2018, 22, 179-194.	2.4	12
70	A local discontinuous Galerkin scheme for Darcy flow with internal jumps. Computational Geosciences, 2018, 22, 1149-1159.	2.4	11
71	Regularization of the cauchy problem for the heat equation by norm bounds. Applicable Analysis, 1984, 17, 295-311.	1.3	10
72	First-order convergence of multi-point flux approximation on triangular grids and comparison with mixed finite element methods. Numerische Mathematik, 2010, 116, 1-29.	1.9	10

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73	Numerical Methods for Elliptic and Parabolic Partial Differential Equations. Texts in Applied Mathematics, 2021, , .	0.4	10
74	STABILITY ESTIMATES FOR ILL-POSED CAUCHY PROBLEMS FOR PARABOLIC EQUATIONS. , 1987, , 351-368.		9
75	The invertibility of the isoparametric mapping for pyramidal and prismatic finite elements. Numerische Mathematik, 2001, 88, 661-681.	1.9	9
76	Experimental design for outflow experiments based on a multi-level identification method for material laws. Inverse Problems, 2003, 19, 1011-1030.	2.0	9
77	Numerical simulation of drug release from collagen matrices by enzymatic degradation. Computing and Visualization in Science, 2009, 12, 409-420.	1.2	9
78	Discontinuous Galerkin method for coupling hydrostatic free surface flows to saturated subsurface systems. Computers and Mathematics With Applications, 2019, 77, 2291-2309.	2.7	9
79	A global implicit solver for miscible reactive multiphase multicomponent flow in porous media. Computational Geosciences, 2019, 23, 127-148.	2.4	9
80	A transport model with micro- and macro-structure. Journal of Differential Equations, 1992, 98, 328-354.	2.2	8
81	Derivation of effective transmission conditions for domains separated by a membrane for different scaling of membrane diffusivity. Discrete and Continuous Dynamical Systems - Series S, 2017, 10, 773-797.	1.1	8
82	A time dependent mixing model to close PDF equations for transport in heterogeneous aquifers. Advances in Water Resources, 2016, 96, 55-67.	3.8	7
83	Derivation of an Effective Model for Metabolic Processes in Living Cells Including Substrate Channeling. Vietnam Journal of Mathematics, 2017, 45, 265-293.	0.8	7
84	Efficiency of Micro-Macro Models for Reactive Two-Mineral Systems. Multiscale Modeling and Simulation, 2022, 20, 433-461.	1.6	7
85	Flow and reactive transport in porous media induced by well injection: Similarity solution. IMA Journal of Applied Mathematics, 1994, 52, 177-200.	1.6	6
86	Numerical benchmark study for flow in highly heterogeneous aquifers. Advances in Water Resources, 2020, 138, 103558.	3.8	6
87	FESTUNG 1.0: Overview, usage, and example applications of the MATLAB/GNU Octave toolbox for discontinuous Galerkin methods. Computers and Mathematics With Applications, 2021, 81, 3-41.	2.7	6
88	Homogenization of Two-Phase Flow in Porous Media From Pore to Darcy Scale: A Phase-Field Approach. Multiscale Modeling and Simulation, 2021, 19, 320-343.	1.6	6
89	A Free Boundary Problem Arising from the Leaching of Saine Soils. SIAM Journal on Mathematical Analysis, 1986, 17, 610-625.	1.9	5
90	Numerical Methods for the Determination of Material Properties in Soil Science. Inverse Problems in Science and Engineering, 2004, 12, 361-378.	1.2	5

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91	Results of the MoMaS benchmark for gas phase appearance and disappearance using generalized MHFE. Advances in Water Resources, 2014, 73, 74-96.	3.8	5
92	Existence and Uniqueness of a Global Solution for Reactive Transport with Mineral Precipitation-Dissolution and Aquatic Reactions in Porous Media. SIAM Journal on Mathematical Analysis, 2017, 49, 4812-4837.	1.9	5
93	Solute transport in aquifers with evolving scale heterogeneity. Analele Stiintifice Ale Universitatii Ovidius Constanta, Seria Matematica, 2015, 23, 167-186.	0.3	5
94	Comparison study of phase-field and level-set method for three-phase systems including two minerals. Computational Geosciences, 2022, 26, 545-570.	2.4	5
95	Convergence analysis of a BDF2â€‰/â€‰mixed finite element discretization of a Darcyâ€"Nernstâ€"Planckâ€"Poisson system. ESAIM: Mathematical Modelling and Numerical Analysis, 2017, 51, 1883-1902.	1.9	4
96	Adaptivity in the finite volume discretization of variable density flows in porous media. Physics and Chemistry of the Earth, 2001, 26, 319-324.	0.3	3
97	On uniform convergence rates for Eulerian and Lagrangian finite element approximations of convection-dominated diffusion problems. Calcolo, 2004, 41, 1-26.	1.1	3
98	Comment on â€œSpatial moments analysis of kinetically sorbing solutes in aquifer with bimodal permeability distributionâ€•by M. MassabÃ³, A. Bellin, and A. J. Valocchi. Water Resources Research, 2009, 45, .	4.2	3
99	Global implicit solver for multiphase multicomponent flow in porous media with multiple gas components and general reactions. Computational Geosciences, 2022, 26, 697-724.	2.4	3
100	Global existence in a general Stefan-like problem. Journal of Mathematical Analysis and Applications, 1986, 115, 543-559.	1.0	2
101	Adaptive methods for parameter identification in ground water hydrology. Advances in Water Resources, 1991, 14, 220-239.	3.8	2
102	Unbiased identification of nonlinear sorption characteristics by soil column breakthrough experiments. Computational Geosciences, 2006, 9, 203-217.	2.4	2
103	Error Estimates for a Finite Element Discretization of a Phase Field Model for Mixtures. SIAM Journal on Numerical Analysis, 2010, 47, 4429-4445.	2.3	2
104	Model-Based Design of Biochemical Microreactors. Frontiers in Bioengineering and Biotechnology, 2016, 4, 13.	4.1	2
105	Consistency issues in PDF methods. Analele Stiintifice Ale Universitatii Ovidius Constanta, Seria Matematica, 2015, 23, 187-208.	0.3	2
106	Analysis of a Modified Second-Order Mixed Hybrid BDM_1 Finite Element Method for Transport Problems in Divergence Form. SIAM Journal on Numerical Analysis, 2016, 54, 2359-2378.	2.3	1
107	2. Multiscale Approaches in Reactive Transport Modeling. , 2019, , 27-48.		1
108	International workshop on mathematical modeling for flow and transport through porous media. Transport in Porous Media, 1991, 6, 473.	2.6	0

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109	Error estimates for an Euler implicitâ€mixed finite element scheme for reactive transport in saturated/unsaturated soil. Proceedings in Applied Mathematics and Mechanics, 2007, 7, 1024705-1024706.	0.2	0
110	Special issue â€œMathematics of Porous Media,â€• dedicated to Professor C.J. van Duijn on the occasion of his 60th anniversary. Computational Geosciences, 2013, 17, 443-445.	2.4	0
111	A Priori Error Analysis for the Galerkin Finite Element Semi-discretization of a Parabolic System with Non-Lipschitzian Nonlinearity. Vietnam Journal of Mathematics, 2017, 45, 179-198.	0.8	0
112	Wavelet-Based Priors Accelerate Maximum-a-Posteriori Optimization in Bayesian Inverse Problems. Methodology and Computing in Applied Probability, 2020, 22, 853-879.	1.2	0
113	Robust simulation of mineral precipitationâ€“dissolution problems with variable mineral surface area. Journal of Engineering Mathematics, 2021, 129, 1.	1.2	0
114	Two-Scale Models for Liquid-Solid Phase Transitions in Binary Material with Equiaxed Microstructure. , 2002, , 175-187.		0
115	The Finite Element Method for Linear Elliptic Boundary Value Problems of Second Order. Texts in Applied Mathematics, 2021, , 111-204.	0.4	0
116	Iterative Methods for Systems of Linear Equations. Texts in Applied Mathematics, 2021, , 235-339.	0.4	0
117	For the Beginning: The Finite Difference Method for the Poisson Equation. Texts in Applied Mathematics, 2021, , 19-49.	0.4	0
118	Grid Generation and A Posteriori Error Estimation. Texts in Applied Mathematics, 2021, , 205-234.	0.4	0