Matthew T Mcdowell

List of Publications by Citations

Source: https://exaly.com/author-pdf/264092/matthew-t-mcdowell-publications-by-citations.pdf
Version: 2024-04-10

95 papers	19,634 citations	53 h-index	114 g-index
114 ext. papers	21,769 ext. citations	14.4 avg, IF	6.91 L-index

#	Paper	IF	Citations
95	Stable cycling of double-walled silicon nanotube battery anodes through solid-electrolyte interphase control. *Nature Nanotechnology*, **2012**, 7, 310-5	28.7	1831
94	A pomegranate-inspired nanoscale design for large-volume-change lithium battery anodes. *Nature Nanotechnology*, **2014**, 9, 187-92	28.7	1804
93	Sulphur-TiO2 yolk-shell nanoarchitecture with internal void space for long-cycle lithium-sulphur batteries. *Nature Communications*, **2013**, 4, 1331	17.4	1698
92	A yolk-shell design for stabilized and scalable li-ion battery alloy anodes. *Nano Letters*, **2012**, 12, 3315-21	11.5	1410
91	Interconnected silicon hollow nanospheres for lithium-ion battery anodes with long cycle life. *Nano Letters*, **2011**, 11, 2949-54	11.5	1155
90	25th anniversary article: Understanding the lithiation of silicon and other alloying anodes for lithium-ion batteries. *Advanced Materials*, **2013**, 25, 4966-85	24	974
89	Stable Li-ion battery anodes by in-situ polymerization of conducting hydrogel to conformally coat silicon nanoparticles. *Nature Communications*, **2013**, 4, 1943	17.4	971
88	Self-healing chemistry enables the stable operation of silicon microparticle anodes for high-energy lithium-ion batteries. *Nature Chemistry*, **2013**, 5, 1042-8	17.6	856
87	In situ TEM of two-phase lithiation of amorphous silicon nanospheres. *Nano Letters*, **2013**, 13, 758-64	11.5	573
86	New nanostructured Li2S/silicon rechargeable battery with high specific energy. *Nano Letters*, **2010** , 10, 1486-91	11.5	547
85	Studying the kinetics of crystalline silicon nanoparticle lithiation with in situ transmission electron microscopy. *Advanced Materials*, **2012**, 24, 6034-41	24	466
84	Prelithiated silicon nanowires as an anode for lithium ion batteries. *ACS Nano*, **2011**, 5, 6487-93	16.7	392
83	Full open-framework batteries for stationary energy storage. *Nature Communications*, **2014**, 5, 3007	17.4	367
82	Rice husks as a sustainable source of nanostructured silicon for high performance Li-ion battery anodes. *Scientific Reports*, **2013**, 3, 1919	4.9	349
81	Improving lithium-sulphur batteries through spatial control of sulphur species deposition on a hybrid electrode surface. *Nature Communications*, **2014**, 5, 3943	17.4	341
80	Fracture of crystalline silicon nanopillars during electrochemical lithium insertion. *Proceedings of the National Academy of Sciences of the United States of America*, **2012**, 109, 4080-5	11.5	326
79	Anomalous shape changes of silicon nanopillars by electrochemical lithiation. *Nano Letters*, **2011**, 11, 3034-9	11.5	316

78	The Effect of Insertion Species on Nanostructured Open Framework Hexacyanoferrate Battery Electrodes. *Journal of the Electrochemical Society*, **2011**, 159, A98-A103	3.9	281
77	Novel size and surface oxide effects in silicon nanowires as lithium battery anodes. *Nano Letters*, **2011**, 11, 4018-25	11.5	251
76	Improving the cycling stability of silicon nanowire anodes with conducting polymer coatings. *Energy and Environmental Science*, **2012**, 5, 7927	35.4	239
75	Demonstration of an electrochemical liquid cell for operando transmission electron microscopy observation of the lithiation/delithiation behavior of Si nanowire battery anodes. *Nano Letters*, **2013**, 13, 6106-12	11.5	232
74	Dry-air-stable lithium silicide-lithium oxide core-shell nanoparticles as high-capacity prelithiation reagents. *Nature Communications*, **2014**, 5, 5088	17.4	203
73	Tunable reaction potentials in open framework nanoparticle battery electrodes for grid-scale energy storage. *ACS Nano*, **2012**, 6, 1688-94	16.7	188
72	Crab shells as sustainable templates from nature for nanostructured battery electrodes. *Nano Letters*, **2013**, 13, 3385-90	11.5	185
71	Challenges in Lithium Metal Anodes for Solid-State Batteries. *ACS Energy Letters*, **2020**, 5, 922-934	20.1	171
70	Mechanistic insights into chemical and photochemical transformations of bismuth vanadate photoanodes. *Nature Communications*, **2016**, 7, 12012	17.4	169
69	Methods for comparing the performance of energy-conversion systems for use in solar fuels and solar electricity generation. *Energy and Environmental Science*, **2015**, 8, 2886-2901	35.4	166
68	Passivation coating on electrospun copper nanofibers for stable transparent electrodes. *ACS Nano*, **2012**, 6, 5150-6	16.7	161
67	The effect of metallic coatings and crystallinity on the volume expansion of silicon during electrochemical lithiation/delithiation. *Nano Energy*, **2012**, 1, 401-410	17.1	136
66	On the elastic modulus of metallic nanowires. *Nano Letters*, **2008**, 8, 3613-8	11.5	133
65	Stable Solar-Driven Water Oxidation to O2(g) by Ni-Oxide-Coated Silicon Photoanodes. *Journal of Physical Chemistry Letters*, **2015**, 6, 592-8	6.4	129
64	Visualizing Chemomechanical Degradation of a Solid-State Battery Electrolyte. *ACS Energy Letters*, **2019**, 4, 1475-1483	20.1	124
63	Improved Stability of Polycrystalline Bismuth Vanadate Photoanodes by Use of Dual-Layer Thin TiO2/Ni Coatings. *Journal of Physical Chemistry C*, **2014**, 118, 19618-19624	3.8	117
62	Interface engineering of the photoelectrochemical performance of Ni-oxide-coated n-Si photoanodes by atomic-layer deposition of ultrathin films of cobalt oxide. *Energy and Environmental Science*, **2015**, 8, 2644-2649	35.4	111
61	Highly conductive, mechanically robust, and electrochemically inactive TiC/C nanofiber scaffold for high-performance silicon anode batteries. *ACS Nano*, **2011**, 5, 8346-51	16.7	109

60	Interphase Morphology between a Solid-State Electrolyte and Lithium Controls Cell Failure. *ACS Energy Letters*, **2019**, 4, 591-599	20.1	108
59	Chemo-Mechanical Challenges in Solid-State Batteries. *Trends in Chemistry*, **2019**, 1, 845-857	14.8	102
58	The influence of structure and processing on the behavior of TiO2 protective layers for stabilization of n-Si/TiO2/Ni photoanodes for water oxidation. *ACS Applied Materials & Interfaces*, **2015**, 7, 15189-99	9.5	100
57	Stabilization of n-cadmium telluride photoanodes for water oxidation to O2(g) in aqueous alkaline electrolytes using amorphous TiO2 films formed by atomic-layer deposition. *Energy and Environmental Science*, **2014**, 7, 3334-3337	35.4	100
56	Bending and tensile deformation of metallic nanowires. *Modelling and Simulation in Materials Science and Engineering*, **2008**, 16, 045003	2	97
55	In Situ XPS Investigation of Transformations at Crystallographically Oriented MoS Interfaces. *ACS Applied Materials & Interfaces*, **2017**, 9, 32394-32404	9.5	87
54	In situ observation of divergent phase transformations in individual sulfide nanocrystals. *Nano Letters*, **2015**, 15, 1264-71	11.5	86
53	Improving O2 production of WO3 photoanodes with IrO2 in acidic aqueous electrolyte. *Physical Chemistry Chemical Physics*, **2014**, 16, 3623-31	3.6	85
52	Challenges for and Pathways toward Li-Metal-Based All-Solid-State Batteries. *ACS Energy Letters*,1399-1404	20.1	78
51	The mechanics of large-volume-change transformations in high-capacity battery materials. *Extreme Mechanics Letters*, **2016**, 9, 480-494	3.9	78
50	Protection of inorganic semiconductors for sustained, efficient photoelectrochemical water oxidation. *Catalysis Today*, **2016**, 262, 11-23	5.3	77
49	Linking void and interphase evolution to electrochemistry in solid-state batteries using operando X-ray tomography. *Nature Materials*, **2021**, 20, 503-510	27	75
48	Atomic layer deposition of lead sulfide quantum dots on nanowire surfaces. *Nano Letters*, **2011**, 11, 934-40	11.5	73
47	Distinct Nanoscale Interphases and Morphology of Lithium Metal Electrodes Operating at Low Temperatures. *Nano Letters*, **2019**, 19, 8664-8672	11.5	72
46	Efficient Low-Temperature Cycling of Lithium Metal Anodes by Tailoring the Solid-Electrolyte Interphase. *ACS Energy Letters*, **2020**, 5, 2411-2420	20.1	69
45	Reduction of Aqueous CO2 to 1-Propanol at MoS2 Electrodes. *Chemistry of Materials*, **2018**, 30, 4902-4908	9.6	58
44	Comparative Study in Acidic and Alkaline Media of the Effects of pH and Crystallinity on the Hydrogen-Evolution Reaction on MoS2 and MoSe2. *ACS Energy Letters*, **2017**, 2, 2234-2238	20.1	56
43	Functionalization of silicon nanowire surfaces with metal-organic frameworks. *Nano Research*, **2012** , 5, 109-116	10	55

42	Plastic deformation of pentagonal silver nanowires: Comparison between AFM nanoindentation and atomistic simulations. *Physical Review B*, **2008**, 77,	3.3	51
41	Single Nanostructure Electrochemical Devices for Studying Electronic Properties and Structural Changes in Lithiated Si Nanowires. *Advanced Energy Materials*, **2011**, 1, 894-900	21.8	50
40	Understanding Transformations in Battery Materials Using in Situ and Operando Experiments: Progress and Outlook. *ACS Energy Letters*, **2020**, 5, 335-345	20.1	50
39	Avoiding Fracture in a Conversion Battery Material through Reaction with Larger Ions. *Joule*, **2018**, 2, 1783-1799	27.8	45
38	Silicon-Core-Carbon-Shell Nanoparticles for Lithium-Ion Batteries: Rational Comparison between Amorphous and Graphitic Carbon Coatings. *Nano Letters*, **2019**, 19, 7236-7245	11.5	44
37	Spontaneous and reversible hollowing of alloy anode nanocrystals for stable battery cycling. *Nature Nanotechnology*, **2020**, 15, 475-481	28.7	42
36	Distinct nanoscale reaction pathways in a sulfide material for sodium and lithium batteries. *Journal of Materials Chemistry A*, **2017**, 5, 11701-11709	13	41
35	Low-temperature self-catalytic growth of tin oxide nanocones over large areas. *ACS Nano*, **2011**, 5, 5800-	16.7	35
34	How Metallic Protection Layers Extend the Lifetime of NASICON-Based Solid-State Lithium Batteries. *Journal of the Electrochemical Society*, **2020**, 167, 050502	3.9	31
33	The Effect of Nickel on MoS Growth Revealed with in Situ Transmission Electron Microscopy. *ACS Nano*, **2019**, 13, 7117-7126	16.7	30
32	Operando Synchrotron Measurement of Strain Evolution in Individual Alloying Anode Particles within Lithium Batteries. *ACS Energy Letters*, **2018**, 3, 349-355	20.1	26
31	Toward an Atomistic Understanding of Solid-State Electrochemical Interfaces for Energy Storage. *Joule*, **2018**, 2, 2189-2193	27.8	25
30	Stress evolution during cycling of alloy-anode solid-state batteries. *Joule*, **2021**, 5, 2450-2465	27.8	23
29	Challenges and Opportunities for Fast Charging of Solid-State Lithium Metal Batteries. *ACS Energy Letters*,3734-3749	20.1	22
28	Si/TiO2Tandem-Junction Microwire Arrays for Unassisted Solar-Driven Water Splitting. *Journal of the Electrochemical Society*, **2016**, 163, H261-H264	3.9	20
27	Toward Electrochemical Studies on the Nanometer and Atomic Scales: Progress, Challenges, and Opportunities. *ACS Nano*, **2019**, 13, 9735-9780	16.7	18
26	Reaction Front Evolution during Electrochemical Lithiation of Crystalline Silicon Nanopillars. *Israel Journal of Chemistry*, **2012**, 52, 1118-1123	3.4	18
25	Porous Metals from Chemical Dealloying for Solid-State Battery Anodes. *Chemistry of Materials*, **2020**, 32, 2461-2469	9.6	14

24	Stack Pressure Measurements to Probe the Evolution of the Lithium∣Solid-State Electrolyte Interface. *ACS Energy Letters*, **2021**, 6, 3261-3269	20.1	14
23	Toward High-Capacity Battery Anode Materials: Chemistry and Mechanics Intertwined. *Chemistry of Materials*, **2020**, 32, 8755-8771	9.6	11
22	Mechano-Chemical Surface Modification with Cu2S: Inducing Superior Lubricity. *Tribology Letters*, **2016**, 64, 1	2.8	10
21	Reversible Tuning of the Surface Plasmon Resonance of Indium Tin Oxide Nanocrystals by Gas-Phase Oxidation and Reduction. *Journal of Physical Chemistry C*, **2017**, 121, 15970-15976	3.8	7
20	Mechanical behavior of inorganic lithium-conducting solid electrolytes. *Journal of Power Sources*, **2021**, 516, 230672	8.9	7
19	In Situ Dynamics during Heating of Copper-Intercalated Bismuth Telluride. *Matter*, **2020**, 3, 1246-1262	12.7	7
18	Enabling highly reversible sodium metal cycling across a wide temperature range with dual-salt electrolytes. *Journal of Materials Chemistry A*, **2021**, 9, 10992-11000	13	7
17	Dynamic Nanomaterials Phenomena Investigated with in Situ Transmission Electron Microscopy: A Nano Letters Virtual Issue. *Nano Letters*, **2018**, 18, 657-659	11.5	6
16	Role of Areal Capacity in Determining Short Circuiting of Sulfide-Based Solid-State Batteries.. *ACS Applied Materials & Interfaces*, **2022**, 14, 4051-4060	9.5	6
15	Seeded Nanowire and Microwire Growth from Lithium Alloys. *Nano Letters*, **2018**, 18, 4331-4337	11.5	5
14	Solid-State Route for the Synthesis of Scalable, Luminescent Silicon and Germanium Nanocrystals. *ChemNanoMat*, **2018**, 4, 423-429	3.5	4
13	In Situ Characterization of Transformations in Nanoscale Layered Metal Chalcogenide Materials: A Review. *ChemNanoMat*, **2021**, 7, 208-222	3.5	3
12	Stretched to the Limit for Better Batteries. *Joule*, **2018**, 2, 818-819	27.8	3
11	Silicon Nanowire Electrodes for Lithium-Ion Battery Negative Electrodes **2013**, 1-68		2
10	Linking Void and Interphase Evolution to Electrochemistry in Solid-State Batteries Using Operando X-Ray Tomography		2
9	Nanomechanical measurements shed light on solid-state battery degradation. *MRS Bulletin*, **2020**, 45, 889-890	3.2	2
8	Unveiling interfacial dynamics and structural degradation of solid electrolytes in a seawater battery system. *Journal of Materials Chemistry A*, **2020**, 8, 21804-21811	13	2
7	Understanding the Effects of Alloy Films on the Electrochemical Behavior of Lithium Metal Anodes with Operando Optical Microscopy. *Journal of the Electrochemical Society*, **2021**, 168, 100517	3.9	1

6	The Role of Nanoscale Science for Advancing Batteries. *Nano Letters*, **2021**, 21, 6353-6355	11.5	1
5	Melting, Crystallization, and Alloying Dynamics in Nanoscale Bismuth Telluride. *Nano Letters*, **2021**, 21, 8197-8204	11.5	1
4	Chapter 8:Nanowires for High-Performance Li-Ion Battery Electrodes. *RSC Smart Materials*, **2014**, 363-399	0.6	
3	The Effect of Temperature and SEI Formation on the Nucleation and Growth of Electrochemically Plated Lithium. *ECS Meeting Abstracts*, **2020**, MA2020-02, 785-785	0	
2	In Situ and Operando Imaging of the Evolution of Battery Materials and Interfaces. *Microscopy and Microanalysis*, **2021**, 27, 388-388	0.5	
1	In Situ TEM Investigation of the Spontaneous Hollowing of Alloy Anode Nanocrystals. *Microscopy and Microanalysis*, **2021**, 27, 1972-1973	0.5	