Frederic Jaouen

List of Publications by Year
in descending order

120 papers	23,991 citations	13099 68 h-index	17592 121 g-index
128 all docs	128 docs citations	128 times ranked	14067 citing authors

#	Article	IF	Citations
1	Iron-Based Catalysts with Improved Oxygen Reduction Activity in Polymer Electrolyte Fuel Cells. Science, 2009, 324, 71-74.	12.6	2,880
2	Identification of catalytic sites for oxygen reduction in iron- and nitrogen-doped grapheneÂmaterials. Nature Materials, 2015, 14, 937-942.	27.5	1,714
3	Recent advances in non-precious metal catalysis for oxygen-reduction reaction in polymer electrolyte fuelcells. Energy and Environmental Science, 2011, 4, 114-130.	30.8	1,456
4	Iron-based cathode catalyst with enhanced power density in polymer electrolyte membrane fuel cells. Nature Communications, 2011, 2, 416.	12.8	1,262
5	Metal organic frameworks for electrochemical applications. Energy and Environmental Science, 2012, 5, 9269.	30.8	767
6	Cross-Laboratory Experimental Study of Non-Noble-Metal Electrocatalysts for the Oxygen Reduction Reaction. ACS Applied Materials & Interfaces, 2009, 1, 1623-1639.	8.0	655
7	Structure of the catalytic sites in Fe/N/C-catalysts for O2-reduction in PEM fuel cells. Physical Chemistry Chemical Physics, 2012, 14, 11673.	2.8	622
8	Highly active oxygen reduction non-platinum group metal electrocatalyst without direct metalâ€"nitrogen coordination. Nature Communications, 2015, 6, 7343.	12.8	583
9	Heat-Treated Fe/N/C Catalysts for O2Electroreduction:Â Are Active Sites Hosted in Micropores?. Journal of Physical Chemistry B, 2006, 110, 5553-5558.	2.6	545
10	Activityâ€"Selectivity Trends in the Electrochemical Production of Hydrogen Peroxide over Single-Site Metalâ€"Nitrogenâ€"Carbon Catalysts. Journal of the American Chemical Society, 2019, 141, 12372-12381.	13.7	493
11	Structural and mechanistic basis for the high activity of Feâ€"Nâ€"C catalysts toward oxygen reduction. Energy and Environmental Science, 2016, 9, 2418-2432.	30.8	472
12	Identification of catalytic sites in cobalt-nitrogen-carbon materials for the oxygen reduction reaction. Nature Communications, 2017, 8, 957.	12.8	443
13	Electroreduction of CO₂ on Singleâ€Site Copperâ€Nitrogenâ€Doped Carbon Material: Selective Formation of Ethanol and Reversible Restructuration of the Metal Sites. Angewandte Chemie - International Edition, 2019, 58, 15098-15103.	13.8	369
14	Identification of durable and non-durable FeNx sites in Feâ€"Nâ€"C materials for proton exchange membrane fuel cells. Nature Catalysis, 2021, 4, 10-19.	34.4	368
15	Electrochemical Reduction of CO₂ Catalyzed by Fe-N-C Materials: A Structureâ€"Selectivity Study. ACS Catalysis, 2017, 7, 1520-1525.	11.2	363
16	Oxygen Reduction Catalysts for Polymer Electrolyte Fuel Cells from the Pyrolysis of Iron Acetate Adsorbed on Various Carbon Supports. Journal of Physical Chemistry B, 2003, 107, 1376-1386.	2.6	361
17	Chemical vapour deposition of Feâ€"Nâ€"C oxygen reduction catalysts with full utilization of dense Feâ€"N4 sites. Nature Materials, 2021, 20, 1385-1391.	27.5	359
18	The Achilles' heel of iron-based catalysts during oxygen reduction in an acidic medium. Energy and Environmental Science, 2018, 11, 3176-3182.	30.8	332

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19	Stability of Feâ€Nâ€C Catalysts in Acidic Medium Studied by Operando Spectroscopy. Angewandte Chemie - International Edition, 2015, 54, 12753-12757.	13.8	321
20	Controlled Growth of Pt Nanowires on Carbon Nanospheres and Their Enhanced Performance as Electrocatalysts in PEM Fuel Cells. Advanced Materials, 2008, 20, 3900-3904.	21.0	318
21	Unveiling N-Protonation and Anion-Binding Effects on Fe/N/C Catalysts for O₂ Reduction in Proton-Exchange-Membrane Fuel Cells. Journal of Physical Chemistry C, 2011, 115, 16087-16097.	3.1	300
22	Electrocatalysts for Hydrogen Oxidation Reaction in Alkaline Electrolytes. ACS Catalysis, 2018, 8, 6665-6690.	11.2	289
23	Fe/N/C non-precious catalysts for PEM fuel cells: Influence of the structural parameters of pristine commercial carbon blacks on their activity for oxygen reduction. Electrochimica Acta, 2008, 53, 2925-2938.	5.2	286
24	P-block single-metal-site tin/nitrogen-doped carbon fuel cell cathode catalyst for oxygen reduction reaction. Nature Materials, 2020, 19, 1215-1223.	27.5	278
25	Spectroscopic insights into the nature of active sites in ironâ€“nitrogenâ€“carbon electrocatalysts for oxygen reduction in acid. Nano Energy, 2016, 29, 65-82.	16.0	269
26	Oxygen reduction by Fe-based catalysts in PEM fuel cell conditions: Activity and selectivity of the catalysts obtained with two Fe precursors and various carbon supports. Electrochimica Acta, 2006, 51, 3202-3213.	5.2	256
27	High loading of single atomic iron sites in Feâ€“NC oxygen reduction catalysts for proton exchange membrane fuel cells. Nature Catalysis, 2022, 5, 311-323.	34.4	248
28	Impact of Loading in RRDE Experiments on Feâ€“Nâ€“C Catalysts: Two- or Four-Electron Oxygen Reduction?. Electrochemical and Solid-State Letters, 2008, 11, B105.	2.2	246
29	Fe-Based Catalysts for Oxygen Reduction in PEMFCs. Journal of the Electrochemical Society, 2006, 153, A689.	2.9	233
30	Investigation of Mass-Transport Limitations in the Solid Polymer Fuel Cell Cathode. Journal of the Electrochemical Society, 2002, 149, A437.	2.9	223
31	Establishing reactivity descriptors for platinum group metal (PGM)-free Feâ€“Nâ€“C catalysts for PEM fuel cells. Energy and Environmental Science, 2020, 13, 2480-2500.	30.8	205
32	Minimizing Operando Demetallation of Fe-N-C Electrocatalysts in Acidic Medium. ACS Catalysis, 2016, 6, 3136-3146.	11.2	201
33	Optimized Synthesis of Fe/N/C Cathode Catalysts for PEM Fuel Cells: A Matter of Ironâ€“Ligand Coordination Strength. Angewandte Chemie - International Edition, 2013, 52, 6867-6870.	13.8	195
34	Nano-structured non-platinum catalysts for automotive fuel cell application. Nano Energy, 2015, 16, 293-300.	16.0	190
35	Evolution Pathway from Iron Compounds to Fe₁(II)â€“N₄ Sites through Gas-Phase Iron during Pyrolysis. Journal of the American Chemical Society, 2020, 142, 1417-1423.	13.7	185
36	Degradation of Fe/N/C catalysts upon high polarization in acid medium. Physical Chemistry Chemical Physics, 2014, 16, 18454-18462.	2.8	182

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37	Unraveling the Nature of Sites Active toward Hydrogen Peroxide Reduction in Feâ€Nâ€C Catalysts. Angewandte Chemie - International Edition, 2017, 56, 8809-8812.	13.8	176
38	Structural Descriptors of Zeoliticâ€“Imidazolate Frameworks Are Keys to the Activity of Feâ€“Nâ€“C Catalysts. Journal of the American Chemical Society, 2017, 139, 453-464.	13.7	173
39	Average turn-over frequency of O2 electro-reduction for Fe/N/C and Co/N/C catalysts in PEFCs. Electrochimica Acta, 2007, 52, 5975-5984.	5.2	169
40	Understanding Active Sites in Pyrolyzed Feâ€“Nâ€“C Catalysts for Fuel Cell Cathodes by Bridging Density Functional Theory Calculations and ⁵⁷Fe MÃ¶ssbauer Spectroscopy. ACS Catalysis, 2019, 9, 9359-9371.	11.2	167
41	Influence of the composition on the structure and electrochemical characteristics of the PEFC cathode. Electrochimica Acta, 2003, 48, 4175-4187.	5.2	162
42	O₂ Reduction Mechanism on Non-Noble Metal Catalysts for PEM Fuel Cells. Part I: Experimental Rates of O₂ Electroreduction, H₂O₂ Electroreduction, and H₂O₂ Disproportionation. Journal of Physical Chemistry C, 2009, 113, 15422-15432.	3.1	162
43	Degradation by Hydrogen Peroxide of Metal-Nitrogen-Carbon Catalysts for Oxygen Reduction. Journal of the Electrochemical Society, 2015, 162, H403-H414.	2.9	161
44	On the Influence of Oxygen on the Degradation of Feâ€Nâ€C Catalysts. Angewandte Chemie - International Edition, 2020, 59, 3235-3243.	13.8	160
45	A novel polymer electrolyte fuel cell for laboratory investigations and in-situ contact resistance measurements. Electrochimica Acta, 2001, 46, 2899-2911.	5.2	145
46	Volcano Trend in Electrocatalytic CO₂ Reduction Activity over Atomically Dispersed Metal Sites on Nitrogen-Doped Carbon. ACS Catalysis, 2019, 9, 10426-10439.	11.2	142
47	On the Influence of Oxygen on the Degradation of Feâ€Nâ€C Catalysts. Angewandte Chemie, 2020, 132, 3261-3269.	2.0	133
48	pH-effect on oxygen reduction activity of Fe-based electro-catalysts. Electrochemistry Communications, 2009, 11, 1986-1989.	4.7	117
49	Investigation of mass transport in gas diffusion layer at the air cathode of a PEMFC. Electrochimica Acta, 2005, 51, 474-488.	5.2	116
50	Investigation of Mass-Transport Limitations in the Solid Polymer Fuel Cell Cathode. Journal of the Electrochemical Society, 2002, 149, A448.	2.9	114
51	Oxygen reduction activities compared in rotating-disk electrode and proton exchange membrane fuel cells for highly active FeNC catalysts. Electrochimica Acta, 2013, 87, 619-628.	5.2	114
52	Transient Techniques for Investigating Mass-Transport Limitations in Gas Diffusion Electrodes. Journal of the Electrochemical Society, 2003, 150, A1699.	2.9	111
53	Application of iron-based cathode catalysts in a microbial fuel cell. Electrochimica Acta, 2011, 56, 1505-1511.	5.2	109
54	Iron porphyrin-based cathode catalysts for PEM fuel cells: Influence of pyrolysis gas on activity and stability. Electrochimica Acta, 2009, 54, 6622-6630.	5.2	106

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55	Iron porphyrin-based cathode catalysts for polymer electrolyte membrane fuel cells: Effect of NH3 and Ar mixtures as pyrolysis gases on catalytic activity and stability. Electrochimica Acta, 2010, 55, 6450-6461.	5.2	106
56	Selective electrochemical reduction of nitric oxide to hydroxylamine by atomically dispersed iron catalyst. Nature Communications, 2021, 12, 1856.	12.8	106
57	Physical and Chemical Considerations for Improving Catalytic Activity and Stability of Non-Precious-Metal Oxygen Reduction Reaction Catalysts. ACS Catalysis, 2018, 8, 11264-11276.	11.2	101
58	Toward Platinum Group Metal-Free Catalysts for Hydrogen/Air Proton-Exchange Membrane Fuel Cells. Johnson Matthey Technology Review, 2018, 62, 231-255.	1.0	97
59	Increasing the activity of Fe/N/C catalysts in PEM fuel cell cathodes using carbon blacks with a high-disordered carbon content. Electrochimica Acta, 2008, 53, 6881-6889.	5.2	94
60	Synthesis of highly-active Feâ€“Nâ€“C catalysts for PEMFC with carbide-derived carbons. Journal of Materials Chemistry A, 2018, 6, 14663-14674.	10.3	94
61	pH Effect on the H₂O₂-Induced Deactivation of Fe-N-C Catalysts. ACS Catalysis, 2020, 10, 8485-8495.	11.2	92
62	Effect of the Transition Metal on Metalâ€“Nitrogenâ€“Carbon Catalysts for the Hydrogen Evolution Reaction. Journal of the Electrochemical Society, 2015, 162, H719-H726.	2.9	90
63	Non-Noble Electrocatalysts for O2 Reduction:â€‰ How Does Heat Treatment Affect Their Activity and Structure? Part I. Model for Carbon Black Gasification by NH3:â€‰ Parametric Calibration and Electrochemical Validation. Journal of Physical Chemistry C, 2007, 111, 5963-5970.	3.1	88
64	Non-Noble Electrocatalysts for O2 Reduction:â€‰ How Does Heat Treatment Affect Their Activity and Structure? Part II. Structural Changes Observed by Electron Microscopy, Raman, and Mass Spectroscopy. Journal of Physical Chemistry C, 2007, 111, 5971-5976.	3.1	79
65	Accurate Evaluation of Active-Site Density (SD) and Turnover Frequency (TOF) of PGM-Free Metalâ€“Nitrogen-Doped Carbon (MNC) Electrocatalysts using CO Cryo Adsorption. ACS Catalysis, 2019, 9, 4841-4852.	11.2	79
66	What is Next in Anionâ€Exchange Membrane Water Electrolyzers? Bottlenecks, Benefits, and Future. ChemSusChem, 2022, 15, .	6.8	77
67	Mechanisms of Manganese Oxide Electrocatalysts Degradation during Oxygen Reduction and Oxygen Evolution Reactions. Journal of Physical Chemistry C, 2019, 123, 25267-25277.	3.1	76
68	Effect of Furfuryl Alcohol on Metal Organic Framework-based Fe/N/C Electrocatalysts for Polymer Electrolyte Membrane Fuel Cells. Electrochimica Acta, 2014, 119, 192-205.	5.2	72
69	Probing active sites in iron-based catalysts for oxygen electro-reduction: A temperature-dependent 57 Fe MÃ¶ssbauer spectroscopy study. Catalysis Today, 2016, 262, 110-120.	4.4	70
70	Effect of Pyrolysis Atmosphere and Electrolyte pH on the Oxygen Reduction Activity, Stability and Spectroscopic Signature of FeN_x Moieties in Fe-N-C Catalysts. Journal of the Electrochemical Society, 2019, 166, F3311-F3320.	2.9	70
71	Transient Techniques for Investigating Mass-Transport Limitations in Gas Diffusion Electrodes. Journal of the Electrochemical Society, 2003, 150, A1711.	2.9	63
72	O₂ Reduction Mechanism on Non-Noble Metal Catalysts for PEM Fuel Cells. Part II: A Porous-Electrode Model To Predict the Quantity of H₂O₂ Detected by Rotating Ring-Disk Electrode. Journal of Physical Chemistry C, 2009, 113, 15433-15443.	3.1	60

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73	Engineering Feâ€“N Doped Graphene to Mimic Biological Functions of NADPH Oxidase in Cells. Journal of the American Chemical Society, 2020, 142, 19602-19610.	13.7	59
74	Oxygen reduction reaction mechanism and kinetics on M-NxCy and M@N-C active sites present in model M-N-C catalysts under alkaline and acidic conditions. Journal of Solid State Electrochemistry, 2021, 25, 45-56.	2.5	59
75	Oxygen Reduction Reaction in Alkaline Media Causes Iron Leaching from Feâ€“Nâ€“C Electrocatalysts. Journal of the American Chemical Society, 2022, 144, 9753-9763.	13.7	59
76	Ironâ€•and Nitrogenâ€Doped Grapheneâ€Based Catalysts for Fuel Cell Applications. ChemElectroChem, 2020, 7, 1739-1747.	3.4	53
77	Quantification of Active Site Density and Turnover Frequency: From Single-Atom Metal to Nanoparticle Electrocatalysts. Jacs Au, 2021, 1, 586-597.	7.9	53
78	Structure and activity of metal-centered coordination sites in pyrolyzed metalâ€“nitrogenâ€“carbon catalysts for the electrochemical reduction of O2. Current Opinion in Electrochemistry, 2018, 9, 198-206.	4.8	51
79	Non-precious metal cathodes for anion exchange membrane fuel cells from ball-milled iron and nitrogen doped carbide-derived carbons. Renewable Energy, 2021, 167, 800-810.	8.9	50
80	High Performance FeNC and Mn-oxide/FeNC Layers for AEMFC Cathodes. Journal of the Electrochemical Society, 2020, 167, 134505.	2.9	49
81	Electroreduction of CO₂ on Singleâ€Site Copperâ€Nitrogenâ€Doped Carbon Material: Selective Formation of Ethanol and Reversible Restructuration of the Metal Sites. Angewandte Chemie, 2019, 131, 15242-15247.	2.0	43
82	Effect of ZIF-8 Crystal Size on the O2 Electro-Reduction Performance of Pyrolyzed Feâ€“Nâ€“C Catalysts. Catalysts, 2015, 5, 1333-1351.	3.5	42
83	Designing the 3D Architecture of PGM-Free Cathodes for H₂/Air Proton Exchange Membrane Fuel Cells. ACS Applied Energy Materials, 2019, 2, 7211-7222.	5.1	41
84	Synergy between molybdenum nitride and gold leading to platinum-like activity for hydrogen evolution. Physical Chemistry Chemical Physics, 2015, 17, 4047-4053.	2.8	38
85	Cobalt hexacyanoferrate supported on Sb-doped SnO₂as a non-noble catalyst for oxygen evolution in acidic medium. Sustainable Energy and Fuels, 2018, 2, 589-597.	4.9	38
86	Fe-based catalysts for oxygen reduction in proton exchange membrane fuel cells with cyanamide as nitrogen precursor and/or pore-filler. Electrochimica Acta, 2011, 56, 3276-3285.	5.2	37
87	Metal Oxide Clusters on Nitrogen-Doped Carbon are Highly Selective for CO₂ Electroreduction to CO. ACS Catalysis, 2021, 11, 10028-10042.	11.2	37
88	Effect of Ball-Milling on the Oxygen Reduction Reaction Activity of Iron and Nitrogen Co-doped Carbide-Derived Carbon Catalysts in Acid Media. ACS Applied Energy Materials, 2019, 2, 7952-7962.	5.1	36
89	Potentialâ€Induced Spin Changes in Fe/N/C Electrocatalysts Assessed by In Situ Xâ€ray Emission Spectroscopy. Angewandte Chemie - International Edition, 2021, 60, 11707-11712.	13.8	36
90	Stabilization of Iron-Based Fuel Cell Catalysts by Non-Catalytic Platinum. Journal of the Electrochemical Society, 2018, 165, F1084-F1091.	2.9	33

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91	Timeâ€Resolved Potentialâ€Induced Changes in Fe/N/Câ€Catalysts Studied by In Situ Modulation Excitation Xâ€Ray Absorption Spectroscopy. Advanced Energy Materials, 2022, 12, .	19.5	33
92	A platinum nanowire electrocatalyst on single-walled carbon nanotubes to drive hydrogen evolution. Applied Catalysis B: Environmental, 2020, 265, 118582.	20.2	31
93	Factors Influencing the Growth of Pt Nanowires via Chemical Selfâ€Assembly and their Fuel Cell Performance. Small, 2015, 11, 3377-3386.	10.0	30
94	Iron and cobalt containing electrospun carbon nanofibre-based cathode catalysts for anion exchange membrane fuel cell. International Journal of Hydrogen Energy, 2021, 46, 31275-31287.	7.1	30
95	Adhesive copper films for an air-breathing polymer electrolyte fuel cell. Journal of Power Sources, 2005, 144, 113-121.	7.8	28
96	Stable, Active, and Methanol-Tolerant PGM-Free Surfaces in an Acidic Medium: Electron Tunneling at Play in Pt/FeNC Hybrid Catalysts for Direct Methanol Fuel Cell Cathodes. ACS Catalysis, 2020, 10, 7475-7485.	11.2	28
97	Insights into the electronic structure of Fe penta-coordinated complexes. Spectroscopic examination and electrochemical analysis for the oxygen reduction and oxygen evolution reactions. Journal of Materials Chemistry A, 2021, 9, 23802-23816.	10.3	27
98	Enhancing the electrocatalytic activity of Fe phthalocyanines for the oxygen reduction reaction by the presence of axial ligands: Pyridine-functionalized single-walled carbon nanotubes. Electrochimica Acta, 2021, 398, 139263.	5.2	27
99	Electrochemical Evidence for Two Subâ€families of FeN_{<i>x</i>}C_{<i>y</i>} Moieties with Concentrationâ€Dependent Cyanide Poisoning. ChemElectroChem, 2018, 5, 1880-1885.	3.4	24
100	The Challenge of Achieving a High Density of Fe-Based Active Sites in a Highly Graphitic Carbon Matrix. Catalysts, 2019, 9, 144.	3.5	22
101	Electrochemical transformation of Fe-N-C catalysts into iron oxides in alkaline medium and its impact on the oxygen reduction reaction activity. Applied Catalysis B: Environmental, 2022, 311, 121366.	20.2	22
102	Strategies to Hierarchical Porosity in Carbon Nanofiber Webs for Electrochemical Applications. Surfaces, 2019, 2, 159-176.	2.3	21
103	The critical importance of ionomers on the electrochemical activity of platinum and platinum-free catalysts for anion-exchange membrane fuel cells. Sustainable Energy and Fuels, 2020, 4, 3300-3307.	4.9	21
104	Electrochemical Evidence of Two Types of Active Sites for Oxygen Reduction in Fe-based Catalysts. ECS Transactions, 2009, 25, 117-128.	0.5	20
105	Characterizing Complex Gasâ€“Solid Interfaces with in Situ Spectroscopy: Oxygen Adsorption Behavior on Feâ€“Nâ€“C Catalysts. Journal of Physical Chemistry C, 2020, 124, 16529-16543.	3.1	20
106	Reduced formation of peroxide and radical species stabilises iron-based hybrid catalysts in polymer electrolyte membrane fuel cells. Journal of Energy Chemistry, 2022, 65, 433-438.	12.9	18
107	Understanding how single-atom site density drives the performance and durability of PGM-free Feâ€“Nâ€“C cathodes in anion exchange membrane fuel cells. Materials Today Advances, 2021, 12, 100179.	5.2	18
108	Influence of the synthesis parameters on the proton exchange membrane fuel cells performance of Feâ€“Nâ€“C aerogel catalysts. Journal of Power Sources, 2021, 514, 230561.	7.8	17

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109	Unraveling the Nature of Sites Active toward Hydrogen Peroxide Reduction in Feâ€Nâ€C Catalysts. Angewandte Chemie, 2017, 129, 8935-8938.	2.0	16
110	Iron-based Catalysts for Oxygen Reduction in PEM Fuel Cells: Expanded Study Using the Pore-filling Method. ECS Transactions, 2009, 25, 105-115.	0.5	14
111	Mitigation of Carbon Crossover in CO₂ Electrolysis by Use of Bipolar Membranes. Journal of the Electrochemical Society, 2022, 169, 034508.	2.9	14
112	Engineering catalytic dephosphorylation reaction for endotoxin inactivation. Nano Today, 2022, 44, 101456.	11.9	14
113	FeNC catalysts for CO₂ electroreduction to CO: effect of nanostructured carbon supports. Sustainable Energy and Fuels, 2019, 3, 1833-1840.	4.9	12
114	Deactivation of Fe-N-C catalysts during catalyst ink preparation process. Catalysis Today, 2021, 359, 9-15.	4.4	9
115	Oxygen Reduction Reaction on Metal and Nitrogenâ€“Doped Carbon Electrocatalysts in the Presence of Sodium Borohydride. Electrocatalysis, 2020, 11, 365-373.	3.0	8
116	Fe-Based Catalyst for Oxygen Reduction: Functionalization of Carbon Black and Importance of the Microporosity. ECS Transactions, 2006, 3, 201-210.	0.5	7
117	Predicting electrochemical activity. Nature Catalysis, 2018, 1, 314-315.	34.4	5
118	Potentialâ€Induced Spin Changes in Fe/N/C Electrocatalysts Assessed by In Situ Xâ€ray Emission Spectroscopy. Angewandte Chemie, 2021, 133, 11813-11818.	2.0	5
119	Enabling low-cost and sustainable fuel cells. Nature Materials, 2022, 21, 733-735.	27.5	4
120	The Future with Fuel Cells & Hydrogen: From Materials Advances to Deployment. Fuel Cells, 2014, 14, 675-676.	2.4	0