

# Laurence J Hardwick

## List of Publications by Year in descending order

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115  
papers

16,811  
citations

53660

45  
h-index

33814

99  
g-index

122  
all docs

122  
docs citations

122  
times ranked

16002  
citing authors

#	ARTICLE	IF	CITATIONS
1	Li <sup>+</sup> /O <sub>2</sub> and Li <sup>+</sup> /S batteries with high energy storage. <i>Nature Materials</i> , 2012, 11, 19-29.	13.3	8,166
2	Reactions in the Rechargeable Lithium <sup>+</sup> /O <sub>2</sub> Battery with Alkyl Carbonate Electrolytes. <i>Journal of the American Chemical Society</i> , 2011, 133, 8040-8047.	6.6	1,157
3	The Lithium <sup>+</sup> /Oxygen Battery with Ether-Based Electrolytes. <i>Angewandte Chemie - International Edition</i> , 2011, 50, 8609-8613.	7.2	1,009
4	Lithium Diffusion in Graphitic Carbon. <i>Journal of Physical Chemistry Letters</i> , 2010, 1, 1176-1180.	2.1	662
5	Oxygen Reactions in a Non-Aqueous Li <sup>+</sup> Electrolyte. <i>Angewandte Chemie - International Edition</i> , 2011, 50, 6351-6355.	7.2	518
6	Lithium-air and lithium-sulfur batteries. <i>MRS Bulletin</i> , 2011, 36, 506-512.	1.7	272
7	<i>In situ</i> Raman study of lithium-ion intercalation into microcrystalline graphite. <i>Faraday Discussions</i> , 2014, 172, 223-237.	1.6	271
8	Surface structural disordering in graphite upon lithium intercalation/deintercalation. <i>Journal of Power Sources</i> , 2010, 195, 3655-3660.	4.0	260
9	Lithium Intercalation into Mesoporous Anatase with an Ordered 3D Pore Structure. <i>Angewandte Chemie - International Edition</i> , 2010, 49, 2570-2574.	7.2	218
10	Nano silicon for lithium-ion batteries. <i>Electrochimica Acta</i> , 2006, 52, 973-978.	2.6	191
11	Three-dimensional protonic conductivity in porous organic cage solids. <i>Nature Communications</i> , 2016, 7, 12750.	5.8	133
12	An in situ Raman study of the intercalation of supercapacitor-type electrolyte into microcrystalline graphite. <i>Electrochimica Acta</i> , 2006, 52, 675-680.	2.6	128
13	Electrochemical lithium insertion into anatase-type TiO <sub>2</sub> : An in situ Raman microscopy investigation. <i>Electrochimica Acta</i> , 2007, 52, 5357-5367.	2.6	124
14	Raman study of lithium coordination in EMI-TFSI additive systems as lithium-ion battery ionic liquid electrolytes. <i>Journal of Raman Spectroscopy</i> , 2007, 38, 110-112.	1.2	121
15	Lithium Insertion into Anatase Nanotubes. <i>Chemistry of Materials</i> , 2012, 24, 4468-4476.	3.2	110
16	In situ Raman spectroscopy of insertion electrodes for lithium-ion batteries and supercapacitors: First cycle effects. <i>Journal of Physics and Chemistry of Solids</i> , 2008, 69, 1232-1237.	1.9	103
17	Charge storage mechanism of activated manganese oxide composites for pseudocapacitors. <i>Journal of Materials Chemistry A</i> , 2015, 3, 12786-12795.	5.2	95
18	The pursuit of rechargeable non-aqueous lithium <sup>+</sup> /oxygen battery cathodes. <i>Current Opinion in Solid State and Materials Science</i> , 2012, 16, 178-185.	5.6	94

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19	Utilizing in Situ Electrochemical SHINERS for Oxygen Reduction Reaction Studies in Aprotic Electrolytes. <i>Journal of Physical Chemistry Letters</i> , 2016, 7, 2119-2124.	2.1	88
20	Microwave plasma chemical vapor deposition of nano-structured Sn/C composite thin-film anodes for Li-ion batteries. <i>Journal of Power Sources</i> , 2007, 173, 965-971.	4.0	87
21	Advanced in situ characterization methods applied to carbonaceous materials. <i>Journal of Power Sources</i> , 2005, 146, 15-20.	4.0	80
22	Surface reactivity of graphite materials and their surface passivation during the first electrochemical lithium insertion. <i>Journal of Power Sources</i> , 2006, 153, 300-311.	4.0	79
23	Mechanistic Insight into the Superoxide Induced Ring Opening in Propylene Carbonate Based Electrolytes using in Situ Surface-Enhanced Infrared Spectroscopy. <i>Journal of the American Chemical Society</i> , 2016, 138, 3745-3751.	6.6	79
24	A Pyrene-4,5,9,10-Tetraone-Based Covalent Organic Framework Delivers High Specific Capacity as a Li-Ion Positive Electrode. <i>Journal of the American Chemical Society</i> , 2022, 144, 9434-9442.	6.6	77
25	Direct Detection of Discharge Products in Lithium-Oxygen Batteries by Solid-State NMR Spectroscopy. <i>Angewandte Chemie - International Edition</i> , 2012, 51, 8560-8563.	7.2	75
26	A highly active nickel electrocatalyst shows excellent selectivity for CO <sub>2</sub> reduction in acidic media. <i>Chemical Science</i> , 2016, 7, 1521-1526.	3.7	74
27	2020 roadmap on solid-state batteries. <i>JPhys Energy</i> , 2020, 2, 032008.	2.3	74
28	Integrated Covalent Organic Framework/Carbon Nanotube Composite as Li-Ion Positive Electrode with Ultra-High Rate Performance. <i>Advanced Energy Materials</i> , 2021, 11, 2101880.	10.2	73
29	Graphite surface disorder detection using in situ Raman microscopy. <i>Solid State Ionics</i> , 2006, 177, 2801-2806.	1.3	71
30	Important parameters affecting the cell voltage of aqueous electrical double-layer capacitors. <i>Journal of Power Sources</i> , 2013, 242, 289-298.	4.0	71
31	In Situ Study of Li Intercalation into Highly Crystalline Graphitic Flakes of Varying Thicknesses. <i>Journal of Physical Chemistry Letters</i> , 2016, 7, 4291-4296.	2.1	70
32	Activated Lithium-Metal-Oxides as Catalytic Electrodes for Li-O <sub>2</sub> Cells. <i>Electrochemical and Solid-State Letters</i> , 2011, 14, A64.	2.2	66
33	In situ Raman spectroscopy of carbon-coated ZnFe <sub>2</sub> O <sub>4</sub> anode material in Li-ion batteries - investigation of SEI growth. <i>Chemical Communications</i> , 2016, 52, 3970-3973.	2.2	64
34	Observation of Interfacial Degradation of Li <sub>6</sub> PS <sub>5</sub> Cl against Lithium Metal and LiCoO <sub>2</sub> via In Situ Electrochemical Raman Microscopy. <i>Batteries and Supercaps</i> , 2020, 3, 647-652.	2.4	63
35	Stabilization of O-O Bonds by d <sup>0</sup> Cations in Li <sub>4</sub> NiWO <sub>6</sub> (0.25) Rock Salt Oxides as the Origin of Large Voltage Hysteresis. <i>Journal of the American Chemical Society</i> , 2019, 141, 7333-7346.	6.6	61
36	Criteria appointing the highest acceptable cell voltage of asymmetric supercapacitors. <i>Electrochemistry Communications</i> , 2013, 27, 81-84.	2.3	60

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37	Electrochemical doping of single-walled carbon nanotubes in double layer capacitors studied by in situ Raman spectroscopy. <i>Carbon</i> , 2009, 47, 38-52.	5.4	58
38	Behaviour of highly crystalline graphites in lithium-ion cells with propylene carbonate containing electrolytes. <i>Journal of Power Sources</i> , 2005, 146, 134-141.	4.0	57
39	Behaviour of highly crystalline graphitic materials in lithium-ion cells with propylene carbonate containing electrolytes: An in situ Raman and SEM study. <i>Electrochimica Acta</i> , 2007, 52, 4884-4891.	2.6	56
40	Solvent-mediated Control of the Electrochemical Discharge Products of Non-aqueous Sodium-Oxygen Electrochemistry. <i>Angewandte Chemie - International Edition</i> , 2016, 55, 8254-8257.	7.2	56
41	An Investigation of the Effect of Graphite Degradation on Irreversible Capacity in Lithium-ion Cells. <i>Journal of the Electrochemical Society</i> , 2008, 155, A442.	1.3	54
42	FTIR and Raman Study of the $\text{Li}_{x}\text{Ti}_{y}\text{Mn}_{1-y}\text{O}_{2}$ ( $y=0,0.11$ ) Cathodes in Methylpropyl Pyrrolidinium Bis(fluoro-sulfonyl)imide, LiTFSI Electrolyte. <i>Journal of the Electrochemical Society</i> , 2009, 156, A120.	1.3	48
43	A light-weight free-standing graphene foam-based interlayer towards improved Li-S cells. <i>Electrochimica Acta</i> , 2019, 299, 479-488.	2.6	45
44	In Situ Surface-Enhanced Infrared Spectroscopy to Identify Oxygen Reduction Products in Nonaqueous Metal-Oxygen Batteries. <i>Journal of Physical Chemistry C</i> , 2017, 121, 19657-19667.	1.5	42
45	Water oxidation intermediates on iridium oxide electrodes probed by <i>in situ</i> electrochemical SHINERS. <i>Chemical Communications</i> , 2020, 56, 1129-1132.	2.2	41
46	Advanced Spectroelectrochemical Techniques to Study Electrode Interfaces Within Lithium-Ion and Lithium-Oxygen Batteries. <i>Annual Review of Analytical Chemistry</i> , 2019, 12, 323-346.	2.8	39
47	Investigating the presence of adsorbed species on Pt steps at low potentials. <i>Nature Communications</i> , 2022, 13, 2550.	5.8	37
48	Electrochemical performance of laser micro-structured nickel oxyhydroxide cathodes. <i>Journal of Power Sources</i> , 2014, 271, 42-47.	4.0	35
49	Shell isolated nanoparticles for enhanced Raman spectroscopy studies in lithium-oxygen cells. <i>Faraday Discussions</i> , 2017, 205, 469-490.	1.6	35
50	Scaling up Nano-Li <sub>4</sub> Ti <sub>5</sub> O <sub>12</sub> for High-Power Lithium-Ion Anodes Using Large Scale Flame Spray Pyrolysis. <i>Journal of the Electrochemical Society</i> , 2015, 162, A2331-A2338.	1.3	32
51	In situ Raman spectroscopic analysis of the lithiation and sodiation of antimony microparticles. <i>Electrochimica Acta</i> , 2017, 247, 296-305.	2.6	32
52	In-situ Electrochemical SHINERS Investigation of SEI Composition on Carbon-Coated Zn <sub>0.9</sub> Fe <sub>0.1</sub> O Anode for Lithium-Ion Batteries. <i>Batteries and Supercaps</i> , 2019, 2, 168-177.	2.4	32
53	The Effect of Degrees of Inversion on the Electronic Structure of Spinel NiCo <sub>2</sub> O <sub>4</sub> : A Density Functional Theory Study. <i>ACS Omega</i> , 2021, 6, 9692-9699.	1.6	32
54	Element selection for crystalline inorganic solid discovery guided by unsupervised machine learning of experimentally explored chemistry. <i>Nature Communications</i> , 2021, 12, 5561.	5.8	32

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55	Dynamics of Solid-Electrolyte Interphase Formation on Silicon Electrodes Revealed by Combinatorial Electrochemical Screening. <i>Angewandte Chemie - International Edition</i> , 2022, 61, .	7.2	32
56	Rechargeable Multi-Valent Metal-Air Batteries. <i>Johnson Matthey Technology Review</i> , 2018, 62, 134-149.	0.5	31
57	Engineering of electrospun polyimide separators for electrical double-layer capacitors and lithium-ion cells. <i>Journal of Power Sources</i> , 2021, 482, 229054.	4.0	31
58	Lithium Transport in $\text{Li}_4\text{M}_0.4\text{M}'_{0.6}\text{S}_4$ ( $\text{M} = \text{Al}^{3+}, \text{Ga}^{3+}, \text{and } \text{M}'^{2+} = \text{Ge}^{4+}, \text{Sn}^{4+}$ ): Combined Crystallographic, Conductivity, Solid State NMR, and Computational Studies. <i>Chemistry of Materials</i> , 2018, 30, 7183-7200.	3.2	28
59	Characterization of Aluminum Doped Lithium-Manganese Rich Composites for Higher Rate Lithium-Ion Cathodes. <i>Journal of the Electrochemical Society</i> , 2014, 161, A2109-A2116.	1.3	27
60	Kerr gated Raman spectroscopy of $\text{LiPF}_6$ salt and $\text{LiPF}_6$ -based organic carbonate electrolyte for Li-ion batteries. <i>Physical Chemistry Chemical Physics</i> , 2019, 21, 23833-23842.	1.3	27
61	Intercalation behaviour of Li and Na into 3-layer and multilayer $\text{MoS}_2$ flakes. <i>Electrochimica Acta</i> , 2020, 331, 135284.	2.6	26
62	Oxygen reactions on $\text{Pt}\{111\}$ in a non-aqueous $\text{Na}^+$ electrolyte: site selective stabilisation of a sodium peroxy species. <i>Chemical Science</i> , 2019, 10, 2956-2964.	3.7	25
63	The role of re-aggregation on the performance of electrochemically exfoliated many-layer graphene for Li-ion batteries. <i>Journal of Electroanalytical Chemistry</i> , 2015, 753, 35-41.	1.9	24
64	Divalent Nonaqueous Metal-Air Batteries. <i>Frontiers in Energy Research</i> , 2021, 8, .	1.2	24
65	Time-resolved SERS study of the oxygen reduction reaction in ionic liquid electrolytes for non-aqueous lithium-oxygen cells. <i>Faraday Discussions</i> , 2018, 206, 379-392.	1.6	23
66	Evaluating chemical bonding in dioxides for the development of metal-oxygen batteries: vibrational spectroscopic trends of dioxygenyls, dioxygen, superoxides and peroxides. <i>Physical Chemistry Chemical Physics</i> , 2019, 21, 1552-1563.	1.3	22
67	Raman spectroscopic and structural studies of heat-treated graphites for lithium-ion batteries. <i>Ionics</i> , 2003, 9, 258-265.	1.2	19
68	Data Management Plans: the Importance of Data Management in the BIG-MAP Project**. <i>Batteries and Supercaps</i> , 2021, 4, 1803-1812.	2.4	19
69	Influence of Tetraalkylammonium Cation Chain Length on Gold and Glassy Carbon Electrode Interfaces for Alkali Metal-Oxygen Batteries. <i>Journal of Physical Chemistry Letters</i> , 2014, 5, 3924-3930.	2.1	18
70	Template-free synthesis of nitrogen doped carbon materials from an organic ionic dye (murexide) for supercapacitor application. <i>RSC Advances</i> , 2017, 7, 54626-54637.	1.7	16
71	Design Parameters for Ionic Liquid-Molecular Solvent Blend Electrolytes to Enable Stable Li Metal Cycling Within $\text{Li}_2\text{O}$ Batteries. <i>Advanced Functional Materials</i> , 2021, 31, 2010627.	7.8	16
72	Microwave plasma chemical vapor deposition of graphitic carbon thin films. <i>Carbon</i> , 2010, 48, 1552-1557.	5.4	14

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73	Analytical SERS: general discussion. Faraday Discussions, 2017, 205, 561-600.	1.6	14
74	Enhanced oxygen evolution performance of spinel Fe <sub>0.1</sub> Ni <sub>0.9</sub> Co <sub>2</sub> O <sub>4</sub> /Activated carbon composites. Electrochimica Acta, 2019, 326, 134986.	2.6	14
75	Crosslinked Polyimide and Reduced Graphene Oxide Composites as Long Cycle Life Positive Electrode for Lithium-Ion Cells. ChemSusChem, 2020, 13, 5571-5579.	3.6	14
76	Quantitative Resolution of Complex Stoichiometric Changes during Electrochemical Cycling by Density Functional Theory-Assisted Electrochemical Quartz Crystal Microbalance. ACS Applied Energy Materials, 2020, 3, 3347-3357.	2.5	14
77	Solvent-Mediated Control of the Electrochemical Discharge Products of Non-Aqueous Sodium-Oxygen Electrochemistry. Angewandte Chemie, 2016, 128, 8394-8397.	1.6	13
78	Na <sub>0.35</sub> MnO <sub>2</sub> as an ionic conductor with randomly distributed nano-sized layers. Journal of Materials Chemistry A, 2017, 5, 10021-10026.	5.2	13
79	Electrochemistry: general discussion. Faraday Discussions, 2018, 206, 405-426.	1.6	13
80	Adsorption, surface relaxation and electrolyte structure at Pt(111) electrodes in non-aqueous and aqueous acetonitrile electrolytes. Physical Chemistry Chemical Physics, 2019, 21, 8654-8662.	1.3	12
81	Carbon electrodes for energy storage: general discussion. Faraday Discussions, 2014, 172, 239-260.	1.6	11
82	Fabrication of a Light-Weight Dual-Function Modified Separator towards High-Performance Lithium-Sulfur Batteries. ChemElectroChem, 2019, 6, 3648-3656.	1.7	11
83	Na <sub>2</sub> Fe <sub>2</sub> OS <sub>2</sub> , a new earth abundant oxysulphide cathode material for Na-ion batteries. Journal of Materials Chemistry A, 2020, 8, 20553-20569.	5.2	11
84	Sn 5s <sup>2</sup> lone pairs and the electronic structure of tin sulphides: A photoreflectance, high-energy photoemission, and theoretical investigation. Physical Review Materials, 2020, 4, .	0.9	11
85	Growth and dissolution of Na <sub>2</sub> O in an ether-based electrolyte as the discharge product in the Na-O <sub>2</sub> cell. Chemical Communications, 2018, 54, 3444-3447.	2.2	8
86	Structure and dynamics of ionic liquids: general discussion. Faraday Discussions, 2018, 206, 291-337.	1.6	8
87	Application of In Situ Techniques for Investigations in Lithium-Ion Battery Materials. ECS Transactions, 2007, 3, 29-43.	0.3	7
88	Extended Condensed Ultraphosphate Frameworks with Monovalent Ions Combine Lithium Mobility with High Computed Electrochemical Stability. Journal of the American Chemical Society, 2021, 143, 18216-18232.	6.6	7
89	An electrochemical investigation of oxygen adsorption on Pt single crystal electrodes in a non-aqueous Li <sup>+</sup> electrolyte. Electrochemistry Communications, 2020, 119, 106814.	2.3	6
90	Trapped interfacial redox introduces reversibility in the oxygen reduction reaction in a non-aqueous Ca <sup>2+</sup> electrolyte. Chemical Science, 2021, 12, 8909-8919.	3.7	5

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91	Porous polyimide separator promotes uniform lithium plating for lithium-free cells. <i>Electrochemical Science Advances</i> , 2022, 2, e2100091.	1.2	5
92	Lithium Insertion into Graphitic Carbon Observed via Operando Kerr-Gated Raman Spectroscopy Enables High State of Charge Diagnostics. <i>ACS Energy Letters</i> , 2022, 7, 2611-2618.	8.8	5
93	The many faces of carbon in electrochemistry: general discussion. <i>Faraday Discussions</i> , 2014, 172, 117-137.	1.6	4
94	Approach to Wide-Frequency Battery Impedance Measurements in Commercial Applications. , 2019, , .		4
95	Batteries: Avoiding oxygen. <i>Nature Energy</i> , 2016, 1, .	19.8	2
96	Dynamics of Solid-Electrolyte Interphase Formation on Silicon Electrodes Revealed by Combinatorial Electrochemical Screening. <i>Angewandte Chemie</i> , 0, , .	1.6	2
97	Long-Life and pH-Stable SnO <sub>2</sub> -Coated Au Nanoparticles for SHINERS. <i>Journal of Physical Chemistry C</i> , 0, , .	1.5	2
98	Studying the Origin and Mechanism of Irreversible Capacity in Lithium-Ion Cells. <i>ECS Transactions</i> , 2008, 11, 139-148.	0.3	0
99	Ionic Liquids: Design Parameters for Ionic Liquid-Molecular Solvent Blend Electrolytes to Enable Stable Li Metal Cycling Within Li-O <sub>2</sub> Batteries (Adv. Funct. Mater. 27/2021). <i>Advanced Functional Materials</i> , 2021, 31, 2170193.	7.8	0
100	(Invited) Oxygen Reactions at Poly and Single Crystalline Electrodes in a Sodium-Ion Containing Aprotic Solvent. <i>ECS Meeting Abstracts</i> , 2018, , .	0.0	0
101	Anionic Redox in Li-Rich Rocksalt Oxides Studied Via X-Ray Photoelectron Spectroscopy. <i>ECS Meeting Abstracts</i> , 2019, , .	0.0	0
102	Oxygen Reduction at Pt{Hkl} Electrodes in an Alkali Metal Ion Containing Aprotic Solvent. <i>ECS Meeting Abstracts</i> , 2019, , .	0.0	0
103	Exploring Ionic Liquid-Solvent Blend Formulations for the Stable Cycling of Li-Metal Anodes in Li-O <sub>2</sub> Batteries. <i>ECS Meeting Abstracts</i> , 2019, , .	0.0	0
104	Kerr Gated Raman Spectroscopy to Investigate Lithium-Ion Battery Interfaces. <i>ECS Meeting Abstracts</i> , 2019, , .	0.0	0
105	Binder Degradation in Sodium- and Potassium-Oxygen Batteries. <i>ECS Meeting Abstracts</i> , 2019, , .	0.0	0
106	Achieving Stable Cycling of Li-Metal Anodes in Li-O <sub>2</sub> Batteries: Optimizing Solvation Environment in Ionic Liquid/Solvent Blend Formulations. <i>ECS Meeting Abstracts</i> , 2020, MA2020-01, 441-441.	0.0	0
107	(Invited) Kerr Gated Raman Spectroscopy to Investigate Aging Processes on Lithium-Ion Electrode Interfaces. <i>ECS Meeting Abstracts</i> , 2020, MA2020-01, 190-190.	0.0	0
108	Observation of Interfacial Degradation of Solid Electrolytes Against Lithium Metal and Layered Transition Metal Oxides Via in Situ Electrochemical Raman Microscopy. <i>ECS Meeting Abstracts</i> , 2020, MA2020-02, 889-889.	0.0	0

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109	Ordered Oxygen Vacancies in the Lithium-Rich Oxide $\text{Li}_4\text{CuSbO}_{5.5}$ , a Triclinic Structure Type Derived from the Cubic Rocksalt Structure. <i>Inorganic Chemistry</i> , 2021, 60, 19022-19034.	1.9	0
110	(Invited) Design of Electrospun Polyimide-Based Separators for Electrical Double-Layer Capacitors and Lithium-Ion Batteries. <i>ECS Meeting Abstracts</i> , 2020, MA2020-02, 604-604.	0.0	0
111	Multi-Functional Polyimide Separators for Electrochemical Capacitor and Lithium-Ion Cell Applications. <i>ECS Meeting Abstracts</i> , 2022, MA2022-01, 550-550.	0.0	0
112	Operando electrochemical Kerr Gated Raman Spectroscopy to Probe the High States of Charge in Graphite Electrodes for Li-Ion Batteries. <i>ECS Meeting Abstracts</i> , 2022, MA2022-01, 2475-2475.	0.0	0
113	Operando Surface Enhanced Infrared Spectroscopic Investigations of Interfacial Restructuring and Oxygen Electrochemistry in Ionic Liquid Electrolytes for Metal-Air Batteries. <i>ECS Meeting Abstracts</i> , 2022, MA2022-01, 569-569.	0.0	0
114	Stable Formulations for the Lithium and Sodium Metal Interfaces in Alkali Metal-Oxygen Batteries. <i>ECS Meeting Abstracts</i> , 2022, MA2022-01, 496-496.	0.0	0
115	Gas Evolution from Sulfide-Based All-Solid-State Batteries. <i>ECS Meeting Abstracts</i> , 2022, MA2022-01, 231-231.	0.0	0