Petko Chernev

List of Publications by Year
in descending order

77 papers	7,136 citations	117625 34 h-index	74163 75 g-index
80 all docs	80 docs citations	80 times ranked	8366 citing authors

#	ARTICLE	IF	CITATIONS
1	Oxygen Evolution Reaction Dynamics, Faradaic Charge Efficiency, and the Active Metal Redox States of Niâ€“Fe Oxide Water Splitting Electrocatalysts. Journal of the American Chemical Society, 2016, 138, 5603-5614.	13.7	888
2	Reversible amorphization and the catalytically active state of crystalline Co3O4 during oxygen evolution. Nature Communications, 2015, 6, 8625.	12.8	694
3	Tracking Catalyst Redox States and Reaction Dynamics in Niâ€“Fe Oxyhydroxide Oxygen Evolution Reaction Electrocatalysts: The Role of Catalyst Support and Electrolyte pH. Journal of the American Chemical Society, 2017, 139, 2070-2082.	13.7	518
4	Iron-Doped Nickel Oxide Nanocrystals as Highly Efficient Electrocatalysts for Alkaline Water Splitting. ACS Nano, 2015, 9, 5180-5188.	14.6	446
5	Unified structural motifs of the catalytically active state of Co(oxyhydr)oxides during the electrochemical oxygen evolution reaction. Nature Catalysis, 2018, 1, 711-719.	34.4	415
6	Electrosynthesis, functional, and structural characterization of a water-oxidizing manganese oxide. Energy and Environmental Science, 2012, 5, 7081.	30.8	407
7	Water oxidation by amorphous cobalt-based oxides: in situ tracking of redox transitions and mode of catalysis. Energy and Environmental Science, 2015, 8, 661-674.	30.8	279
8	Cobaltâˆ’Oxo Core of a Water-Oxidizing Catalyst Film. Journal of the American Chemical Society, 2009, 131, 6936-6937.	13.7	262
9	Water Oxidation by Amorphous Cobaltâ€Based Oxides: Volume Activity and Proton Transfer to Electrolyte Bases. ChemSusChem, 2014, 7, 1301-1310.	6.8	183
10	Uncovering the prominent role of metal ions in octahedral versus tetrahedral sites of cobaltâ€“zinc oxide catalysts for efficient oxidation of water. Journal of Materials Chemistry A, 2016, 4, 10014-10022.	10.3	171
11	Drought-induced modifications of photosynthetic electron transport in intact leaves: Analysis and use of neural networks as a tool for a rapid non-invasive estimation. Biochimica Et Biophysica Acta - Bioenergetics, 2012, 1817, 1490-1498.	1.0	168
12	Heterogeneous Water Oxidation: Surface Activity versus Amorphization Activation in Cobalt Phosphate Catalysts. Angewandte Chemie - International Edition, 2015, 54, 2472-2476.	13.8	152
13	Water Oxidation by Electrodeposited Cobalt Oxidesâ€”Role of Anions and Redoxâ€Inert Cations in Structure and Function of the Amorphous Catalyst. ChemSusChem, 2012, 5, 542-549.	6.8	149
14	Untangling the sequence of events during the S ₂ â†’ S ₃ transition in photosystem II and implications for the water oxidation mechanism. Proceedings of the National Academy of Sciences of the United States of America, 2020, 117, 12624-12635.	7.1	149
15	Spectroscopic identification of active sites for the oxygen evolution reaction on iron-cobalt oxides. Nature Communications, 2017, 8, 2022.	12.8	147
16	Delayed fluorescence in photosynthesis. Photosynthesis Research, 2009, 101, 217-232.	2.9	133
17	Uncovering The Role of Oxygen in Ni-Fe(OxHy) Electrocatalysts using In situ Soft X-ray Absorption Spectroscopy during the Oxygen Evolution Reaction. Scientific Reports, 2019, 9, 1532.	3.3	112
18	Nickel-oxido structure of a water-oxidizing catalyst film. Chemical Communications, 2011, 47, 11912.	4.1	105

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19	Water oxidation catalysis â€“ role of redox and structural dynamics in biological photosynthesis and inorganic manganese oxides. Energy and Environmental Science, 2016, 9, 2433-2443.	30.8	99
20	Geometric distortions in nickel (oxy)hydroxide electrocatalysts by redox inactive iron ions. Energy and Environmental Science, 2018, 11, 2476-2485.	30.8	83
21	O2 Reactions at the Six-iron Active Site (H-cluster) in [FeFe]-Hydrogenase. Journal of Biological Chemistry, 2011, 286, 40614-40623.	3.4	80
22	Behavior of the Ru-bda Water Oxidation Catalyst Covalently Anchored on Glassy Carbon Electrodes. ACS Catalysis, 2015, 5, 3422-3429.	11.2	78
23	Structural dynamics in the water and proton channels of photosystem II during the S2 to S3 transition. Nature Communications, 2021, 12, 6531.	12.8	73
24	H/D Isotope Effects Reveal Factors Controlling Catalytic Activity in Co-Based Oxides for Water Oxidation. Journal of the American Chemical Society, 2019, 141, 2938-2948.	13.7	72
25	Room-Temperature Energy-Sampling KÎ² X-ray Emission Spectroscopy of the Mn₄Ca Complex of Photosynthesis Reveals Three Manganese-Centered Oxidation Steps and Suggests a Coordination Change Prior to O₂ Formation. Biochemistry, 2016, 55, 4197-4211.	2.5	66
26	Nickel-iron catalysts for electrochemical water oxidation â€“ redox synergism investigated by <i>in situ</i> X-ray spectroscopy with millisecond time resolution. Sustainable Energy and Fuels, 2018, 2, 1986-1994.	4.9	64
27	Kinetics of delayed chlorophyll a fluorescence registered in milliseconds time range. Photosynthesis Research, 2005, 84, 209-215.	2.9	61
28	Electronic and molecular structures of the active-site H-cluster in [FeFe]-hydrogenase determined by site-selective X-ray spectroscopy and quantum chemical calculations. Chemical Science, 2014, 5, 1187-1203.	7.4	60
29	Hydride Binding to the Active Site of [FeFe]-Hydrogenase. Inorganic Chemistry, 2014, 53, 12164-12177.	4.0	58
30	Formation of unexpectedly active Niâ€“Fe oxygen evolution electrocatalysts by physically mixing Ni and Fe oxyhydroxides. Chemical Communications, 2019, 55, 818-821.	4.1	57
31	Heterogeneous Water Oxidation: Surface Activity versus Amorphization Activation in Cobalt Phosphate Catalysts. Angewandte Chemie, 2015, 127, 2502-2506.	2.0	46
32	Temperature Dependence of the Catalytic Two- versus Four-Electron Reduction of Dioxygen by a Hexanuclear Cobalt Complex. Journal of the American Chemical Society, 2017, 139, 15033-15042.	13.7	42
33	Preservation of photosynthetic electron transport from senescence-induced inactivation in primary leaves after decapitation and defoliation of bean plants. Journal of Plant Physiology, 2008, 165, 1954-1963.	3.5	40
34	Electronic Structure of an [FeFe] Hydrogenase Model Complex in Solution Revealed by X-ray Absorption Spectroscopy Using Narrow-Band Emission Detection. Journal of the American Chemical Society, 2012, 134, 14142-14157.	13.7	36
35	Nickelâ€“Vanadium Layered Double Hydroxide under Water-Oxidation Reaction: New Findings and Challenges. ACS Sustainable Chemistry and Engineering, 2019, 7, 17252-17262.	6.7	35
36	Light-driven formation of manganese oxide by todayâ€™s photosystem II supports evolutionarily ancient manganese-oxidizing photosynthesis. Nature Communications, 2020, 11, 6110.	12.8	34

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37	Electrosynthesis of Biomimetic Manganeseâ€“Calcium Oxides for Water Oxidation Catalysisâ€”Atomic Structure and Functionality. ChemSusChem, 2016, 9, 379-387.	6.8	33
38	KÎ± X-ray Emission Spectroscopy on the Photosynthetic Oxygen-Evolving Complex Supports Manganese Oxidation and Water Binding in the S₃ State. Inorganic Chemistry, 2018, 57, 10424-10430.	4.0	33
39	Electromodified NiFe Alloys as Electrocatalysts for Water Oxidation: Mechanistic Implications of Timeâ€Resolved UV/Vis Tracking of Oxidation State Changes. ChemSusChem, 2019, 12, 1966-1976.	6.8	33
40	Self-supported Ni(OH)2/MnO2 on CFP as a flexible anode towards electrocatalytic urea conversion: The role of composition on activity, redox states and reaction dynamics. Electrochimica Acta, 2019, 318, 32-41.	5.2	33
41	Carboxylate Shifts Steer Interquinone Electron Transfer in Photosynthesis. Journal of Biological Chemistry, 2011, 286, 5368-5374.	3.4	32
42	Rapid X-ray Photoreduction of Dimetal-Oxygen Cofactors in Ribonucleotide Reductase. Journal of Biological Chemistry, 2013, 288, 9648-9661.	3.4	30
43	Revisiting Metalâ€“Organic Frameworks for Oxygen Evolution: A Case Study. Inorganic Chemistry, 2020, 59, 15335-15342.	4.0	29
44	Site-Selective X-ray Spectroscopy on an Asymmetric Model Complex of the [FeFe] Hydrogenase Active Site. Inorganic Chemistry, 2012, 51, 4546-4559.	4.0	28
45	Bridging-hydride influence on the electronic structure of an [FeFe] hydrogenase active-site model complex revealed by XAES-DFT. Dalton Transactions, 2013, 42, 7539.	3.3	28
46	Behavior of Ruâ€“bda Waterâ€Oxidation Catalysts in Low Oxidation States. Chemistry - A European Journal, 2018, 24, 12838-12847.	3.3	27
47	Origin of the heat-induced improvement of catalytic activity and stability of MnO_x electrocatalysts for water oxidation. Journal of Materials Chemistry A, 2019, 7, 17022-17036.	10.3	25
48	Exploring the Limits of Self-Repair in Cobalt Oxide Films for Electrocatalytic Water Oxidation. ACS Catalysis, 2020, 10, 7990-7999.	11.2	21
49	Structure and Mechanism Leading to Formation of the Cysteine Sulfinate Product Complex of a Biomimetic Cysteine Dioxygenase Model. Chemistry - A European Journal, 2015, 21, 7470-7479.	3.3	20
50	Characterisation of a water-oxidizing Co-film by XAFS. Journal of Physics: Conference Series, 2009, 190, 012167.	0.4	19
51	Structural and functional role of anions in electrochemical water oxidation probed by arsenate incorporation into cobalt-oxide materials. Physical Chemistry Chemical Physics, 2019, 21, 12485-12493.	2.8	18
52	The exchange of the fast substrate water in the S₂ state of photosystem II is limited by diffusion of bulk water through channels â€“ implications for the water oxidation mechanism. Chemical Science, 2021, 12, 12763-12775.	7.4	18
53	Delayed Chlorophyll Fluorescence as a Monitor for Physiological State of Photosynthetic Apparatus. Biotechnology and Biotechnological Equipment, 2009, 23, 452-457.	1.3	17
54	Electrochemical oxidation of ferricyanide. Scientific Reports, 2021, 11, 23058.	3.3	17

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55	Merging Structural Information from X-ray Crystallography, Quantum Chemistry, and EXAFS Spectra: The Oxygen-Evolving Complex in PSII. Journal of Physical Chemistry B, 2016, 120, 10899-10922.	2.6	16
56	Water oxidation by a manganeseâ€“potassium cluster: Mn oxide as a kinetically dominant â€œtrueâ€•catalyst for water oxidation. Catalysis Science and Technology, 2018, 8, 4390-4398.	4.1	16
57	Operando tracking of oxidation-state changes by coupling electrochemistry with time-resolved X-ray absorption spectroscopy demonstrated for water oxidation by a cobalt-based catalyst film. Analytical and Bioanalytical Chemistry, 2021, 413, 5395-5408.	3.7	16
58	A mononuclear cobalt complex for water oxidation: new controversies and puzzles. Dalton Transactions, 2018, 47, 16668-16673.	3.3	15
59	Towards a comprehensive X-ray approach for studying the photosynthetic manganese complexâ€“XANES, KÎ±/KÎ²/KÎ²-satellite emission lines, RIXS, and comparative computational approaches for selected model complexes. Journal of Physics: Conference Series, 2009, 190, 012142.	0.4	14
60	High-valent [MnFe] and [FeFe] cofactors in ribonucleotide reductases. Biochimica Et Biophysica Acta - Bioenergetics, 2012, 1817, 430-444.	1.0	14
61	Structural differences of oxidized ironâ€“sulfur and nickelâ€“iron cofactors in O 2 -tolerant and O 2 -sensitive hydrogenases studied by X-ray absorption spectroscopy. Biochimica Et Biophysica Acta - Bioenergetics, 2015, 1847, 162-170.	1.0	14
62	Electrochemical alcohols oxidation mediated by N-hydroxyphthalimide on nickel foam surface. Scientific Reports, 2020, 10, 19378.	3.3	13
63	A synthetic manganeseâ€“calcium cluster similar to the catalyst of Photosystem II: challenges for biomimetic water oxidation. Dalton Transactions, 2020, 49, 5597-5605.	3.3	13
64	Tuning cobalt eg occupation of Co-NCNT by manipulation of crystallinity facilitates more efficient oxygen evolution and reduction. Journal of Catalysis, 2020, 383, 221-229.	6.2	11
65	Room temperature XFEL crystallography reveals asymmetry in the vicinity of the two phylloquinones in photosystem I. Scientific Reports, 2021, 11, 21787.	3.3	11
66	Using Artificial Neural Networks for Plant Taxonomic Determination Based on Chlorophyll Fluorescence Induction Curves. Biotechnology and Biotechnological Equipment, 2009, 23, 941-945.	1.3	10
67	A cobalt(<scp>ii</scp>) iminoiodane complex and its scandium adduct: mechanistic promiscuity in hydrogen atom abstraction reactions. Dalton Transactions, 2016, 45, 14538-14543.	3.3	10
68	Unequal misses during the flash-induced advancement of photosystem II: effects of the S state and acceptor side cycles. Photosynthesis Research, 2019, 139, 93-106.	2.9	10
69	Molecular basis for turnover inefficiencies (misses) during water oxidation in photosystem II. Chemical Science, 2022, 13, 8667-8678.	7.4	9
70	Water Oxidation by Pentapyridyl Base Metal Complexes? A Case Study. Inorganic Chemistry, 2022, 61, 9104-9118.	4.0	5
71	Spin transition in a ferrous chloride complex supported by a pentapyridine ligand. Chemical Communications, 2020, 56, 2703-2706.	4.1	3
72	Electronic and geometric structure effects on one-electron oxidation of first-row transition metals in the same ligand framework. Dalton Transactions, 2021, 50, 660-674.	3.3	3

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73	Modulated Sink-Source Interactions Preserve PSII Electron Transport from Senescence-Induced Inactivation in a Model System with Expanded Life Span Induced by Decapitation of Bean Plants. , 2008, , 675-679.		3
74	A chemical evolutionâ€like method to synthesize a waterâ€oxidizing catalyst. ChemElectroChem, 0, , .	3.4	2
75	Water Oxidation in Photosystem II: Energetics and Kinetics of Intermediates Formation in the S2â†'S3 and S3â†'S0 Transitions Monitored by Delayed Chlorophyll Fluorescence. Advanced Topics in Science and Technology in China, 2013, , 234-238.	0.1	2
76	Coordination Changes of Carboxyl Ligands at the QAFeQB Triad in Photosynthetic Reaction Centers Studied by Density-Functional Theory. Advanced Topics in Science and Technology in China, 2013, , 95-101.	0.1	1
77	Kinetic Model of Electron-Transport Reactions in Thylakoid Membranes Determining Chlorophyll Fluorescence Transients. Biotechnology and Biotechnological Equipment, 2009, 23, 621-626.	1.3	0