Piotr Zelenay

List of Publications by Year
in descending order

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111 papers	22,038 citations	41344 49 h-index	69250 77 g-index
119 all docs	119 docs citations	119 times ranked	15942 citing authors

#	Article	IF	Citations
1	High-Performance Electrocatalysts for Oxygen Reduction Derived from Polyaniline, Iron, and Cobalt. Science, 2011, 332, 443-447.	12.6	3,672
2	Scientific Aspects of Polymer Electrolyte Fuel Cell Durability and Degradation. Chemical Reviews, 2007, 107, 3904-3951.	47.7	2,976
3	A class of non-precious metal composite catalysts for fuel cells. Nature, 2006, 443, 63-66.	27.8	1,956
4	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
5	Direct atomic-level insight into the active sites of a high-performance PGM-free ORR catalyst. Science, 2017, 357, 479-484.	12.6	1,273
6	Nanostructured Nonprecious Metal Catalysts for Oxygen Reduction Reaction. Accounts of Chemical Research, 2013, 46, 1878-1889.	15.6	975
7	Active and stable carbon nanotube/nanoparticle composite electrocatalyst for oxygen reduction. Nature Communications, 2013, 4, 1922.	12.8	749
8	Anion exchange membrane fuel cells: Current status and remaining challenges. Journal of Power Sources, 2018, 375, 170-184.	7.8	706
9	Recent advances in direct methanol fuel cells at Los Alamos National Laboratory. Journal of Power Sources, 2000, 86, 111-116.	7.8	696
10	Synthesisâ€“structureâ€“performance correlation for polyanilineâ€“Meâ€“C non-precious metal cathode catalysts for oxygen reduction in fuel cells. Journal of Materials Chemistry, 2011, 21, 11392.	6.7	545
11	Experimental Observation of Redox-Induced Feâ€“N Switching Behavior as a Determinant Role for Oxygen Reduction Activity. ACS Nano, 2015, 9, 12496-12505.	14.6	499
12	Nitrogen-Doped Graphene-Rich Catalysts Derived from Heteroatom Polymers for Oxygen Reduction in Nonaqueous Lithiumâ€“O‹sub›2‹/sub› Battery Cathodes. ACS Nano, 2012, 6, 9764-9776.	14.6	486
13	High-performance fuel cell cathodes exclusively containing atomically dispersed iron active sites. Energy and Environmental Science, 2019, 12, 2548-2558.	30.8	457
14	Performance enhancement and degradation mechanism identification of a single-atom Coâ€“Nâ€“C catalyst for proton exchange membrane fuel cells. Nature Catalysis, 2020, 3, 1044-1054.	34.4	443
15	PGMâ€Free Cathode Catalysts for PEM Fuel Cells: A Miniâ€Review on Stability Challenges. Advanced Materials, 2019, 31, e1807615.	21.0	430
16	Multitechnique Characterization of a Polyanilineâ€“Ironâ€“Carbon Oxygen Reduction Catalyst. Journal of Physical Chemistry C, 2012, 116, 16001-16013.	3.1	378
17	Progress in the Development of Feâ€Based PGMâ€Free Electrocatalysts for the Oxygen Reduction Reaction. Advanced Materials, 2019, 31, e1806545.	21.0	317
18	Ruthenium Crossover in Direct Methanol Fuel Cell with Pt-Ru Black Anode. Journal of the Electrochemical Society, 2004, 151, A2053.	2.9	263

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19	Ozonated Graphene Oxide Film as a Protonâ€Exchange Membrane. Angewandte Chemie - International Edition, 2014, 53, 3588-3593.	13.8	214
20	Electrocatalysis in Alkaline Media and Alkaline Membrane-Based Energy Technologies. Chemical Reviews, 2022, 122, 6117-6321.	47.7	195
21	Structure of Feâ€“N_xâ€“C Defects in Oxygen Reduction Reaction Catalysts from First-Principles Modeling. Journal of Physical Chemistry C, 2014, 118, 14388-14393.	3.1	167
22	Performance Durability of Polyaniline-derived Non-precious Cathode Catalysts. ECS Transactions, 2009, 25, 1299-1311.	0.5	150
23	Durability challenges and perspective in the development of PGM-free electrocatalysts for the oxygen reduction reaction. Current Opinion in Electrochemistry, 2018, 9, 224-232.	4.8	145
24	Stability of iron species in heat-treated polyanilineâ€“ironâ€“carbon polymer electrolyte fuel cell cathode catalysts. Electrochimica Acta, 2013, 110, 282-291.	5.2	138
25	Cyanamide-derived non-precious metal catalyst for oxygen reduction. Electrochemistry Communications, 2010, 12, 1792-1795.	4.7	130
26	Titanium dioxide-supported non-precious metal oxygen reduction electrocatalyst. Chemical Communications, 2010, 46, 7489.	4.1	128
27	ElectroCat: DOE's approach to PGM-free catalyst and electrode R&D. Solid State Ionics, 2018, 319, 68-76.	2.7	121
28	Phosphate-Tolerant Oxygen Reduction Catalysts. ACS Catalysis, 2014, 4, 3193-3200.	11.2	116
29	Linking structure to function: The search for active sites in non-platinum group metal oxygen reduction reaction catalysts. Nano Energy, 2016, 29, 54-64.	16.0	116
30	Lattice Boltzmann Pore-Scale Investigation of Coupled Physical-electrochemical Processes in C/Pt and Non-Precious Metal Cathode Catalyst Layers in Proton Exchange Membrane Fuel Cells. Electrochimica Acta, 2015, 158, 175-186.	5.2	114
31	Preparation of Nonprecious Metal Electrocatalysts for the Reduction of Oxygen Using a Low-Temperature Sacrificial Metal. Journal of the American Chemical Society, 2020, 142, 5477-5481.	13.7	110
32	Acid Stability and Demetalation of PGM-Free ORR Electrocatalyst Structures from Density Functional Theory: A Model for â€œSingle-Atom Catalystâ€•Dissolution. ACS Catalysis, 2020, 10, 14527-14539.	11.2	105
33	Resolving Electrode Morphologyâ€™s Impact on Platinum Group Metal-Free Cathode Performance Using Nano-CT of 3D Hierarchical Pore and Ionomer Distribution. ACS Applied Materials & Interfaces, 2016, 8, 32764-32777.	8.0	99
34	Electrochemical Impedance Spectroscopy for Direct Methanol Fuel Cell Diagnostics. Journal of the Electrochemical Society, 2006, 153, A1902.	2.9	91
35	Graphene-Riched Co₉S₈-N-C Non-Precious Metal Catalyst for Oxygen Reduction in Alkaline Media. ECS Transactions, 2011, 41, 1709-1717.	0.5	79
36	A Combined Probe-Molecule, MÃ¶ssbauer, Nuclear Resonance Vibrational Spectroscopy, and Density Functional Theory Approach for Evaluation of Potential Iron Active Sites in an Oxygen Reduction Reaction Catalyst. Journal of Physical Chemistry C, 2017, 121, 16283-16290.	3.1	75

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37	Theoretical Study of Possible Active Site Structures in Cobalt- Polypyrrole Catalysts for Oxygen Reduction Reaction. Journal of Physical Chemistry C, 2011, 115, 16672-16680.	3.1	74
38	Porphyrin Aerogel Catalysts for Oxygen Reduction Reaction in Anionâ€Exchange Membrane Fuel Cells. Advanced Functional Materials, 2021, 31, 2100963.	14.9	70
39	Nitrogen-Doped Graphene Oxide Electrocatalysts for the Oxygen Reduction Reaction. ACS Applied Nano Materials, 2019, 2, 1675-1682.	5.0	69
40	Quantifying the electrochemical active site density of precious metal-free catalysts in situ in fuel cells. Nature Catalysis, 2022, 5, 163-170.	34.4	65
41	Highly methanol-tolerant non-precious metal cathode catalysts for direct methanol fuel cell. Electrochimica Acta, 2010, 55, 7615-7621.	5.2	64
42	Pore-scale study of multiphase reactive transport in fibrous electrodes of vanadium redox flow batteries. Electrochimica Acta, 2017, 248, 425-439.	5.2	64
43	(Invited)<i />Kinetic Models for the Degradation Mechanisms of PGM-Free ORR Catalysts. ECS Transactions, 2018, 85, 1239-1250.	0.5	61
44	Elucidation of Fe-N-C electrocatalyst active site functionality via in-situ X-ray absorption and operando determination of oxygen reduction reaction kinetics in a PEFC. Applied Catalysis B: Environmental, 2019, 257, 117929.	20.2	61
45	Detection Technologies for Reactive Oxygen Species: Fluorescence and Electrochemical Methods and Their Applications. Biosensors, 2021, 11, 30.	4.7	58
46	Adsorption of acetic acid on platinum, gold and rhodium electrodes. Electrochimica Acta, 1981, 26, 1111-1119.	5.2	57
47	Radiochemical Assay of Adsorption at Single Crystal/Solution Interfaces. Journal of the Electrochemical Society, 1992, 139, 2552-2558.	2.9	55
48	Highly Graphitic Mesoporous Fe,N-Doped Carbon Materials for Oxygen Reduction Electrochemical Catalysts. ACS Applied Materials & Interfaces, 2018, 10, 25337-25349.	8.0	54
49	Status and challenges for the application of platinum group metal-free catalysts in proton-exchange membrane fuel cells. Current Opinion in Electrochemistry, 2021, 25, 100627.	4.8	54
50	Radioactive labeling study of bisulfate adsorption on copper adatoms deposited on the gold electrode in neutral media. Surface Science, 1991, 256, 253-263.	1.9	49
51	Standardized protocols for evaluating platinum group metal-free oxygen reduction reaction electrocatalysts in polymer electrolyte fuel cells. Nature Catalysis, 2022, 5, 455-462.	34.4	47
52	Experimental and Theoretical Trends of PGM-Free Electrocatalysts for the Oxygen Reduction Reaction with Different Transition Metals. Journal of the Electrochemical Society, 2019, 166, F3136-F3142.	2.9	42
53	Highâ€Activity PtRuPd/C Catalyst for Direct Dimethyl Ether Fuel Cells. Angewandte Chemie - International Edition, 2015, 54, 7524-7528.	13.8	38
54	Recent progress in the durability of Fe-N-C oxygen reduction electrocatalysts for polymer electrolyte fuel cells. Journal of Electroanalytical Chemistry, 2020, 875, 114696.	3.8	37

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55	Critical role of intercalated water for electrocatalytically active nitrogen-doped graphitic systems. Science Advances, 2016, 2, e1501178.	10.3	36
56	Elucidation of role of graphene in catalytic designs for electroreduction of oxygen. Current Opinion in Electrochemistry, 2018, 9, 257-264.	4.8	35
57	Synthesis and Evaluation of Heat-treated, Cyanamide-derived Non-precious Catalysts for Oxygen Reduction. ECS Transactions, 2009, 25, 485-492.	0.5	34
58	Direct Dimethyl Ether Fuel Cell with Much Improved Performance. Electrocatalysis, 2014, 5, 310-317.	3.0	32
59	PGM-Free ORR Catalysts Designed by Templating PANI-Type Polymers Containing Functional Groups with High Affinity to Iron. Journal of the Electrochemical Society, 2019, 166, F3240-F3245.	2.9	30
60	Coupling High-Throughput Experiments and Regression Algorithms to Optimize PGM-Free ORR Electrocatalyst Synthesis. ACS Applied Energy Materials, 2020, 3, 9083-9088.	5.1	30
61	Direct Measurement ofiR-Free Individual-Electrode Overpotentials in Polymer Electrolyte Fuel Cells. Journal of Physical Chemistry C, 2007, 111, 6512-6523.	3.1	29
62	A simple synthesis of nitrogen-doped carbon micro- and nanotubes. Chemical Communications, 2015, 51, 13546-13549.	4.1	26
63	Role of two carbon phases in oxygen reduction reaction on the Coâ€“PPyâ€“C catalyst. International Journal of Hydrogen Energy, 2014, 39, 15887-15893.	7.1	23
64	Ternary PtRuPd/C Catalyst for Highâ€Performance, Lowâ€Temperature Direct Dimethyl Ether Fuel Cells. ChemElectroChem, 2016, 3, 1564-1569.	3.4	21
65	Ceftibuten:â€Development of a Commercial Process Based on Cephalosporin C. Part IV. Pilot-Plant Scale Electrochemical Reduction of 3-Acetoxymethyl-7(R)-glutaroylaminoceph-3-em-4-carboxylic Acid 1(S)-Oxide. Organic Process Research and Development, 2002, 6, 178-183.	2.7	20
66	The effect of diluting ruthenium by iron in RuxSey catalyst for oxygen reduction. Electrochimica Acta, 2010, 55, 7575-7580.	5.2	20
67	Understanding water management in platinum group metal-free electrodes using neutron imaging. Journal of Power Sources, 2020, 472, 228442.	7.8	17
68	2,2â€²-Dipyridylamine as Heterogeneous Organic Molecular Electrocatalyst for Two-Electron Oxygen Reduction Reaction in Acid Media. ACS Applied Energy Materials, 2019, 2, 7272-7278.	5.1	16
69	Feâ€“Nâ€“C Catalysts: Progress in the Development of Feâ€Based PGMâ€Free Electrocatalysts for the Oxygen Reduction Reaction (Adv. Mater. 31/2019). Advanced Materials, 2019, 31, 1970224.	21.0	14
70	Radiometric and voltammetric study of benzoic acid adsorption on a polycrystalline silver electrode. Electrochimica Acta, 1998, 43, 1963-1968.	5.2	9
71	A class of non-precious metal composite catalysts for fuel cells. , 2010, , 247-250.		7
72	Communicationâ€”On the Lack of Correlation between the Voltammetric Redox Couple and ORR Activity of Fe-N-C Catalysts. Journal of the Electrochemical Society, 2020, 167, 134510.	2.9	7

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73	Elucidating fuel cell catalyst degradation mechanisms by identical-location transmission electron microscopy. Microscopy and Microanalysis, 2021, 27, 974-976.	0.4	3
74	Comment on â€œNon-PGM electrocatalysts for PEM fuel cells: effect of fluorination on the activity and stability of a highly active NC_Ar + NH₃ catalystâ€•by Gaixia Zhang, Xiaohua Yang, Marc Dubois, Michael Herraiz, RÃ©gis Chenitz, Michel LefÃ¨vre, Mohamed Cherif, FranÃ§ois Vidal, Vassili P. Glibin, Shuhui Sun and Jean-Pol Dodelet, Energy Environ. Sci., 2019, 12, 3015â€“3037, 10.1039/C9EE00867E. Energy and Environmental Science, 2021, 14, 1029-1033.	30.8	2
75	Resolving Active Sites in Atomically Dispersed Electrocatalysts for Energy Conversion Applications. Microscopy and Microanalysis, 2019, 25, 2066-2067.	0.4	1
76	Fuel Cell Durability Study of PGM-Free ORR Catalysts. ECS Meeting Abstracts, 2020, MA2020-01, 1680-1680.	0.0	1
77	High-Throughput Performance Testing in 25-Electrode Array Fuel Cell for Platinum Group Metal-Free Catalysts. ECS Meeting Abstracts, 2018, , .	0.0	0
78	(Invited) Kinetic Insight into the Degradation Mechanism of PGM-Free ORR Catalysts. ECS Meeting Abstracts, 2018, , .	0.0	0
79	Formation of Metal-Nitrogen Sites in Atomically-Dispersed Catalysts Observed By in Situ Microscopy. ECS Meeting Abstracts, 2018, , .	0.0	0
80	(Keynote) The Progress and Challenges in Oxygen Reduction Electrocatalysis without Precious Metals. ECS Meeting Abstracts, 2018, , .	0.0	0
81	(Invited) Medium Temperature Fuel Cells: Stack and Material Advances. ECS Meeting Abstracts, 2018, , .	0.0	0
82	High-Throughput Activity and Performance Screening Methods for PGM-Free Catalysts. ECS Meeting Abstracts, 2018, , .	0.0	0
83	Bifunctional Organic Molecular Electrocatalyst for Hydrogen Evolution Reaction and Hydrogen Peroxide Production. ECS Meeting Abstracts, 2018, , .	0.0	0
84	Operando Determination of Oxygen Reduction Reaction Kinetics on PGM-Free Electrocatalysts in a PEFC. ECS Meeting Abstracts, 2018, , .	0.0	0
85	Molecular Probes for the Identification and Quantification of Active Sites in PGM-Free ORR Catalysts. ECS Meeting Abstracts, 2018, , .	0.0	0
86	Activity and Durability Insights for Atomically Dispersed (AD)Fe-N-C Oxygen Reduction Catalysts. ECS Meeting Abstracts, 2018, , .	0.0	0
87	Identification of Possible Degradation Mechanisms of PGM-Free Electrocatalysts during Fuel Cell Operation. ECS Meeting Abstracts, 2018, , .	0.0	0
88	X-Ray Absorption Spectroscopy, Scattering, and Tomography Characterization of Platinum Group Metal-Free Oxygen Reduction Reaction Catalysts and Electrodes. ECS Meeting Abstracts, 2018, , .	0.0	0
89	Carbon-Free Perovskite Oxide Oxygen Evolution Reaction Catalysts for AEM Electrolyzer. ECS Meeting Abstracts, 2018, , .	0.0	0
90	Layered PGM-Free Electrode for Improved Mass Transport. ECS Meeting Abstracts, 2019, , .	0.0	0

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91	Nuclear Resonance Vibration Spectroscopy Study of 57-Fe-Enriched Atomically Dispersed (AD)Fe-N-C Oxygen Reduction Reaction Catalyst for Polymer Electrolyte Fuel Cells. ECS Meeting Abstracts, 2019, , .	0.0	0
92	In Situ MÃ¶ssbauer and X-Ray Absorption Spectroscopy Studies of Atomically-Dispersed Fe-N-C Oxygen Reduction Reaction Catalysts. ECS Meeting Abstracts, 2019, , .	0.0	0
93	Nuclear Resonance Vibrational Spectroscopy and MÃ¶ssbauer Spectroscopy Studies of Atomically Dispersed (AD)57fe-N-C Oxygen Reduction Reaction Catalysts for Polymer Electrolyte Fuel Cells. ECS Meeting Abstracts, 2019, , .	0.0	0
94	(Invited) Electrocat: Expediting PGM-Free Fuel Cell Catalyst and Electrode Development. ECS Meeting Abstracts, 2019, , .	0.0	0
95	Structure-Function Relationships of PGM-Free ORR Electrocatalysts from Density Functional Theory. ECS Meeting Abstracts, 2019, , .	0.0	0
96	Structure-Activity Data Mining for Hydrogen Evolution Reaction at Organic Molecular Electrocatalysts. ECS Meeting Abstracts, 2019, , .	0.0	0
97	Effect of Substituents on the Activity of Organic Molecular Electrocatalysts for Hydrogen Evolution Reaction. ECS Meeting Abstracts, 2019, , .	0.0	0
98	(Invited) Precious Metal-Free Electrocatalysis: Accomplishments and Challenges. ECS Meeting Abstracts, 2019, , .	0.0	0
99	Electrochemical Characterization Methods of Fe-Based Oxygen Reduction Reaction Electrocatalysts for Polymer Electrolyte Fuel Cells. ECS Meeting Abstracts, 2019, , .	0.0	0
100	(Invited) Corrosion of PGM-Free Electrocatalysts for Oxygen Reduction in Fuel Cells: A Combined Experimental and Theoretical Study. ECS Meeting Abstracts, 2020, MA2020-01, 2824-2824.	0.0	0
101	Andrzej Wieckowski: Forty-Two Years of Friendship. ECS Meeting Abstracts, 2020, MA2020-01, 2595-2595.	0.0	0
102	Quantifying and Understanding PGM-Free Oxygen Reduction Reaction Active Sites by in Situ Molecular Probes. ECS Meeting Abstracts, 2021, MA2021-02, 1288-1288.	0.0	0
103	Standardized Protocols for Platinum Group Metal-Free Fuel Cell Catalysts for Oxygen Reduction Reaction. ECS Meeting Abstracts, 2021, MA2021-02, 1149-1149.	0.0	0
104	(Invited) Electrocat 2.0: Accelerating PGM-Free Catalyst and Electrode Development. ECS Meeting Abstracts, 2021, MA2021-02, 1331-1331.	0.0	0
105	Optimizing High-Throughput Synthesis of PGM-Free ORR Electrocatalyst Using Machine Learning Approach. ECS Meeting Abstracts, 2021, MA2021-02, 1145-1145.	0.0	0
106	A Durable Platinum Group Metal-Free Oxygen Reduction Catalyst for Polymer Electrolyte Fuel Cells. ECS Meeting Abstracts, 2021, MA2021-02, 1144-1144.	0.0	0
107	Identical Location Scanning Transmission Electron Microscopy Study of Fuel Cell Catalyst Degradation. ECS Meeting Abstracts, 2021, MA2021-02, 1168-1168.	0.0	0
108	(Invited) Effect of Nanostructure and Surface Chemistry on Activity and Selectivity of Cu-Based Electrocatalysts for Carbon Dioxide Reduction. ECS Meeting Abstracts, 2022, MA2022-01, 2096-2096.	0.0	0

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109	(Invited, Digital Presentation) La-Sr-Co Oxide Catalysts for Oxygen Evolution Reaction in Anion Exchange Membrane Water Electrolyzers: The Role of Electrode Fabrication on Performance and Durability. ECS Meeting Abstracts, 2022, MA2022-01, 1718-1718.	0.0	0
110	Nitric Oxide Probe Molecule Studies of Iron-Nitrogen-Carbon PEMFC Oxygen Reduction Reaction Electrocatalysts. ECS Meeting Abstracts, 2022, MA2022-01, 1446-1446.	0.0	0
111	(Invited) Towards Entirely Platinum Group Metal-Free Water Electrolyzers: Innovative Electrocatalysts for Oxygen Evolution and Hydrogen Evolution Reactions. ECS Meeting Abstracts, 2022, MA2022-01, 1379-1379.	0.0	0