Giles Richardson

List of Publications by Year
in descending order

63 papers	2,788 citations	331670 21 h-index	175258 52 g-index
63 all docs	63 docs citations	63 times ranked	4086 citing authors

#	Article	IF	Citations
1	Migration of cations induces reversible performance losses over day/night cycling in perovskite solar cells. Energy and Environmental Science, 2017, 10, 604-613.	30.8	525
2	Can slow-moving ions explain hysteresis in the currentâ€“voltage curves of perovskite solar cells?. Energy and Environmental Science, 2016, 9, 1476-1485.	30.8	363
3	Improving the Long-Term Stability of Perovskite Solar Cells with a Porous Al₂O₃ Buffer Layer. Journal of Physical Chemistry Letters, 2015, 6, 432-437.	4.6	343
4	Mathematical modelling of magnetically targeted drug delivery. Journal of Magnetism and Magnetic Materials, 2005, 293, 455-463.	2.3	241
5	How transport layer properties affect perovskite solar cell performance: insights from a coupled charge transport/ion migration model. Energy and Environmental Science, 2019, 12, 396-409.	30.8	184
6	Binder migration during drying of lithium-ion battery electrodes: Modelling and comparison to experiment. Journal of Power Sources, 2018, 393, 177-185.	7.8	108
7	Multiscale modelling and analysis of lithium-ion battery charge and discharge. Journal of Engineering Mathematics, 2012, 72, 41-72.	1.2	69
8	Measurement and modelling of dark current decay transients in perovskite solar cells. Journal of Materials Chemistry C, 2017, 5, 452-462.	5.5	64
9	A Model for the Operation of Perovskite Based Hybrid Solar Cells: Formulation, Analysis, and Comparison to Experiment. SIAM Journal on Applied Mathematics, 2014, 74, 1935-1966.	1.8	53
10	A fast and robust numerical scheme for solving models of charge carrier transport and ion vacancy motion in perovskite solar cells. Applied Mathematical Modelling, 2018, 63, 329-348.	4.2	51
11	Vortex pinning by inhomogeneities in type-II superconductors. Physica D: Nonlinear Phenomena, 1997, 108, 397-407.	2.8	50
12	Causes of binder damage in porous battery electrodes and strategies to prevent it. Journal of Power Sources, 2017, 350, 140-151.	7.8	49
13	Identification of recombination losses and charge collection efficiency in a perovskite solar cell by comparing impedance response to a drift-diffusion model. Nanoscale, 2020, 12, 17385-17398.	5.6	43
14	IonMonger: a free and fast planar perovskite solar cell simulator with coupled ion vacancy and charge carrier dynamics. Journal of Computational Electronics, 2019, 18, 1435-1449.	2.5	42
15	Derivation of the Bidomain Equations for a Beating Heart with a General Microstructure. SIAM Journal on Applied Mathematics, 2011, 71, 657-675.	1.8	39
16	Motion of Vortices in Type II Superconductors. SIAM Journal on Applied Mathematics, 1995, 55, 1275-1296.	1.8	38
17	Generalised single particle models for high-rate operation of graded lithium-ion electrodes: Systematic derivation and validation. Electrochimica Acta, 2020, 339, 135862.	5.2	30
18	Bond tilting and sliding friction in a model of cell adhesion. Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences, 2008, 464, 447-467.	2.1	25

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19	Deducing transport properties of mobile vacancies from perovskite solar cell characteristics. Journal of Applied Physics, 2020, 128, .	2.5	25
20	Toward a Mathematical Model of the Assembly and Disassembly of Membrane Microdomains: Comparison with Experimental Models. Biophysical Journal, 2007, 92, 4145-4156.	0.5	23
21	Systematic derivation of a surface polarisation model for planar perovskite solar cells. European Journal of Applied Mathematics, 2019, 30, 427-457.	2.9	22
22	Time-dependent modelling and asymptotic analysis of electrochemical cells. Journal of Engineering Mathematics, 2007, 59, 239-275.	1.2	19
23	A multiscale approach to modelling electrochemical processes occurring across the cell membrane with application to transmission of action potentials. Mathematical Medicine and Biology, 2009, 26, 201-224.	1.2	18
24	On a biophysical and mathematical model of Pgp-mediated multidrug resistance: understanding the â€œspaceâ€“timeâ€•dimension of MDR. European Biophysics Journal, 2010, 39, 201-211.	2.2	18
25	Vasomotion Drives Periarterial Drainage of AÎ² from the Brain. Neuron, 2020, 105, 400-401.	8.1	18
26	DandeLiion v1: An Extremely Fast Solver for the Newman Model of Lithium-Ion Battery (Dis)charge. Journal of the Electrochemical Society, 2021, 168, 060544.	2.9	18
27	Vortex motion in shallow water with varying bottom topography and zero Froude number. Journal of Fluid Mechanics, 2000, 411, 351-374.	3.4	17
28	The mixed boundary condition for the Ginzburg Landau model in thin films. Applied Mathematics Letters, 2000, 13, 97-99.	2.7	17
29	Experimental and theoretical modelling of blind-ended vessels within a developing angiogenic plexus. Microvascular Research, 2008, 76, 161-168.	2.5	17
30	Asymptotic and numerical prediction of current-voltage curves for an organic bilayer solar cell under varying illumination and comparison to the Shockley equivalent circuit. Journal of Applied Physics, 2013, 114, .	2.5	17
31	Incorporating Dendrite Growth into Continuum Models of Electrolytes: Insights from NMR Measurements and Inverse Modeling. Journal of the Electrochemical Society, 2019, 166, A1591-A1602.	2.9	17
32	Long time asymptotics for forced curvature flow with applications to the motion of a superconducting vortex. Nonlinearity, 1997, 10, 655-678.	1.4	16
33	The Effect of Ionic Aggregates on the Transport of Charged Species in Lithium Electrolyte Solutions. Journal of the Electrochemical Society, 2018, 165, H561-H567.	2.9	15
34	Illumination Intensity Dependence of the Recombination Mechanism in Mixed Perovskite Solar Cells. ChemPlusChem, 2021, 86, 1347-1356.	2.8	15
35	Shock formation and non-linear dispersion in a microvascular capillary network. Mathematical Medicine and Biology, 2007, 24, 379-400.	1.2	13
36	Parametrisation and Use of a Predictive DFN Model for a High-Energy NCA/Gr-SiOx Battery. Journal of the Electrochemical Society, 2021, 168, 120522.	2.9	13

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37	Models of void electromigration. European Journal of Applied Mathematics, 2001, 12, 97-134.	2.9	12
38	A Model for Interstitial Drainage Through a Sliding Lymphatic Valve. Bulletin of Mathematical Biology, 2015, 77, 1101-1131.	1.9	11
39	Asymptotic Solution of a Model for Bilayer Organic Diodes and Solar Cells. SIAM Journal on Applied Mathematics, 2012, 72, 1792-1817.	1.8	10
40	A Model for Fluid Drainage by the Lymphatic System. Bulletin of Mathematical Biology, 2013, 75, 49-81.	1.9	10
41	Bistable nematic liquid crystal device with flexoelectric switching. European Journal of Applied Mathematics, 2006, 17, 435-463.	2.9	9
42	Modelling in vivo action potential propagation along a giant axon. Journal of Mathematical Biology, 2015, 70, 237-263.	1.9	9
43	Derivation and solution of effective medium equations for bulk heterojunction organic solar cells. European Journal of Applied Mathematics, 2017, 28, 973-1014.	2.9	9
44	Particle trapping by an external body force in the limit of large Peclet number: applications to magnetic targeting in the blood flow. European Journal of Applied Mathematics, 2010, 21, 77-107.	2.9	8
45	A Mathematical Model for Mechanically-Induced Deterioration of the Binder in Lithium-Ion Electrodes. SIAM Journal on Applied Mathematics, 2017, 77, 2172-2198.	1.8	8
46	The Reversing of Interfaces in Slow Diffusion Processes with Strong Absorption. SIAM Journal on Applied Mathematics, 2012, 72, 144-162.	1.8	7
47	Instability of a superconducting line vortex. Physica D: Nonlinear Phenomena, 1997, 110, 139-153.	2.8	6
48	Motion and Homogenization of Vortices in Anisotropic Type II Superconductors. SIAM Journal on Applied Mathematics, 1998, 58, 587-606.	1.8	6
49	Understanding rapid charge and discharge in nano-structured lithium iron phosphate cathodes. European Journal of Applied Mathematics, 2022, 33, 328-368.	2.9	6
50	Heat generation and a conservation law for chemical energy in Li-ion batteries. Electrochimica Acta, 2021, 392, 138909.	5.2	6
51	The Hele-Shaw injection problem for an extremely shear-thinning fluid. European Journal of Applied Mathematics, 2015, 26, 563-594.	2.9	5
52	Ill-posedness of the mean-field model of superconducting vortices and a possible regularisation. European Journal of Applied Mathematics, 2000, 11, 137-152.	2.9	4
53	The evolution of space curves by curvature and torsion. Journal of Physics A, 2002, 35, 9857-9879.	1.6	4
54	The Saffman-Taylor problem for an extremely shear-thinning fluid. Quarterly Journal of Mechanics and Applied Mathematics, 2007, 60, 161-200.	1.3	4

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55	An asymptotic analysis of the buckling of a highly shear-resistant vesicle. European Journal of Applied Mathematics, 2009, 20, 479-518.	2.9	4
56	Motion by curvature of a three-dimensional filament: similarity solutions. Interfaces and Free Boundaries, 2002, 4, 395-421.	0.8	4
57	Classification of Phase Transitions in Thin Structures with Small Ginzburg--Landau Parameter. SIAM Journal on Applied Mathematics, 2001, 61, 1286-1307.	1.8	3
58	The bifurcation structure of a thin superconducting loop swith small variations in its thickness. Quarterly of Applied Mathematics, 2000, 58, 685-703.	0.7	3
59	A theoretical treatment of void electromigration in the strip geometry. Computational Materials Science, 2000, 17, 279-289.	3.0	2
60	Correctly computing targeting efficiency in magnetically targeted delivery from particle tracking models. Journal of Magnetism and Magnetic Materials, 2022, 549, 168960.	2.3	2
61	Asymptotic models for transport in large aspect ratio nanopores. European Journal of Applied Mathematics, 2019, 30, 557-584.	2.9	1
62	Canonical reduced Ginzburgâ€“Landau models. Physica C: Superconductivity and Its Applications, 2000, 332, 289-291.	1.2	0
63	Similarity solutions to an averaged model for superconducting vortex motion. European Journal of Applied Mathematics, 2003, 14, 639-675.	2.9	0