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Etched and doped Co<sub>9</sub>S<sub>8</sub>/graphene hybrid for oxygen electro

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7 <sup>11</sup>	Three-dimensional graphene-based spheres and crumpled balls: micro- and nano-structures, synthesis strategies, properties and applications. <b>2016</b> , 6, 50941-50967	24
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584	A Facile Strategy to Synthesize Cobalt-Based Self-Supported Material for Electrocatalytic Water Splitting. <b>2017</b> , 34, 1700189	13
583	CoS nanoparticles anchored on nitrogen and sulfur dual-doped carbon nanosheets as highly efficient bifunctional electrocatalyst for oxygen evolution and reduction reactions. <b>2017</b> , 9, 12432-12440	110
582	An ambient temperature, CO-assisted solution processing of amorphous cobalt sulfide in a thiol/amine based quasi-ionic liquid for oxygen evolution catalysis. <b>2017</b> , 53, 9418-9421	29
581	Atomic-Scale CoOx Species in Metal-Organic Frameworks for Oxygen Evolution Reaction. <b>2017</b> , 27, 1702546	279
580	Solvent-Induced Cadmium(II) Metal-Organic Frameworks with Adjustable Guest-Evacuated Porosity: Application in the Controllable Assembly of MOF-Derived Porous Carbon Materials for Supercapacitors. <b>2017</b> , 23, 15680-15693	32
579	Universal, In Situ Transformation of Bulky Compounds into Nanoscale Catalysts by High-Temperature Pulse. <b>2017</b> , 17, 5817-5822	23
578	Cobalt Nanoparticles Encapsulated in Porous Carbons Derived from Core-Shell ZIF67@ZIF8 as Efficient Electrocatalysts for Oxygen Evolution Reaction. <b>2017</b> , 9, 28685-28694	97
577	Metal-Organic framework-derived CoSe <sub>2</sub> /(NiCo)Se <sub>2</sub> box-in-box hollow nanocubes with enhanced electrochemical properties for sodium-ion storage and hydrogen evolution. <b>2017</b> , 5, 18823-18830	171
576	Co,N,S-Codoped Three-Dimensional Graphene as Efficient Bi-Functional Electrocatalyst for Oxygen Reduction/Hydrogen Evolution Reaction. <b>2017</b> , 164, F1110-F1114	7
575	Hierarchical Porous CoS/Nitrogen-Doped Carbon@MoS Polyhedrons as pH Universal Electrocatalysts for Highly Efficient Hydrogen Evolution Reaction. <b>2017</b> , 9, 28394-28405	135
574	Vertically-aligned Co <sub>3</sub> O <sub>4</sub> nanowires interconnected with Co(OH) <sub>2</sub> nanosheets as supercapacitor electrode. <b>2017</b> , 139, 1153-1158	47
573	Carbon sphere@CoS yolk-shell structure with good morphology stability for improved lithium storage performance. <b>2017</b> , 28, 375402	14
572	A review of transition metal chalcogenide/graphene nanocomposites for energy storage and conversion. <b>2017</b> , 28, 2180-2194	127
571	Cobalt sulfide supported on nitrogen and sulfur dual-doped reduced graphene oxide for highly active oxygen reduction reaction. <b>2017</b> , 7, 50246-50253	27

570	Multifunctional Prussian blue analogous@polyaniline core-shell nanocubes for lithium storage and overall water splitting. <b>2017</b> , 7, 50812-50821	24
569	Study of iron oxide nanoparticle phases in graphene aerogels for oxygen reduction reaction. <b>2017</b> , 41, 15180-15186	13
568	IrO <sub>2</sub> /ZnO Hybrid Nanoparticles as Highly Efficient Trifunctional Electrocatalysts. <b>2017</b> , 121, 14899-14906	28
567	Ultrathin Two-Dimensional Nanostructured Materials for Highly Efficient Water Oxidation. <b>2017</b> , 13, 1700806	85
566	RETRACTED ARTICLE: Self-assembly of N doped 3D porous carbon frameworks from carbon quantum dots and its application for oxygen reduction reaction. <b>2017</b> , 28, 12660-12669	8
565	Co <sub>9</sub> S <sub>8</sub> activated N/S co-doped carbon tubes in situ grown on carbon nanofibers for efficient oxygen reduction. <b>2017</b> , 7, 34763-34769	9
564	Facile Synthesis of Defect-Rich and S/N Co-Doped Graphene-Like Carbon Nanosheets as an Efficient Electrocatalyst for Primary and All-Solid-State Zn-Air Batteries. <b>2017</b> , 9, 24545-24554	65
563	A comprehensive review on recent progress in aluminum-air batteries. <b>2017</b> , 2, 246-277	171
562	Proton conductive Pt-Co nanoparticles anchoring on citric acid functionalized graphene for efficient oxygen reduction reaction. <b>2017</b> , 360, 528-537	8
561	Facile synthesis of nitrogen-doped carbon nanotubes encapsulating nickel cobalt alloys 3D networks for oxygen evolution reaction in an alkaline solution. <b>2017</b> , 338, 26-33	89
560	Three-dimensional N-doped, plasma-etched graphene: Highly active metal-free catalyst for hydrogen evolution reaction. <b>2017</b> , 529, 127-133	55
559	Ni/NiO <sub>x</sub> -decorated carbon nanofibers with enhanced oxygen evolution activity for rechargeable zinc-air batteries. <b>2017</b> , 1, 677-682	27
558	In-situ growth of highly uniform and single crystalline Co <sub>3</sub> O <sub>4</sub> nanocubes on graphene for efficient oxygen evolution. <b>2017</b> , 88, 81-84	21
557	Use of Cobalt Polyphthalocyanine and Graphene as Precursors to Construct an Efficient Co <sub>9</sub> S <sub>8</sub> /N,S-G Electrocatalyst for the Oxygen Electrode Reaction in Harsh Media. <b>2017</b> , 9, 308-315	17
556	In situ confined synthesis of molybdenum oxide decorated nickel-iron alloy nanosheets from MoO <sub>4</sub> <sup>2-</sup> intercalated layered double hydroxides for the oxygen evolution reaction. <b>2017</b> , 5, 87-91	122
555	Metal-Nitrogen-doped Porous Carbons Derived from Metal-Containing Ionic Liquids for Oxygen Reduction Reaction. <b>2018</b> , 13, 1029-1037	4
554	Efficient unitary oxygen electrode for air-based flow batteries. <b>2018</b> , 47, 361-367	28
553	Three dimensional metal/N-doped nanoplate carbon catalysts for oxygen reduction, the reason for using a layered nanoreactor. <b>2018</b> , 8, 3404	8

552	Recent Advances on Non-precious Metal Porous Carbon-based Electrocatalysts for Oxygen Reduction Reaction. <b>2018</b> , 5, 1775-1785	114
551	Nickel Cobalt Sulfide Double-Shelled Hollow Nanospheres as Superior Bifunctional Electrocatalysts for Photovoltaics and Alkaline Hydrogen Evolution. <b>2018</b> , 10, 9379-9389	64
550	Hierarchical CoTe <sub>2</sub> Nanowire Array: An Effective Oxygen Evolution Catalyst in Alkaline Media. <b>2018</b> , 6, 4481-4485	32
549	Charge-Transfer-Promoted High Oxygen Evolution Activity of Co@CoS Core-Shell Nanochains. <b>2018</b> , 10, 11565-11571	32
548	Effective Oxygen Reduction and Evolution Catalysts Derived from Metal Organic Frameworks by Optimizing Active Sites. <b>2018</b> , 165, F158-F165	10
547	Earthworm-like N, S-Doped carbon tube-encapsulated Co <sub>9</sub> S <sub>8</sub> nanocomposites derived from nanoscaled metal-organic frameworks for highly efficient bifunctional oxygen catalysis. <b>2018</b> , 6, 5935-5943	73
546	Aqueous electrocatalytic N <sub>2</sub> reduction under ambient conditions. <b>2018</b> , 11, 2992-3008	170
545	Freestanding Non-Precious Metal Electrocatalysts for Oxygen Evolution and Reduction Reactions. <b>2018</b> , 5, 1786-1804	26
544	N-doped defective carbon with trace Co for efficient rechargeable liquid electrolyte-/all-solid-state Zn-air batteries. <b>2018</b> , 63, 548-555	90
543	Mixed Valent, Distorted Cobalt Ludwigite (Co <sub>3</sub> BO <sub>5</sub> /Co <sub>3</sub> O <sub>2</sub> BO <sub>3</sub> ) and Its Composite with Reduced Multiwalled Carbon Nanotubes (R-MWCNT) in Enhancing the Domain Edge-Sharing Oxygen as Superior Water Oxidation Electrocatalysts. <b>2018</b> , 5, 1670-1676	9
542	Urchin-like non-precious-metal bifunctional oxygen electrocatalysts: Boosting the catalytic activity via the In-situ growth of heteroatom (N, S)-doped carbon nanotube on mesoporous cobalt sulfide/carbon spheres. <b>2018</b> , 524, 465-474	21
541	MOF-derived Cl/O-doped C/CoO and C nanoparticles for high performance supercapacitor. <b>2018</b> , 448, 50-63	32
540	Homogeneously Dispersed CoS Anchored on Nitrogen and Sulfur Co-Doped Carbon Derived from Soybean as Bifunctional Oxygen Electrocatalysts and Supercapacitors. <b>2018</b> , 10, 16436-16448	50
539	Thiacalix[4]arene-supported tetradecanuclear cobalt nanocage cluster as precursor to synthesize CoO/Co <sub>9</sub> S <sub>8</sub> @CN composite for supercapacitor application. <b>2018</b> , 5, 1329-1335	18
538	Cobalt Sulfide Nanowires Core Encapsulated by a N, S Codoped Graphitic Carbon Shell for Efficient Oxygen Reduction Reaction. <b>2018</b> , 14, e1703642	57
537	Pyridinic-N-Dominated Doped Defective Graphene as a Superior Oxygen Electrocatalyst for Ultrahigh-Energy-Density Zn-Air Batteries. <b>2018</b> , 3, 1183-1191	325
536	CoNi/CNTs composite as effective and stable electrode for oxygen evolution reaction in alkaline media. <b>2018</b> , 43, 8623-8631	16
535	Co <sub>9</sub> S <sub>8</sub> @carbon porous nanocages derived from a metal-organic framework: a highly efficient bifunctional catalyst for aprotic LiO <sub>2</sub> batteries. <b>2018</b> , 6, 8595-8603	49

534	Urchin-Like Nanorods of Binary NiCoS Supported on Nickel Foam for Electrocatalytic Overall Water Splitting. <b>2018</b> , 165, H102-H108	33
533	Hierarchically carbon-coated Na <sub>3</sub> V <sub>2</sub> (PO <sub>4</sub> ) <sub>3</sub> nanoflakes for high-rate capability and ultralong cycle-life sodium ion batteries. <b>2018</b> , 339, 162-169	46
532	Facile preparation of three-dimensional Co <sub>1-x</sub> S/sulfur and nitrogen-codoped graphene/carbon foam for highly efficient oxygen reduction reaction. <b>2018</b> , 378, 699-706	37
531	Recent developments in electrocatalysts and future prospects for oxygen reduction reaction in polymer electrolyte membrane fuel cells. <b>2018</b> , 27, 1124-1139	68
530	A review of anion-regulated multi-anion transition metal compounds for oxygen evolution electrocatalysis. <b>2018</b> , 5, 521-534	76
529	Catalyst Preparation with Plasmas: How Does It Work?. <b>2018</b> , 8, 2093-2110	210
528	3D Nitrogen, Sulfur-Codoped Carbon Nanomaterial-Supported Cobalt Oxides with Polyhedron-Like Particles Grafted onto Graphene Layers as Highly Active Bimetallic Catalysts for Oxygen-Evolving Reactions. <b>2018</b> , 10, 7180-7190	37
527	Controllable Urchin-Like NiCo <sub>2</sub> S <sub>4</sub> Microsphere Synergized with Sulfur-Doped Graphene as Bifunctional Catalyst for Superior Rechargeable Zn-Air Battery. <b>2018</b> , 28, 1706675	160
526	A facile co-precipitation synthesis of robust FeCo phosphate electrocatalysts for efficient oxygen evolution. <b>2018</b> , 264, 244-250	26
525	Room-Temperature Electrochemical Conversion of Metal-Organic Frameworks into Porous Amorphous Metal Sulfides with Tailored Composition and Hydrogen Evolution Activity. <b>2018</b> , 28, 1707244	83
524	Graphene foam supported LiFePO <sub>4</sub> nanosheets composite as advanced cathode for lithium ion batteries. <b>2018</b> , 101, 205-209	11
523	Plasma-Assisted Synthesis and Surface Modification of Electrode Materials for Renewable Energy. <b>2018</b> , 30, e1705850	323
522	Mo- and Fe-Modified Ni(OH) <sub>2</sub> /NiOOH Nanosheets as Highly Active and Stable Electrocatalysts for Oxygen Evolution Reaction. <b>2018</b> , 8, 2359-2363	195
521	Co,N-codoped nanotube/graphene 1D/2D heterostructure for efficient oxygen reduction and hydrogen evolution reactions. <b>2018</b> , 6, 3926-3932	105
520	LDHs derived nanoparticle-stacked metal nitride as interlayer for long-life lithium sulfur batteries. <b>2018</b> , 63, 169-175	48
519	The Role of Composition of Uniform and Highly Dispersed Cobalt Vanadium Iron Spinel Nanocrystals for Oxygen Electrocatalysis. <b>2018</b> , 8, 1259-1267	72
518	Interface engineered in situ anchoring of CoS nanoparticles into a multiple doped carbon matrix: highly efficient zinc-air batteries. <b>2018</b> , 10, 2649-2657	53
517	Design and Synthesis of Cobalt-Based Electrocatalysts for Oxygen Reduction Reaction. <b>2018</b> , 18, 840-848	6

516	Hollow TiO@CoS Core-Branch Arrays as Bifunctional Electrocatalysts for Efficient Oxygen/Hydrogen Production. <b>2018</b> , 5, 1700772	145
515	Facile Synthesis of Co <sub>9</sub> S <sub>8</sub> Hollow Spheres as a High-Performance Electrocatalyst for the Oxygen Evolution Reaction. <b>2018</b> , 6, 1863-1871	56
514	Nanosheets/Mesopore Structured Co <sub>3</sub> O <sub>4</sub> @CMK-3 Composite as an Electrocatalyst for the Oxygen Reduction Reaction. <b>2018</b> , 10, 1321-1329	13
513	CoS@MoS Core-Shell Heterostructures as Trifunctional Electrocatalysts for Overall Water Splitting and Zn-Air Batteries. <b>2018</b> , 10, 1678-1689	159
512	Porous CoP nanosheets converted from layered double hydroxides with superior electrochemical activity for hydrogen evolution reactions at wide pH ranges. <b>2018</b> , 54, 1465-1468	102
511	Fe-doped Co <sub>9</sub> S <sub>8</sub> nanosheets on carbon fiber cloth as pH-universal freestanding electrocatalysts for efficient hydrogen evolution. <b>2018</b> , 264, 157-165	34
510	Ultrafast-Versatile-Domestic-Microwave-Oven Based Graphene Oxide Reactor for the Synthesis of Highly Efficient Graphene Based Hybrid Electrocatalysts. <b>2018</b> , 6, 4037-4045	8
509	Tunable electronic coupling of cobalt sulfide/carbon composites for optimizing oxygen evolution reaction activity. <b>2018</b> , 6, 10304-10312	68
508	Strongly coupling of Co <sub>9</sub> S <sub>8</sub> /Zn-Co-S heterostructures rooted in carbon nanocages towards efficient oxygen evolution reaction. <b>2018</b> , 361, 322-330	55
507	Co <sub>9</sub> S <sub>8</sub> @carbon nanospheres as high-performance anodes for sodium ion battery. <b>2018</b> , 343, 512-519	86
506	Facile synthesis of nanometer-sized NiFe layered double hydroxide/nitrogen-doped graphite foam hybrids for enhanced electrocatalytic oxygen evolution reactions. <b>2018</b> , 43, 7956-7963	21
505	Highly Defective Fe-Based Oxyhydroxides from Electrochemical Reconstruction for Efficient Oxygen Evolution Catalysis. <b>2018</b> , 3, 861-868	71
504	Porous Cobalt Oxynitride Nanosheets for Efficient Electrocatalytic Water Oxidation. <b>2018</b> , 11, 1479-1485	24
503	Slippery liquid-infused porous surface for corrosion protection with self-healing property. <b>2018</b> , 345, 147-155	79
502	Milk powder-derived bifunctional oxygen electrocatalysts for rechargeable Zn-air battery. <b>2018</b> , 11, 134-143	33
501	Free-standing, flexible ENi(OH) <sub>2</sub> /electrochemically-exfoliated graphene film electrode for efficient oxygen evolution. <b>2018</b> , 433, 88-93	14
500	Carbon-coated cobalt oxide porous spheres with improved kinetics and good structural stability for long-life lithium-ion batteries. <b>2018</b> , 510, 368-375	21
499	Controllable Synthesis of CoS <sub>2</sub> @N/S-Codoped Porous Carbon Derived from ZIF-67 for as a Highly Efficient Catalyst for the Hydrogen Evolution Reaction. <b>2018</b> , 10, 796-803	32

498	Facile and Controllable One-Pot Synthesis of Hierarchical Co <sub>9</sub> S <sub>8</sub> Hollow Microspheres as High-Performance Electroactive Materials for Energy Storage and Conversion. <b>2018</b> , 5, 137-143	13
497	Electrochemical co-preparation of cobalt sulfide/reduced graphene oxide composite for electrocatalytic activity and determination of HO in biological samples. <b>2018</b> , 509, 153-162	43
496	Graphene as an intermediary for enhancing the electron transfer rate: A free-standing Ni <sub>3</sub> S <sub>2</sub> @graphene@Co <sub>9</sub> S <sub>8</sub> electrocatalytic electrode for oxygen evolution reaction. <b>2018</b> , 11, 1389-1398	38
495	Sulphur and nitrogen dual-doped mesoporous carbon hybrid coupling with graphite coated cobalt and cobalt sulfide nanoparticles: Rational synthesis and advanced multifunctional electrochemical properties. <b>2018</b> , 509, 254-264	28
494	Engineering multi-dimensional nanocarbons with enhanced electrochemical activity as high-performance bifunctional electrocatalyst. <b>2018</b> , 25, 1115-1122	4
493	Co <sub>3</sub> (PO <sub>4</sub> ) <sub>2</sub> Nanoparticles Embedded in Nitrogen-Doped Carbon as an Advanced Electrocatalyst for OER in Alkaline Solution. <b>2018</b> , 148, 214-219	12
492	In Situ Exfoliated, N-Doped, and Edge-Rich Ultrathin Layered Double Hydroxides Nanosheets for Oxygen Evolution Reaction. <b>2018</b> , 28, 1703363	258
491	CuCrO@rGO Nanocomposites as High-Performance Cathode Catalyst for Rechargeable Lithium-Oxygen Batteries. <b>2018</b> , 10, 22	22
490	Hollow POM@MOF hybrid-derived porous Co <sub>3</sub> O <sub>4</sub> /CoMoO <sub>4</sub> nanocages for enhanced electrocatalytic water oxidation. <b>2018</b> , 6, 1639-1647	102
489	Engineering the coordination geometry of metal-organic complex electrocatalysts for highly enhanced oxygen evolution reaction. <b>2018</b> , 6, 805-810	57
488	Holey Reduced Graphene Oxide Coupled with an Mo N-Mo C Heterojunction for Efficient Hydrogen Evolution. <b>2018</b> , 30, 1704156	322
487	Bifunctional Electrocatalysts (Co <sub>9</sub> S <sub>8</sub> @NSC) Derived from a Polymer-metal Complex for the Oxygen Reduction and Oxygen Evolution Reactions. <b>2018</b> , 5, 355-361	21
486	A photo-responsive bifunctional electrocatalyst for oxygen reduction and evolution reactions. <b>2018</b> , 43, 130-137	74
485	Fe/Fe <sub>3</sub> C@C nanoparticles encapsulated in N-doped graphene@CNTs framework as an efficient bifunctional oxygen electrocatalyst for robust rechargeable Zn  air batteries. <b>2018</b> , 6, 516-526	288
484	Vapor-phase hydrothermal growth of single crystalline NiS <sub>2</sub> nanostructure film on carbon fiber cloth for electrocatalytic oxidation of alcohols to ketones and simultaneous H <sub>2</sub> evolution. <b>2018</b> , 11, 1004-1017	37
483	Electronic Tuning of Co, Ni-Based Nanostructured (Hydr)oxides for Aqueous Electrocatalysis. <b>2018</b> , 28, 1804886	53
482	Recent Progress on Layered Double Hydroxides and Their Derivatives for Electrocatalytic Water Splitting. <b>2018</b> , 5, 1800064	329
481	Apically Co-nanoparticles-wrapped nitrogen-doped carbon nanotubes from a single-source MOF for efficient oxygen reduction. <b>2018</b> , 6, 24071-24077	44

480	Recent Advances of Cobalt-Based Electrocatalysts for Oxygen Electrode Reactions and Hydrogen Evolution Reaction. <b>2018</b> , 8, 559	66
479	Atmospheric Air Plasma Treated SnS Films: An Efficient Electrocatalyst for HER. <b>2018</b> , 8, 462	5
478	A brief review on plasma for synthesis and processing of electrode materials. <b>2018</b> , 3, 28-47	30
477	Direct Observation of Structural Evolution of Metal Chalcogenide in Electrocatalytic Water Oxidation. <b>2018</b> , 12, 12369-12379	220
476	Amorphous CoSnO <sub>3</sub> @rGO nanocomposite as an efficient cathode catalyst for long-life Li-O <sub>2</sub> batteries. <b>2018</b> , 39, 1951-1959	14
475	Composition-dependent electrocatalytic activities of NiFe-based selenides for the oxygen evolution reaction. <b>2018</b> , 291, 64-72	39
474	Highly Efficient and Durable Electrocatalyst Based on Nanowires of Cobalt Sulfide for Overall Water Splitting. <b>2018</b> , 4, 1240-1246	19
473	Cobalt iron carbonate hydroxide hydrate on 3D porous carbon as active and stable bifunctional oxygen electrode for Zn  air battery. <b>2018</b> , 402, 388-393	21
472	Quaternary bimetallic phosphosulphide nanosheets derived from prussian blue analogues: Origin of the ultra-high activity for oxygen evolution. <b>2018</b> , 403, 90-96	73
471	Engineering the Interface of Carbon Electrocatalysts at the Triple Point for Enhanced Oxygen Reduction Reaction. <b>2018</b> , 24, 18374-18384	39
470	Covalent Phenanthroline Framework Derived FeS@Fe <sub>3</sub> C Composite Nanoparticles Embedding in N-S-Codoped Carbons as Highly Efficient Trifunctional Electrocatalysts. <b>2018</b> , 28, 1803973	95
469	Defect Engineering of Cobalt-Based Materials for Electrocatalytic Water Splitting. <b>2018</b> , 6, 15954-15969	107
468	Topochemical Synthesis of 2D Carbon Hybrids through Self-Boosting Catalytic Carbonization of a Metal-Polymer Framework. <b>2018</b> , 57, 16436-16441	41
467	Topochemical Synthesis of 2D Carbon Hybrids through Self-Boosting Catalytic Carbonization of a Metal-Polymer Framework. <b>2018</b> , 130, 16674-16679	9
466	Ultra-high surface area graphitic Fe-N-C nanospheres with single-atom iron sites as highly efficient non-precious metal bifunctional catalysts towards oxygen redox reactions. <b>2018</b> , 368, 279-290	67
465	Disordering the Atomic Structure of Co(II) Oxide via B-Doping: An Efficient Oxygen Vacancy Introduction Approach for High Oxygen Evolution Reaction Electrocatalysts. <b>2018</b> , 14, e1802760	55
464	Nickel-Based Bicarbonates as Bifunctional Catalysts for Oxygen Evolution and Reduction Reaction in Alkaline Media. <b>2018</b> , 24, 17665-17671	11
463	Surface decorated cobalt sulfide as efficient catalyst for oxygen evolution reaction and its intrinsic activity. <b>2018</b> , 367, 43-52	24

462	Carbon-Based, Metal-Free Electrocatalysts for Renewable Energy Technologies. <b>2018</b> , 313-334	
461	Cobalt nickel nitride coated by a thin carbon layer anchoring on nitrogen-doped carbon nanotube anodes for high-performance lithium-ion batteries. <b>2018</b> , 6, 19853-19862	26
460	Exploring Indium-Based Ternary Thiospinel as Conceivable High-Potential Air-Cathode for Rechargeable Zn-Air Batteries. <b>2018</b> , 8, 1802263	164
459	Spherical Ruthenium Disulfide-Sulfur-Doped Graphene Composite as an Efficient Hydrogen Evolution Electrocatalyst. <b>2018</b> , 10, 34098-34107	41
458	Coordination-Assisted Polymerization of Mesoporous Cobalt Sulfide/Heteroatom (N,S)-Doped Double-Layered Carbon Tubes as an Efficient Bifunctional Oxygen Electrocatalyst. <b>2018</b> , 10, 33124-33134	50
457	A Facile Strategy to Construct Amorphous Spinel-Based Electrocatalysts with Massive Oxygen Vacancies Using Ionic Liquid Dopant. <b>2018</b> , 8, 1800980	105
456	Solid solution nitride/carbon nanotube hybrids enhance electrocatalysis of oxygen in zinc-air batteries. <b>2018</b> , 15, 380-387	20
455	3D N-doped carbon framework with embedded CoS nanoparticles as highly active and durable oxygen reduction and evolution electrocatalyst. <b>2018</b> , 29, 465402	10
454	Nitrogen Doped Holey Carbon with MoS <sub>2</sub> -MoP Nanosheets for Efficient Hydrogen Evolution Reaction in Alkaline Medium. <b>2018</b> , 165, F976-F980	13
453	Facile synthesis of Fe-doped Co <sub>9</sub> S <sub>8</sub> nano-microspheres grown on nickel foam for efficient oxygen evolution reaction. <b>2018</b> , 454, 46-53	62
452	Bifunctional MOF-derived Co-N-doped carbon electrocatalysts for high-performance zinc-air batteries and MFCs. <b>2018</b> , 156, 95-102	58
451	Nickel Vacancies Boost Reconstruction in Nickel Hydroxide Electrocatalyst. <b>2018</b> , 3, 1373-1380	119
450	Notable light-free catalytic activity for pollutant destruction over flower-like BiOI microspheres by a dual-reaction-center Fenton-like process. <b>2018</b> , 527, 251-259	25
449	Hybrid shells of MnO nanosheets encapsulated by N-doped carbon towards nonprecious oxygen reduction reaction catalysts. <b>2018</b> , 527, 241-250	24
448	Phase-pure pentlandite NiCoS binary sulfide as an efficient bifunctional electrocatalyst for oxygen evolution and hydrogen evolution. <b>2018</b> , 10, 10459-10466	62
447	Recent Advances on Black Phosphorus for Energy Storage, Catalysis, and Sensor Applications. <b>2018</b> , 30, e1800295	166
446	Dicyandiamide and iron-tannin framework derived nitrogen-doped carbon nanosheets with encapsulated iron carbide nanoparticles as advanced pH-universal oxygen reduction catalysts. <b>2018</b> , 530, 196-201	18
445	Rational Design of Z-Scheme System Based on 3D Hierarchical CdS Supported 0D Co <sub>9</sub> S <sub>8</sub> Nanoparticles for Superior Photocatalytic H <sub>2</sub> Generation. <b>2018</b> , 6, 10385-10394	70

444	Interface Designing over WS <sub>2</sub> /W <sub>2</sub> C for Enhanced Hydrogen Evolution Catalysis. <b>2018</b> , 1, 3377-3384	34
443	Organophosphoric acid-derived CoP quantum dots@S,N-codoped graphite carbon as a trifunctional electrocatalyst for overall water splitting and Zn-air batteries. <b>2018</b> , 10, 14613-14626	55
442	Directly Electrodeposited Cobalt Sulfide Nanosheets as Advanced Catalyst for Oxygen Evolution Reaction. <b>2018</b> , 3, 7081-7088	14
441	Metal organic frameworks derived cobalt sulfide/reduced graphene oxide composites with fast reaction kinetic and excellent structural stability for sodium storage. <b>2018</b> , 532, 407-415	25
440	Edge-Rich Quasi-Mesoporous Nitrogen-Doped Carbon Framework Derived from Palm Tree Bark Hair for Electrochemical Applications. <b>2018</b> , 10, 27047-27055	31
439	Monodisperse Co <sub>9</sub> S <sub>8</sub> nanoparticles in situ embedded within N, S-codoped honeycomb-structured porous carbon for bifunctional oxygen electrocatalyst in a rechargeable Zn  air battery. <b>2018</b> , 10, 670-684	58
438	3D cellular CoS <sub>1.097</sub> /nitrogen doped graphene foam: a durable and self-supported bifunctional electrode for overall water splitting. <b>2018</b> , 6, 16235-16245	19
437	Efficient Supercapacitors Based on Co <sub>9</sub> S <sub>8</sub> /Graphene Composites for Electric Vehicles. <b>2018</b> , 7, 289-295	2
436	Highly active bifunctional oxygen electrocatalysts derived from nickel- or cobalt-phytic acid xerogel for zinc-air batteries. <b>2018</b> , 10, 15834-15841	20
435	Boosting Oxygen Reduction Catalysis with N-doped Carbon Coated CoS Microtubes. <b>2018</b> , 10, 25415-25421	75
434	Green Synthesis of Three-Dimensional Hybrid N-Doped ORR Electro-Catalysts Derived from Apricot Sap. <b>2018</b> , 11,	6
433	Sulfur-Doped Graphene-Supported Nickel-Core Palladium-Shell Nanoparticles as Efficient Oxygen Reduction and Methanol Oxidation Electrocatalyst. <b>2018</b> , 1, 3869-3880	18
432	Hierarchical porous CoS <sub>2</sub> microboxes for efficient oxygen evolution reaction. <b>2018</b> , 278, 219-225	40
431	Graphite-graphene architecture stabilizing ultrafine Co <sub>3</sub> O <sub>4</sub> nanoparticles for superior oxygen evolution. <b>2018</b> , 140, 17-23	16
430	Highly Dispersed Co-B/N Codoped Carbon Nanospheres on Graphene for Synergistic Effects as Bifunctional Oxygen Electrocatalysts. <b>2018</b> , 10, 30460-30469	25
429	Cobalt and Nitrogen Codoped Carbon Nanosheets Templated from NaCl as Efficient Oxygen Reduction Electrocatalysts. <b>2018</b> , 13, 3057-3062	21
428	Tuning Cobalt and Nitrogen Co-Doped Carbon to Maximize Catalytic Sites on a Superabsorbent Resin for Efficient Oxygen Reduction. <b>2018</b> , 11, 3631-3639	16
427	Monodisperse and Tiny Co <sub>2</sub> N <sub>0.67</sub> Nanocrystals Uniformly Embedded over Two Curving Surfaces of Hollow Carbon Microfibers as Efficient Electrocatalyst for Oxygen Evolution Reaction. <b>2018</b> , 1, 4461-4473	19

426	Applications of Plasma in Energy Conversion and Storage Materials. <b>2018</b> , 8, 1801804	47
425	A Review of Precious-Metal-Free Bifunctional Oxygen Electrocatalysts: Rational Design and Applications in Zn/Air Batteries. <b>2018</b> , 28, 1803329	368
424	One step fabrication of carbon supported cobalt pentlandite (Co <sub>9</sub> S <sub>8</sub> ) via the thermolysis of lignin and Co <sub>3</sub> O <sub>4</sub> . <b>2018</b> , 27, 196-203	13
423	Exploring Active Sites in Multi-Heteroatom-Doped Co-Based Catalysts for Hydrogen Evolution Reactions. <b>2018</b> , 24, 12480-12484	10
422	Reactive template-induced core-shell FeCo@C microspheres as multifunctional electrocatalysts for rechargeable zinc-air batteries. <b>2018</b> , 10, 17021-17029	36
421	Multifunctional nanostructured electrocatalysts for energy conversion and storage: current status and perspectives. <b>2018</b> , 10, 11241-11280	177
420	Controllable synthesis of ultrathin Co <sub>9</sub> S <sub>8</sub> nanosheets as a highly efficient electrocatalyst for overall water splitting. <b>2018</b> , 281, 198-207	20
419	Porous CoS/Nitrogen, Sulfur-Doped Carbon@MoC Dual Catalyst for Efficient Water Splitting. <b>2018</b> , 10, 22291-22302	66
418	Hierarchical cobalt sulfide with vertical in-plane edge structure for enhanced electrocatalytic oxygen evolution reaction. <b>2018</b> , 281, 348-356	17
417	Achieving superior performance for oxygen electrode catalyst by the assistance of NaCl to construct cobalt sulfide on nitrogen and sulfur dual-doped graphene. <b>2018</b> , 43, 13256-13265	5
416	Hierarchical FeS/RGO/FeS@Fe foil as high-performance negative electrode for asymmetric supercapacitors. <b>2018</b> , 5, 1912-1922	19
415	Interlaced Ni-Co LDH nanosheets wrapped Co <sub>9</sub> S <sub>8</sub> nanotube with hierarchical structure toward high performance supercapacitors. <b>2018</b> , 351, 348-355	134
414	Iron phosphide anchored nanoporous carbon as an efficient electrode for supercapacitors and the oxygen reduction reaction.. <b>2019</b> , 9, 25240-25247	9
413	Space-Confined Strategy to Fe <sub>7</sub> C <sub>3</sub> Nanoparticles Wrapped in Porous Fe-/N-Doped Carbon Nanosheets for Efficient Oxygen Electrocatalysis. <b>2019</b> , 7, 13576-13583	24
412	Engineering Unique Ball-In-Ball Structured (NiCo)S@C Nanospheres for Advanced Sodium Storage. <b>2019</b> , 11, 27805-27812	16
411	Self-Catalyzed Growth of Co, N-Codoped CNTs on Carbon-Encased CoS <sub>x</sub> Surface: A Noble-Metal-Free Bifunctional Oxygen Electrocatalyst for Flexible Solid Zn/Air Batteries. <b>2019</b> , 29, 1904481	144
410	Hydrothermal deposition of CoS nanostructures and its multifunctional applications in supercapattery and water electrolyzer. <b>2019</b> , 494, 916-928	26
409	A strategy of two-step tandem catalysis towards direct N-alkylation of nitroarenes with ethanol via facile fabricated novel Co-based catalysts derived from coordination polymers. <b>2019</b> , 376, 106-118	13

408	Nanostructured Co-based bifunctional electrocatalysts for energy conversion and storage: current status and perspectives. <b>2019</b> , 7, 18674-18707	152
407	Nonmetal Doping as a Robust Route for Boosting the Hydrogen Evolution of Metal-Based Electrocatalysts. <b>2019</b> , 26, 3930	8
406	Integrated N-Co/Carbon Nanofiber Cathode for Highly Efficient Zinc-Air Batteries. <b>2019</b> , 11, 29708-29717	23
405	Thiacalixarene-supported Co <sub>24</sub> nanocluster derived octahedral Co <sub>9</sub> S <sub>8</sub> nanoparticles in N-doped carbon for superior Li-ion storage. <b>2019</b> , 171, 279-284	4
404	Cobalt Nanoparticles Embedded in N, S Co-Doped Carbon towards Oxygen Reduction Reaction Derived by in situ Reducing Cobalt Sulfide. <b>2019</b> , 11, 6039-6050	8
403	Graphdiyne with tunable activity towards hydrogen evolution reaction. <b>2019</b> , 63, 103874	29
402	Molybdenum, Cobalt Sulfide-Modified N-, S-Doped Graphene from Low-Temperature Molecular Pyrolysis: Mutual Activation Effect for Hydrogen Evolution. <b>2019</b> , 7, 19442-19452	7
401	Ultrastable Co <sub>9</sub> S <sub>8</sub> Nanowires by Glancing Angle Deposition with Magnetron Sputtering as Novel Electrocatalyst for Water Oxidation. <b>2019</b> , 11, 6111-6115	8
400	Defect-Enriched Nitrogen Doped-Graphene Quantum Dots Engineered NiCo S Nanoarray as High-Efficiency Bifunctional Catalyst for Flexible Zn-Air Battery. <b>2019</b> , 15, e1903610	61
399	Hierarchical holey Co <sub>9</sub> S <sub>8</sub> @S-rGO hybrid electrodes for high-performance asymmetric supercapacitors. <b>2019</b> , 328, 135078	27
398	N-doped carbon matrix supported Fe <sub>3</sub> Ni <sub>6</sub> S <sub>8</sub> hierarchical architecture with excellent sodium storage capability and electrocatalytic properties. <b>2019</b> , 325, 134925	9
397	Surface-engineered cobalt nitride composite as efficient bifunctional oxygen electrocatalyst. <b>2019</b> , 30, 495406	10
396	Engineering Bimetal Synergistic Electrocatalysts Based on Metal-Organic Frameworks for Efficient Oxygen Evolution. <b>2019</b> , 15, e1903410	82
395	Experimental and Theoretical Understanding on Electrochemical Activation Processes of Nickel Selenide for Excellent Water-Splitting Performance: Comparing the Electrochemical Performances with M <sub>2</sub> NiSe (M = Co, Cu, and V). <b>2019</b> , 7, 19257-19267	58
394	Novel Composite Based on Bimetallic AuNi-Embedded Nano X Zeolite/MWCNT as a Superior Electrocatalyst for Oxygen Evolution Reaction. <b>2019</b> , 7, 19384-19395	5
393	A Review on the Promising Plasma-Assisted Preparation of Electrocatalysts. <b>2019</b> , 9,	15
392	Synergism of Interface and Electronic Effects: Bifunctional N-Doped Ni S/N-Doped MoS Hetero-Nanowires for Efficient Electrocatalytic Overall Water Splitting. <b>2019</b> , 25, 16074	21
391	Lattice Strain Formation through Spin-Coupled Shells of MoS <sub>2</sub> on Mo <sub>2</sub> C for Bifunctional Oxygen Reduction and Oxygen Evolution Reaction Electrocatalysts. <b>2019</b> , 6, 1900948	28

390	Convolutional End-to-End Memory Networks for Multi-Hop Reasoning. <b>2019</b> , 7, 135268-135276	1
389	In situ coupled amorphous cobalt nitride with nitrogen-doped graphene aerogel as a trifunctional electrocatalyst towards Zn-air battery driven full water splitting. <b>2019</b> , 259, 118100	76
388	Amorphous NiMS (M: Co, Fe or Mn) holey nanosheets derived from crystal phase transition for enhanced oxygen evolution in water splitting. <b>2019</b> , 323, 134756	22
387	Engineering anion defect in LaFeO <sub>2.85</sub> Cl <sub>0.15</sub> perovskite for boosting oxygen evolution reaction. <b>2019</b> , 44, 24077-24085	19
386	Confined Co <sub>9</sub> S <sub>8</sub> into a defective carbon matrix as a bifunctional oxygen electrocatalyst for rechargeable zinc-air batteries. <b>2019</b> , 9, 5757-5762	5
385	Dopamine D1 receptor agonist treatment alleviates morphine-exposure-induced learning and memory impairments. <b>2019</b> , 1711, 120-129	1
384	Coupling pentlandite nanoparticles and dual-doped carbon networks to yield efficient and stable electrocatalysts for acid water oxidation. <b>2019</b> , 7, 461-468	33
383	Well-defined cobalt sulfide nanoparticles locked in 3D hollow nitrogen-doped carbon shells for superior lithium and sodium storage. <b>2019</b> , 18, 114-124	33
382	N <sup>+</sup> -ion irradiation engineering towards the efficient oxygen evolution reaction on NiO nanosheet arrays. <b>2019</b> , 7, 4729-4733	34
381	Ar Plasma-Exfoliated Ultrathin NiCo-Layered Double Hydroxide Nanosheets for Enhanced Oxygen Evolution. <b>2019</b> , 2, 1162-1168	43
380	Triple hierarchy and double synergies of NiFe/CoS/carbon cloth: a new and efficient electrocatalyst for the oxygen evolution reaction. <b>2019</b> , 11, 3378-3385	32
379	Water-Plasma Assisted Synthesis of Oxygen-Enriched NiFe Layered Double Hydroxide Nanosheets for Efficient Oxygen Evolution Reaction. <b>2019</b> , 7, 4247-4254	43
378	Interface-Engineering-Induced Electric Field Effect and Atomic Disorder in Cobalt Selenide for High-Rate and Large-Capacity Lithium Storage. <b>2019</b> , 7, 4657-4665	26
377	Facile synthesis of hierarchical porous NiCoSeO networks with controllable composition as a new and efficient water oxidation catalyst. <b>2019</b> , 11, 3268-3274	17
376	Bifunctional iron disulfide nanoellipsoids for high energy density supercapacitor and electrocatalytic oxygen evolution applications. <b>2019</b> , 6, 659-670	20
375	Recent progress in the hybrids of transition metals/carbon for electrochemical water splitting. <b>2019</b> , 7, 14380-14390	68
374	Engineering Two-Dimensional Materials and Their Heterostructures as High-Performance Electrocatalysts. <b>2019</b> , 2, 373-394	47
373	Recent advances in metal sulfides: from controlled fabrication to electrocatalytic, photocatalytic and photoelectrochemical water splitting and beyond. <b>2019</b> , 48, 4178-4280	463

372	Few-Layer Antimonene Nanosheet: A Metal-Free Bifunctional Electrocatalyst for Effective Water Splitting. <b>2019</b> , 2, 4774-4781	33
371	Morphological and electronic modification of 3D porous nickel microsphere arrays by cobalt and sulfur dual synergistic modulation for overall water splitting electrolysis and supercapacitors. <b>2019</b> , 491, 570-578	7
370	3D ordered macro-/mesoporous carbon supported Ag nanoparticles for efficient electrocatalytic oxygen reduction reaction. <b>2019</b> , 554, 177-182	9
369	Hierarchical Nanoassembly of MoS/CoS/NiS/Ni as a Highly Efficient Electrocatalyst for Overall Water Splitting in a Wide pH Range. <b>2019</b> , 141, 10417-10430	359
368	Heterogeneous CoFe <sub>2</sub> O <sub>8</sub> FeS <sub>8</sub> nanoparticles embedded in CNT networks as highly efficient and stable electrocatalysts for oxygen evolution reaction. <b>2019</b> , 433, 126688	61
367	Solvothermal sulfurization in a deep eutectic solvent: a novel route to synthesize Co-doped Ni <sub>3</sub> S <sub>2</sub> nanosheets supported on Ni foam as active materials for ultrahigh-performance pseudocapacitors. <b>2019</b> , 3, 1957-1965	13
366	General Synthesis of Ultrathin Metal Borate Nanomeshes Enabled by 3D Bark-Like N-Doped Carbon for Electrocatalysis. <b>2019</b> , 9, 1901130	30
365	Small sized Fe <sub>2</sub> O <sub>3</sub> sulfide nanoclusters anchored on carbon for oxygen evolution. <b>2019</b> , 7, 15851-15861	57
364	Highly stable nitrogen-doped carbon nanotubes derived from carbon dots and metal-organic frameworks toward excellent efficient electrocatalyst for oxygen reduction reaction. <b>2019</b> , 63, 103788	55
363	Three-dimensional Composite Catalysts for Al-O Batteries Composed of CoMnO Nanoneedles Supported on Nitrogen-Doped Carbon Nanotubes/Graphene. <b>2019</b> , 11, 21526-21535	25
362	Superior Oxygen Electrocatalysis on Nickel Indium Thiospinels for Rechargeable Zn-Air Batteries. <b>2019</b> , 1, 123-131	135
361	A Cathode-Integrated Sulfur-Deficient CoS Catalytic Interlayer for the Reutilization of "Lost" Polysulfides in Lithium-Sulfur Batteries. <b>2019</b> , 13, 7073-7082	156
360	N-doped cobalt disulfide decorated on carbon cloth as an efficient electrode for oxygen generation. <b>2019</b> , 44, 16615-16623	5
359	The oxygen evolution reaction enabled by transition metal phosphide and chalcogenide pre-catalysts with dynamic changes. <b>2019</b> , 55, 8744-8763	143
358	Recent progress in Co <sub>9</sub> S <sub>8</sub> -based materials for hydrogen and oxygen electrocatalysis. <b>2019</b> , 7, 16068-16088	66
357	Insight into the design of defect electrocatalysts: From electronic structure to adsorption energy. <b>2019</b> , 31, 47-68	173
356	Ultrafine and highly-dispersed bimetal Ni <sub>2</sub> P/Co <sub>2</sub> P encapsulated by hollow N-doped carbon nanospheres for efficient hydrogen evolution. <b>2019</b> , 44, 14908-14917	66
355	Evolution of cobalt species in glow discharge plasma prepared CoRu/SiO <sub>2</sub> catalysts with enhanced Fischer-Tropsch synthesis performance. <b>2019</b> , 374, 246-256	9

354	Construction of ultrasensitive label-free aptasensor for thrombin detection using palladium nanocones boosted electrochemiluminescence system. <b>2019</b> , 310, 195-202	20
353	Sea urchin-like NiBe sulfide architectures as efficient electrocatalysts for the oxygen evolution reaction. <b>2019</b> , 7, 12350-12357	52
352	Co-Modified MoS <sub>2</sub> Hybrids as Superior Bifunctional Electrocatalysts for Water Splitting Reactions: Integrating Multiple Active Components in One. <b>2019</b> , 6, 1900372	11
351	Surface confinement assisted synthesis of nitrogen-rich hollow carbon cages with Co nanoparticles as breathable electrodes for Zn-air batteries. <b>2019</b> , 254, 55-65	63
350	Structure-Activity Relationship of Defective Metal-Based Photocatalysts for Water Splitting: Experimental and Theoretical Perspectives. <b>2019</b> , 6, 1900053	126
349	Functionalized Carbon Dots on Graphene as Outstanding Non-Metal Bifunctional Oxygen Electrocatalyst. <b>2019</b> , 15, e1900296	37
348	Graphene-Encapsulated Co S Nanoparticles on N,S-Codoped Carbon Nanotubes: An Efficient Bifunctional Oxygen Electrocatalyst. <b>2019</b> , 12, 3390-3400	34
347	Rational design of three-phase interfaces for electrocatalysis. <b>2019</b> , 12, 2055-2066	86
346	Porous NiCo <sub>2</sub> S <sub>4</sub> /Co <sub>9</sub> S <sub>8</sub> Microcubes Templated by Sacrificial ZnO Spheres as an Efficient Bifunctional Oxygen Electrocatalyst. <b>2019</b> , 3, 1800167	13
345	2D Layered Double Hydroxides for Oxygen Evolution Reaction: From Fundamental Design to Application. <b>2019</b> , 9, 1803358	296
344	Prospects and challenges of graphene based fuel cells. <b>2019</b> , 39, 217-234	35
343	Preparation of stable and highly active Ni/CeO <sub>2</sub> catalysts by glow discharge plasma technique for glycerol steam reforming. <b>2019</b> , 249, 257-265	53
342	Recent Progress in Defective Carbon-Based Oxygen Electrode Materials for Rechargeable Zink-Air Batteries. <b>2019</b> , 2, 509-523	26
341	Core-shell MOF-derived N-doped yolk-shell carbon nanocages homogenously filled with ZnSe and CoSe <sub>2</sub> nanodots as excellent anode materials for lithium- and sodium-ion batteries. <b>2019</b> , 7, 11016-11037	105
340	Chitin-derived porous carbon loaded with Co, N and S with enhanced performance towards electrocatalytic oxygen reduction, oxygen evolution, and hydrogen evolution reactions. <b>2019</b> , 304, 350-359	15
339	Rational assembly of hybrid carbon nanotubes grafted on the carbon nanofibers as reliable and robust bifunctional catalyst for rechargeable zinc-air battery. <b>2019</b> , 421, 68-75	27
338	Hierarchical tri-functional electrocatalysts derived from bimetallicimidazolate framework for overall water splitting and rechargeable zinc-air batteries. <b>2019</b> , 7, 8641-8652	35
337	High-performance electrolytic oxygen evolution with a seamless armor core-shell FeCoNi oxynitride. <b>2019</b> , 11, 7239-7246	21

336	Effect of two-step doping pathway on the morphology, structure, composition, and electrochemical performance of three-dimensional N,S-codoped graphene framework. <b>2019</b> , 34, 1993-2002	1
335	Low-temperature plasma technology for electrocatalysis. <b>2019</b> , 30, 826-838	28
334	Efficient Oxygen Electrocatalyst for Zn-Air Batteries: Carbon Dots and CoS Nanoparticles in a N,S-Codoped Carbon Matrix. <b>2019</b> , 11, 14085-14094	66
333	Phase-Transited Lysozyme-Driven Formation of Self-Supported CoO@C Nanomeshes for Overall Water Splitting. <b>2019</b> , 6, 1900272	50
332	Self-reconstruction in 2D nickel thiophosphate nanosheets to boost oxygen evolution reaction. <b>2019</b> , 484, 54-61	16
331	Nanoarchitectonics for Transition-Metal-Sulfide-Based Electrocatalysts for Water Splitting. <b>2019</b> , 31, e1807134	613
330	Electrochemical investigation of uncapped AgBiS (schapbachite) synthesized using in situ melts of xanthate precursors. <b>2019</b> , 48, 3714-3722	28
329	Electrochemical impacts of sheet-like hafnium phosphide and hafnium disulfide catalysts bonded with reduced graphene oxide sheets for bifunctional oxygen reactions in alkaline electrolytes.. <b>2019</b> , 9, 2599-2607	9
328	Metal-organic framework-derived Co <sub>9</sub> S <sub>8</sub> embedded in N, O and S-tridoped carbon nanomaterials as an efficient oxygen bifunctional electrocatalyst. <b>2019</b> , 7, 7389-7395	65
327	Two-Dimensional Materials on the Rocks: Positive and Negative Role of Dopants and Impurities in Electrochemistry. <b>2019</b> , 13, 2681-2728	46
326	Cobalt oxyhydroxide with highly porous structures as active and stable phase for efficient water oxidation. <b>2019</b> , 303, 231-238	15
325	N- and S- co-doped graphene sheet-encapsulated Co <sub>9</sub> S <sub>8</sub> nanomaterials as excellent electrocatalysts for the oxygen evolution reaction. <b>2019</b> , 417, 90-98	35
324	In-situ evolution of active layers on commercial stainless steel for stable water splitting. <b>2019</b> , 248, 277-285	64
323	Selective surface functionalization generating site-isolated Ir on a MnO <sub>x</sub> /N-doped carbon composite for robust electrocatalytic water oxidation. <b>2019</b> , 7, 23098-23104	12
322	Identifying the crystal and electronic structure evolution in tri-component transition metal oxide nanosheets for efficient electrocatalytic oxygen evolution. <b>2019</b> , 1, e12005	10
321	3D carbon framework-supported CoNi nanoparticles as bifunctional oxygen electrocatalyst for rechargeable Zn-air batteries. <b>2019</b> , 240, 193-200	134
320	Designing iron carbide embedded isolated boron (B) and nitrogen (N) atoms co-doped porous carbon fibers networks with tiny amount of BN bonds as high-efficiency oxygen reduction reaction catalysts. <b>2019</b> , 533, 709-722	19
319	Pseudocapacitive Co <sub>9</sub> S <sub>8</sub> /graphene electrode for high-rate hybrid supercapacitors. <b>2019</b> , 141, 134-142	85

3 <sup>18</sup>	Co <sub>9</sub> S <sub>8</sub> @MoS <sub>2</sub> core-shell nanostructure anchored on reduced graphene oxide with improved electrochemical performance for lithium-ion batteries. <b>2019</b> , 473, 918-927	17
3 <sup>17</sup>	Hierarchical microstructure of CNTs interwoven ultrathin Co <sub>3</sub> S <sub>4</sub> nanosheets as a high performance anode for sodium-ion battery. <b>2019</b> , 45, 3591-3599	20
3 <sup>16</sup>	Effect of molecular weight of polyethylene glycol on the sheet-thickness and photocatalytic performance of MoS <sub>2</sub> nanoparticles. <b>2019</b> , 469, 312-315	4
3 <sup>15</sup>	Metal Nanoclusters: New Paradigm in Catalysis for Water Splitting, Solar and Chemical Energy Conversion. <b>2019</b> , 12, 1517-1548	60
3 <sup>14</sup>	N-Doped porous carbon nanosheets decorated with graphitized carbon layer encapsulated CoS nanoparticles: an efficient bifunctional electrocatalyst for the OER and ORR. <b>2019</b> , 11, 901-907	65
3 <sup>13</sup>	Recent advances in transition metalBased catalysts with heterointerfaces for energy conversion and storage. <b>2019</b> , 11, 16-28	53
3 <sup>12</sup>	Co <sub>9</sub> S <sub>8</sub> nanowires@NiCo LDH nanosheets arrays on nickel foams towards efficient overall water splitting. <b>2019</b> , 64, 158-165	38
3 <sup>11</sup>	Three-Dimensional Nanoporous CoSP Pentlandite as a Bifunctional Electrocatalyst for Overall Neutral Water Splitting. <b>2019</b> , 11, 3880-3888	47
3 <sup>10</sup>	Architecture of porous CoS <sub>1.097</sub> -C composite nanowire for efficient oxygen reduction reaction. <b>2019</b> , 44, 3681-3689	5
3 <sup>09</sup>	Salt-templated synthesis of Co <sub>9</sub> S <sub>8</sub> nanoparticles anchored on N, S co-doped carbon nanosheets towards high-performance water oxidation. <b>2019</b> , 835, 67-72	5
3 <sup>08</sup>	Rapid low-temperature synthesis of hollow CuS <sub>0.55</sub> nanoparticles for efficient electrocatalytic water oxidation. <b>2019</b> , 195, 665-670	23
3 <sup>07</sup>	All-solid-state Z-scheme Co <sub>9</sub> S <sub>8</sub> /graphitic carbon nitride photocatalysts for simultaneous reduction of Cr(VI) and oxidation of 2,4-dichlorophenoxyacetic acid under simulated solar irradiation. <b>2019</b> , 360, 1188-1198	41
3 <sup>06</sup>	Recent Progress in Electrically Rechargeable Zinc-Air Batteries. <b>2019</b> , 31, e1805230	204
3 <sup>05</sup>	Defect engineering on electrocatalysts for gas-evolving reactions. <b>2018</b> , 48, 15-20	35
3 <sup>04</sup>	Hierarchical Bimetallic Selenide Nanosheet-Constructed Nanotubes for Efficient Electrocatalytic Water Oxidation. <b>2019</b> , 6, 331-335	11
3 <sup>03</sup>	Insights into Ni-Fe couple in perovskite electrocatalysts for highly efficient electrochemical oxygen evolution. <b>2019</b> , 293, 240-246	20
3 <sup>02</sup>	Ultra-dispersed island-like Co <sub>9</sub> S <sub>8</sub> nanoparticles composed of nanosheets in-situ grown on nitrogen-doped graphene for asymmetric supercapacitor. <b>2019</b> , 293, 419-425	19
3 <sup>01</sup>	A highly pyridinic N-doped carbon from macroalgae with multifunctional use toward CO <sub>2</sub> capture and electrochemical applications. <b>2019</b> , 54, 1606-1615	17

300	Rational Design of Transition Metal-Based Materials for Highly Efficient Electrocatalysis. <b>2019</b> , 3, 1800211	166
299	In-situ growth of graphene decorated Ni <sub>3</sub> S <sub>2</sub> pyramids on Ni foam for high-performance overall water splitting. <b>2019</b> , 465, 772-779	30
298	Co <sub>1-x</sub> S embedded in porous carbon derived from metal organic framework as a highly efficient electrocatalyst for oxygen evolution reaction. <b>2019</b> , 30, 229-233	26
297	Phosphorus doped Co <sub>9</sub> S <sub>8</sub> @CS as an excellent air-electrode catalyst for zinc-air batteries. <b>2020</b> , 381, 122683	38
296	Cobalt sulfides nanoparticles encapsulated in N, S co-doped carbon substrate for highly efficient oxygen reduction. <b>2020</b> , 815, 152457	17
295	Comparative analysis of Co <sub>9</sub> S <sub>8</sub> /S-doped rGO composites as high-performance electrodes via facile one-step anneal fabrication for supercapacitor application. <b>2020</b> , 815, 152448	8
294	Toward materials-by-design: achieving functional materials with physical and chemical effects. <b>2020</b> , 31, 024002	3
293	N, S-codoped graphene loaded Ni-Co bimetal sulfides for enhanced oxygen evolution activity. <b>2020</b> , 503, 144146	22
292	Recent advances in carbon-based electrocatalysts for oxygen reduction reaction. <b>2020</b> , 31, 626-634	60
291	Charge Transfer Modulated Activity of Carbon-Based Electrocatalysts. <b>2020</b> , 10, 1901227	93
290	Co <sub>9</sub> S <sub>8</sub> nanoparticles embedded in multiple doped and electrospun hollow carbon nanofibers as bifunctional oxygen electrocatalysts for rechargeable zinc-air battery. <b>2020</b> , 268, 118437	68
289	MOF-derived nitrogen-doped CoO@CoP arrays as bifunctional electrocatalysts for efficient overall water splitting. <b>2020</b> , 330, 135210	45
288	Coral-like hierarchical architecture self-assembled by cobalt hexacyanoferrate nanocrystals and N-doped carbon nanoplatelets as efficient electrocatalyst for oxygen evolution reaction. <b>2020</b> , 558, 190-199	14
287	Walnut shell-derived hierarchical porous carbon with high performances for electrocatalytic hydrogen evolution and symmetry supercapacitors. <b>2020</b> , 45, 443-451	30
286	Nitrogen, sulfur and oxygen co-doped carbon-armored Co/CoS rods (Co/CoS@N-S-O-C) as efficient activator of peroxymonosulfate for sulfamethoxazole degradation. <b>2020</b> , 387, 121669	29
285	Graphene-cobalt based oxygen electrocatalysts. <b>2020</b> , 358, 184-195	2
284	N, S-codoped CNTs supported CoS nanoparticles prepared by using CdS nanorods as sulfur sources and hard templates: An efficient catalyst for reversible oxygen electrocatalysis. <b>2020</b> , 560, 186-197	27
283	Copper and cobalt co-doped Ni <sub>3</sub> S <sub>2</sub> grown on nickel foam for highly efficient oxygen evolution reaction. <b>2020</b> , 502, 144172	22

282	Ultrathin Co <sub>3</sub> O <sub>4</sub> nanosheet clusters anchored on nitrogen doped carbon nanotubes/3D graphene as binder-free cathodes for Al-air battery. <b>2020</b> , 381, 122681	29
281	Oxygen vacancies confined in nickel oxide nanoprism arrays for promoted electrocatalytic water splitting. <b>2020</b> , 44, 1703-1706	7
280	Point-defect-optimized electron distribution for enhanced electrocatalysis: Towards the perfection of the imperfections. <b>2020</b> , 31, 100833	35
279	Unconventionally fabricating defect-rich NiO nanoparticles within ultrathin metal-organic framework nanosheets to enable high-output oxygen evolution. <b>2020</b> , 8, 2140-2146	33
278	Self-templated nitrogen-doped mesoporous carbon decorated with double transition-metal active sites for enhanced oxygen electrode catalysis. <b>2020</b> , 39, 824-833	33
277	Highly efficient catalytic CoS <sub>1.097</sub> embedded in biomass nanosheets for oxygen evolution reaction. <b>2020</b> , 45, 2765-2773	5
276	Novel Co <sub>1-x</sub> S/C-3 supported on N-doped ketjen black as an efficient electrocatalyst for oxygen reduction reaction in alkaline media. <b>2020</b> , 106, 215-226	1
275	Hybrid shells of N-doped carbon encapsulated by MnO nanoparticles as oxygen reduction reaction electrocatalysts. <b>2020</b> , 44, 580-585	7
274	Co <sub>9</sub> S <sub>8</sub> integrated into nitrogen/sulfur dual-doped carbon nanofibers as an efficient oxygen bifunctional electrocatalyst for Zn-Bi batteries. <b>2020</b> , 4, 1093-1098	12
273	High-efficiency synthesis of Co, N-doped carbon nanocages by ball milling-hard template method as an active catalyst for oxygen reduction reaction. <b>2020</b> , 45, 6318-6327	12
272	The Proportion of Fe-N, N Doping Species and Fe C to Oxygen Catalytic Activity in Core-Shell Fe-N/C Electrocatalyst. <b>2020</b> , 15, 310-318	2
271	Strongly Cooperative Nano-CoO/Co Active Phase in Hierarchically Porous Nitrogen-Doped Carbon Microspheres for Efficient Bifunctional Oxygen Electrocatalysis. <b>2020</b> , 3, 1328-1337	13
270	Cobalt-gluconate-derived high-density cobalt sulfides nanocrystals encapsulated within nitrogen and sulfur dual-doped micro/mesoporous carbon spheres for efficient electrocatalysis of oxygen reduction. <b>2020</b> , 561, 829-837	14
269	Highly active bifunctional Pd-Co <sub>9</sub> S <sub>8</sub> /S-CNT catalysts for selective hydrogenolysis of 5-hydroxymethylfurfural to 2,5-dimethylfuran. <b>2020</b> , 482, 110756	9
268	BiVO <sub>4</sub> photoanode decorated with cobalt-manganese layered double hydroxides for enhanced photoelectrochemical water oxidation. <b>2020</b> , 45, 31902-31912	10
267	Controllable synthesis of CoFeMo layered double hydroxide nanoarrays for promoting the oxygen evolution reaction. <b>2020</b> , 49, 15417-15424	1
266	Iron nanoparticles loaded on nickel sulfide nanosheets: an efficient amorphous catalyst for water oxidation. <b>2020</b> , 4, 5498-5502	1
265	Current progress and performance improvement of Pt/C catalysts for fuel cells. <b>2020</b> , 8, 24284-24306	50

264	Synthesis of Holey Graphene Nanoparticle Compounds. <b>2020</b> , 12, 36513-36522	3
263	Construction of FeCoO@N-Doped Carbon Dots Nanoflowers as Binder Free Electrode for Reduction and Oxidation of Water. <b>2020</b> , 13,	11
262	Single-Atom Vacancy Defect to Trigger High-Efficiency Hydrogen Evolution of MoS. <b>2020</b> , 142, 4298-4308	287
261	Micelles of Mesoporous Silica with Inserted Iron Complexes as a Platform for Constructing Efficient Electrocatalysts for Oxygen Reduction. <b>2020</b> , 12, 54720-54731	9
260	Rational Design of Metal-Organic Frameworks towards Efficient Electrocatalysis. <b>2020</b> , 2, 1251-1267	25
259	Phase Engineering of Iron-Cobalt Sulfides for Zn-Air and Na-Ion Batteries. <b>2020</b> , 14, 10438-10451	20
258	Electrocatalysts optimized with nitrogen coordination for high-performance oxygen evolution reaction. <b>2020</b> , 422, 213468	23
257	Porphyrin coordination polymer/Co <sub>1</sub> S composite electrocatalyst for efficient oxygen evolution reaction. <b>2020</b> , 400, 125975	26
256	Dual-metal NiCo nanoparticles in B-doped carbon layers as efficient and durable electrocatalyst for oxygen evolution reaction. <b>2020</b> , 532, 147381	13
255	Self-supported multidimensional NiBe phosphide networks as novel and robust water splitting catalyst. <b>2020</b> , 45, 22921-22928	8
254	Synthesis of Flower-Like Co <sub>9</sub> S <sub>8</sub> /Reduced Graphene Oxide Nanocomposites and Their Photocatalytic Performance. <b>2020</b> , 30, 5168-5179	3
253	CoSe <sub>2</sub> @NiSe <sub>2</sub> nanoarray as better and efficient electrocatalyst for overall water splitting. <b>2020</b> , 45, 30611-30621	31
252	Electrospun Inorganic Nanofibers for Oxygen Electrocatalysis: Design, Fabrication, and Progress. <b>2020</b> , 10, 1902115	60
251	Three-dimensional Co <sub>3</sub> O <sub>4</sub> @NiCo <sub>2</sub> O <sub>4</sub> nanoarrays with different morphologies as electrocatalysts for oxygen evolution reaction. <b>2020</b> , 45, 28598-28606	6
250	Recent advances in nanostructured transition metal nitrides for fuel cells. <b>2020</b> , 8, 20803-20818	14
249	A facile and scalable approach to develop electrochemical unzipping of multi-walled carbon nanotubes to graphene nanoribbons. <b>2020</b> , 8, 22045-22053	3
248	Electrospinning CoS <sub>2</sub> /carbon nanofibers with enhanced stability as electrode materials for supercapacitors. <b>2020</b> , 26, 5737-5746	5
247	An Ir/Ni(OH) Heterostructured Electrocatalyst for the Oxygen Evolution Reaction: Breaking the Scaling Relation, Stabilizing Iridium(V), and Beyond. <b>2020</b> , 32, e2000872	87

246	Characterization of Cobalt Sulfide Thin Films Synthesized from Acidic Chemical Baths. <b>2020</b> , 2020, 1-9	13
245	High-Performance Overall CO <sub>2</sub> Splitting on Hierarchical Structured Cobalt Disulfide with Partially Removed Sulfur Edges. <b>2020</b> , 30, 2000154	18
244	Paper-Based Constant Potential Electrochemiluminescence Sensing Platform with Black Phosphorus as a Luminophore Enabled by a Perovskite Solar Cell. <b>2020</b> , 92, 6822-6826	20
243	Facile and controllable synthesis N-doping porous Graphene for high-performance Supercapacitor. <b>2020</b> , 871, 114311	7
242	General approach to construct hierarchical-structured porous CoNi bimetallic oxides for efficient oxygen evolution. <b>2020</b> , 7, 2611-2620	5
241	Improving catalysis for electrochemical water splitting using a phosphosulphide surface. <b>2020</b> , 7, 2388-2395	9
240	Slower Removing Ligands of Metal Organic Frameworks Enables Higher Electrocatalytic Performance of Derived Nanomaterials. <b>2020</b> , 16, e2002210	25
239	Cobalt(II) ions and cobalt nanoparticle embedded porous organic polymers: an efficient electrocatalyst for water-splitting reactions. <b>2020</b> , 4, 3797-3805	10
238	Identification of the Dynamic Behavior of Oxygen Vacancy-Rich CoO for Oxygen Evolution Reaction. <b>2020</b> , 142, 12087-12095	279
237	Mesoporous anion-cation-codoped CoS nanorings for enhanced electrocatalytic oxygen evolution reactions. <b>2020</b> , 31, 334001	2
236	Metal-Rich Chalcogenides as Sustainable Electrocatalysts for Oxygen Evolution and Reduction: State of the Art and Future Perspectives. <b>2020</b> , 2020, 2679-2690	13
235	Holey Cobalt-Iron Nitride Nanosheet Arrays as High-Performance Bifunctional Electrocatalysts for Overall Water Splitting. <b>2020</b> , 12, 29253-29263	10
234	Rational Design and Synthesis of Hierarchical Porous MnNi Nanoparticles with Atomically Dispersed Mn <sub>Nx</sub> Moieties for Highly Efficient Oxygen Reduction Reaction. <b>2020</b> , 8, 9367-9376	23
233	A high-performance bimetallic cobalt iron oxide catalyst for the oxygen evolution reaction. <b>2020</b> , 22, 4317-4323	8
232	Compositional engineering of sulfides, phosphides, carbides, nitrides, oxides, and hydroxides for water splitting. <b>2020</b> , 8, 13415-13436	51
231	Nitrogen and Sulfur Vacancies in Carbon Shell to Tune Charge Distribution of Co <sub>6</sub> Ni <sub>3</sub> S <sub>8</sub> Core and Boost Sodium Storage. <b>2020</b> , 10, 1904147	47
230	Doping Nitrogen into Q-Graphene by Plasma Treatment toward Peroxidase Mimics with Enhanced Catalysis. <b>2020</b> , 92, 5152-5157	19
229	Graphdiyne: A Rising Star of Electrocatalyst Support for Energy Conversion. <b>2020</b> , 10, 2000177	53

228	Undoped SnO as a Support for Ni Species to Boost Oxygen Generation through Alkaline Water Electrolysis. <b>2020</b> , 12, 18407-18420	6
227	Iterative oxidation and sulfidation reactions: revival of bulk cobalt sulfide into an active electrocatalyst for the oxygen evolution reaction. <b>2020</b> , 8, 7647-7652	10
226	Ferrocene-Incorporated Cobalt Sulfide Nanoarchitecture for Superior Oxygen Evolution Reaction. <b>2020</b> , 16, e2001665	30
225	A new concept analogous to homogeneous catalysis to construct in-situ regenerative electrodes for long-term oxygen evolution reaction. <b>2020</b> , 76, 105115	9
224	Co9S8 Nanoparticle-Supported Nitrogen-doped Carbon as a Robust Catalyst for Oxygen Reduction Reaction in Both Acidic and Alkaline Conditions. <b>2020</b> , 7, 3123-3134	2
223	Effect of the Size and Shape on the Electrocatalytic Activity of CoO Nanoparticles in the Oxygen Evolution Reaction. <b>2020</b> , 59, 10013-10024	14
222	A supersalt-type copper(i)-thiolate cluster with applications for mechano/thermochromism and the oxygen evolution reaction. <b>2020</b> , 56, 3967-3970	9
221	The electrochemical synthesis of CNTs/N-Cu2S composites as efficient electrocatalysts for water oxidation. <b>2020</b> , 22, 1	1
220	Surface plasma-etching treatment of cobalt nanoparticles-embedded honeysuckle-like nitrogen-doped carbon nanotubes to produce high-performance catalysts for rechargeable zinc-air batteries. <b>2020</b> , 453, 227858	16
219	Toward More Sustainable Rechargeable Aqueous Batteries Using Plasma-Treated Cellulose-Based Li-Ion Electrodes. <b>2020</b> , 8, 4728-4733	7
218	A microwave-assisted bubble bursting strategy to grow Co8FeS8/CoS heterostructure on rearranged carbon nanotubes as efficient electrocatalyst for oxygen evolution reaction. <b>2020</b> , 449, 227561	28
217	MOF-derived electrocatalysts for oxygen reduction, oxygen evolution and hydrogen evolution reactions. <b>2020</b> , 49, 1414-1448	587
216	Bifunctional Catalysts for Reversible Oxygen Evolution Reaction and Oxygen Reduction Reaction. <b>2020</b> , 26, 3906	35
215	Plasma-induced surface reorganization of porous CoO-CoO heterostructured nanosheets for electrocatalytic water oxidation. <b>2020</b> , 565, 400-404	5
214	Advanced Electrocatalysts for the Oxygen Reduction Reaction in Energy Conversion Technologies. <b>2020</b> , 4, 45-68	288
213	Prussian blue analog nanocubes tuning synthesis of coral-like Ni3S2@MIL-53(NiFeCo) core-shell nanowires array and boosting oxygen evolution reaction. <b>2020</b> , 451, 227295	8
212	Nitrogen-doped carbon spheres decorated with CoSx nanoparticles as multifunctional electrocatalysts for rechargeable zn-air battery and overall water splitting. <b>2020</b> , 125, 110770	11
211	Effect of cation substitution on the water splitting performance of spinel cobaltite MCo2S4 (M = Ni, Cu and Co). <b>2020</b> , 45, 12012-12025	4

210	Three-dimensional self-standing Co@NC octahedron/biochar cathode for non-aqueous Li-O <sub>2</sub> batteries: efficient catalysis for reversible formation and decomposition of LiOH. <b>2020</b> , 55, 7792-7804	7
209	Co,N-Codoped Porous Carbon-Supported CoZnS with Superior Activity for Nitroarene Hydrogenation. <b>2020</b> , 8, 6118-6126	21
208	Switch of Optical Nonlinear Absorption in Black Phosphorous. <b>2020</b> , 206, 32-40	3
207	A nickel molybdenum oxide nanoarray as an efficient and stable electrocatalyst for overall water splitting. <b>2020</b> , 44, 8176-8182	11
206	MOF-reinforced Co <sub>9</sub> S <sub>8</sub> self-supported nanowire arrays for highly durable and flexible supercapacitor. <b>2020</b> , 346, 136201	20
205	Thin metal organic layer derived Co/Co <sub>9</sub> S <sub>8</sub> /N,S co-doped carbon nanosheets synthesized by the space confinement effect of montmorillonite for oxygen electrocatalysis. <b>2020</b> , 44, 9522-9529	3
204	Rational design of 2D super holey metal carbonitride leaf-like nanostructure for efficient oxygen electrocatalysis. <b>2020</b> , 164, 287-295	10
203	In situ construction of Co/N/C-based heterojunction on biomass-derived hierarchical porous carbon with stable active sites using a Co-N protective strategy for high-efficiency ORR, OER and HER trifunctional electrocatalysts. <b>2021</b> , 54, 626-638	43
202	Electrochemistry: Retrospect and Prospects. <b>2021</b> , 61, 120-151	1
201	Anion-mediated transition metal electrocatalysts for efficient water electrolysis: Recent advances and future perspectives. <b>2021</b> , 427, 213552	28
200	Novel Fenton process of Co-catalyst CoS quantum dots for highly efficient removal of organic pollutants. <b>2021</b> , 270, 128648	13
199	Directly embedded Ni <sub>3</sub> S <sub>2</sub> /Co <sub>9</sub> S <sub>8</sub> @S-doped carbon nanofiber networks as a free-standing anode for lithium-ion batteries. <b>2021</b> , 5, 166-174	6
198	ZIF-67-derived Co nanoparticles anchored in N doped hollow carbon nanofibers as bifunctional oxygen electrocatalysts. <b>2021</b> , 407, 127157	40
197	Nanocarbon-based metal-free and non-precious metal bifunctional electrocatalysts for oxygen reduction and oxygen evolution reactions. <b>2021</b> , 58, 610-628	10
196	Flower-like nanosheets directly grown on Co foil as efficient bifunctional catalysts for overall water splitting. <b>2021</b> , 587, 650-660	3
195	P-doped cobalt carbonate hydroxide@NiMoO double-shelled hierarchical nanoarrays anchored on nickel foam as a bi-functional electrode for energy storage and conversion. <b>2021</b> , 587, 855-863	16
194	Polyaniline@MOF fiber derived Fe <sub>3</sub> O <sub>4</sub> oxide-based high performance electrocatalyst. <b>2021</b> , 45, 282-287	2
193	Reconstructing 1D Fe Single-atom Catalytic Structure on 2D Graphene Film for High-Efficiency Oxygen Reduction Reaction. <b>2021</b> , 14, 866-875	8

192	Synergistic two- and three-dimensional morphology engineering of pyrite-type CoPS to boost hydrogen evolution over wide pH range. <b>2021</b> , 484, 229144	4
191	Advance in Using Plasma Technology for Modification or Fabrication of Carbon-Based Materials and Their Applications in Environmental, Material, and Energy Fields. <b>2021</b> , 31, 2006287	16
190	Hollow Co <sub>9</sub> S <sub>8</sub> spheres-derived polyhedrons uniformly anchored on N, S-doped graphene for efficient oxygen electrocatalysts. <b>2021</b> , 23, 100587	7
189	Pd Ion-Exchange and Ammonia Etching of a Prussian Blue Analogue to Produce a High-Performance Water-Splitting Catalyst. <b>2021</b> , 31, 2008989	20
188	Recent Advances in Electrochemical Water Oxidation to Produce Hydrogen Peroxide: A Mechanistic Perspective. <b>2021</b> , 9, 76-91	22
187	Homogeneous Co <sub>3</sub> O <sub>4</sub> film electrode with enhanced oxygen evolution electrocatalysis via surface reduction. <b>2021</b> , 29, 221-227	1
186	The synergistic effect of the carbon shell pore volume and core Pd size of Pd@hollow@C-X for the synthesis of H <sub>2</sub> O <sub>2</sub> . <b>2021</b> , 45, 1617-1625	1
185	MOFs derived NiFeP porous nanoflowers for boosted electrocatalytic water splitting. <b>2021</b> , 312, 110760	9
184	PtCo on continuous-phase graphene as PEM fuel cell catalyst. <b>2021</b> , 45, 1673-1684	2
183	Synthesis of Au/Co <sub>9</sub> S <sub>8</sub> composite aerogels by one-step sol-gel method as hydrogen evolution reaction electrocatalysts. <b>2021</b> , 28, 99-108	1
182	Tuning the intrinsic catalytic activities of oxygen-evolution catalysts by doping: a comprehensive review. <b>2021</b> , 9, 20131-20163	15
181	Atomic heterointerface engineering overcomes the activity limitation of electrocatalysts and promises highly-efficient alkaline water splitting. <i>Energy and Environmental Science</i> ,	35.4 34
180	Graphene modification based on plasma technologies. <b>2021</b> , 70, 095208-095208	0
179	Fe <sub>3</sub> O <sub>4</sub> /Co <sub>3</sub> O <sub>4</sub> binary oxides as bifunctional electrocatalysts for rechargeable Zn  air batteries by one-pot pyrolysis of zeolitic imidazolate frameworks.	2
178	N-doped graphene anchored ultrasmall Ir nanoparticles as bifunctional electrocatalyst for overall water splitting. <b>2021</b> ,	1
177	Rational surface engineering of MXene@N-doped hollow carbon dual-confined cobalt sulfides/selenides for advanced aluminum batteries. <b>2021</b> , 9, 16878-16888	9
176	Mechanism of electrochemical oxygen reduction reaction at two-dimensional Pt-doped MoSe <sub>2</sub> material: an efficient electrocatalyst. <b>2021</b> , 9, 11331-11342	8
175	Bifunctional OER-ORR electrodes for metal-air batteries. <b>2021</b> , 139-186	0

174	Nitrogen, sulfur co-doped carbon coated zinc sulfide for efficient hydrogen peroxide electrosynthesis. <b>2021</b> , 50, 5416-5419	2
173	Boron vacancy: a strategy to boost the oxygen reduction reaction of hexagonal boron nitride nanosheet in hBN/MoS <sub>2</sub> heterostructure. <b>2021</b> , 3, 4739-4749	4
172	Nanostructured multifunctional electrocatalysts for efficient energy conversion systems: Recent perspectives. <b>2021</b> , 10, 137-157	10
171	Preparation of porous carbon based on partially degraded raw biomass by <i>Trichoderma viride</i> to optimize its toluene adsorption performance. <b>2021</b> , 28, 46186-46195	1
170	0D Cd <sub>x</sub> Zn <sub>1-x</sub> S and amorphous Co <sub>9</sub> S <sub>8</sub> formed S-scheme heterojunction boosting photocatalytic hydrogen evolution. <b>2021</b> , 501, 111378	10
169	Nanohybridization of Keggin polyoxometalate clusters and reduced graphene oxide for lithium-ion batteries. <b>2020</b> , 23, 41	2
168	Dual-Active Sites Engineering of N-Doped Hollow Carbon Nanocubes Confining Bimetal Alloys as Bifunctional Oxygen Electrocatalysts for Flexible Metal-Air Batteries. <b>2021</b> , 17, e2007239	20
167	Recent Advance of Transition-Metal-Based Layered Double Hydroxide Nanosheets: Synthesis, Properties, Modification, and Electrocatalytic Applications. <b>2021</b> , 11, 2002863	43
166	Hollow CeO <sub>2</sub> @Co <sub>2</sub> N Nanosheets Derived from Co-ZIF-L for Boosting the Oxygen Evolution Reaction. <b>2021</b> , 8, 2100041	4
165	Recent advances in nonmetallic atom-doped metal nanocrystals: Synthesis and catalytic applications. <b>2021</b> , 32, 2679-2679	1
164	Electrocatalytic, Kinetic, and Mechanism Insights into the Oxygen-Reduction Catalyzed Based on the Biomass-Derived FeO @N-Doped Porous Carbon Composites. <b>2021</b> , 17, e2007326	10
163	Electrocatalytic property of nitrogen-doped graphite-supported CeO <sub>2</sub> -CoOx. <b>2021</b> , 8, 035510	1
162	Heterostructured MoO <sub>2</sub> @MoS <sub>2</sub> @Co <sub>9</sub> S <sub>8</sub> nanorods as high efficiency bifunctional electrocatalyst for overall water splitting. <b>2021</b> , 543, 148804	26
161	In Situ Synthesis of Co <sub>3</sub> O <sub>4</sub> /CoFe <sub>2</sub> O <sub>4</sub> Derived from a Metal-Organic Framework on Nickel Foam: High-Performance Electrocatalyst for Water Oxidation. <b>2021</b> , 4, 2951-2959	12
160	Highly Curved Nanostructure-Coated Co, N-Doped Carbon Materials for Oxygen Electrocatalysis. <b>2021</b> , 60, 12759-12764	42
159	Atmospheric-Pressure Plasma Jet-Induced Ultrafast Construction of an Ultrathin Nonstoichiometric Nickel Oxide Layer with Mixed Ni <sup>3+</sup> /Ni <sup>2+</sup> Ions and Rich Oxygen Defects as an Efficient Electrocatalyst for Oxygen Evolution Reaction. <b>2021</b> , 4, 5059-5069	9
158	Co S @CN Composites Obtained from Thiocalix[4]arene-Based Coordination Polymers for Supercapacitor Applications. <b>2021</b> , 16, 1486-1492	1
157	Iron Doped in the Subsurface of CuS Nanosheets by Interionic Redox: Highly Efficient Electrocatalysts toward the Oxygen Evolution Reaction. <b>2021</b> , 13, 16210-16217	12

156	Electrodeposited nanostructured flakes of cobalt, manganese and nickel-based sulfide (CoMnNiS) for electrocatalytic alkaline oxygen evolution reaction (OER). <b>2021</b> , 32, 12292-12307	5
155	Highly Curved Nanostructure-Coated Co, N-Doped Carbon Materials for Oxygen Electrocatalysis. <b>2021</b> , 133, 12869-12874	8
154	Gram-Scale Synthesis of Porous Graphene via Printing Paper Pyrolysis as Supercapacitor Electrodes. <b>2021</b> , 9, 2001025	1
153	A 2D/3D Heterojunction Photocatalyst Using 2D Nanosheet Sm <sub>2</sub> MoO <sub>6</sub> on 3D Spherical NiS: A Novel High-Efficiency Photocatalyst. <b>2021</b> , 218, 2100026	1
152	ZIF-67 derived CoS <sub>x</sub> /NC catalysts for selective reduction of nitro compounds. <b>2021</b> , 28, 1279-1290	0
151	Cold plasma treatment of catalytic materials: A review.	11
150	Di-defects synergy boost electrocatalysis hydrogen evolution over two-dimensional heterojunctions. <b>2022</b> , 15, 677	8
149	Boosted charge transfer in oxygen vacancy-rich K <sup>+</sup> birnessite MnO <sub>2</sub> for water oxidation and zinc-ion batteries. <b>2021</b> , 378, 138147	14
148	Structural Design Strategy and Active Site Regulation of High-Efficient Bifunctional Oxygen Reaction Electrocatalysts for Zn-Air Battery. <b>2021</b> , 17, e2006766	24
147	Meritorious spatially on hierarchically Co <sub>3</sub> O <sub>4</sub> /MoS <sub>2</sub> phase nanocomposite synergistically a high-efficient electrocatalyst for hydrogen evolution reaction performance: Recent advances & future perspectives. <b>2021</b> , 46, 22707-22718	7
146	Carbon nanotubes-supported Ag/MoO <sub>2</sub> or Ag/MnO <sub>2</sub> heterostructures for a highly efficient oxygen reduction reaction. <b>2021</b> , 176, 111147	0
145	Enhanced Electrochemical NO <sub>2</sub> Oxidation Reactions on Biomolecule Functionalised Graphene Oxide. <b>2021</b> , 6, 6050-6055	1
144	Etching engineering on controllable synthesis of etched N-doped hierarchical porous carbon toward efficient oxygen reduction reaction in zinc-air batteries. <b>2021</b> , 20, 100670	5
143	Poly-5-aminoindole and graphene-like materials derived bifunctional Co-N-C electrocatalysts for oxygen reduction and hydrogen evolution. <b>2021</b> , 25, 2309-2319	1
142	Dual-Phasic Carbon with Co Single Atoms and Nanoparticles as a Bifunctional Oxygen Electrocatalyst for Rechargeable Zn-Air Batteries. <b>2021</b> , 31, 2103360	24
141	Metallic S-CoTe with Surface Reconstruction Activated by Electrochemical Oxidation for Oxygen Evolution Catalysis. <b>2021</b> , 17, e2102027	16
140	Carbon-Based Composites as Electrocatalysts for Oxygen Evolution Reaction in Alkaline Media. <b>2021</b> , 14,	6
139	Selective Se doping of NiFe <sub>2</sub> O <sub>4</sub> on an active NiOOH scaffold for efficient and robust water oxidation. <b>2021</b> , 42, 1395-1403	15

138	Reduced Graphene Oxide Supported Cobalt-Calcium Phosphate Composite for Electrochemical Water Oxidation. <b>2021</b> , 11, 960	0
137	Hierarchical assembly strategy to tailored nanostructures of doped-carbon/Co-based catalysts for high-performance trifunctional electrocatalysis. <b>2021</b> , 418, 129365	7
136	A hierarchical and branch-like NiCoS/NF material prepared by gradient electrodeposition method for oxygen evolution reaction. <b>2021</b> , 46, 36629-36629	1
135	Uniformly growing Co <sub>9</sub> S <sub>8</sub> nanoparticles on flexible carbon foam as a free-standing anode for lithium-ion storage devices. <b>2021</b> , 182, 404-412	8
134	Functional carbon materials processed by NH <sub>3</sub> plasma for advanced full-carbon sodium-ion capacitors. <b>2021</b> , 420, 129647	13
133	Metal-Organic Frameworks-Derived Self-Supported Carbon-Based Composites for Electrocatalytic Water Splitting. <b>2021</b> , 27, 15866-15888	5
132	Self-supporting transition metal chalcogenides on metal substrates for catalytic water splitting. <b>2021</b> , 421, 129645	14
131	Highly electrocatalytic performance of bimetallic CoBe sulfide nanoparticles encapsulated in N-doped carbon nanotubes on reduced graphene oxide for oxygen evolution. <b>2021</b> , 881, 160667	6
130	Photocatalytic production of hydrogen peroxide over Z-scheme Mn <sub>3</sub> O <sub>4</sub> /Co <sub>9</sub> S <sub>8</sub> with p-n heterostructure. <b>2021</b> , 298, 120516	7
129	Mesoporous nanostructures of NiCo-LDH/ZnCoO as an efficient electrocatalyst for oxygen evolution reaction. <b>2021</b> , 604, 832-843	9
128	Hybrid heterojunction of molybdenum disulfide/single cobalt atoms anchored nitrogen, sulfur-doped carbon nanotube /cobalt disulfide with multiple active sites for highly efficient hydrogen evolution. <b>2021</b> , 298, 120630	12
127	Defect engineering in metal sulfides for energy conversion and storage. <b>2021</b> , 448, 214147	19
126	Hollow C-LDH/CoS nanocages derived from ZIF-67-C for high- performance asymmetric supercapacitors. <b>2021</b> , 604, 340-349	11
125	Coupling CoP/CoSe heterostructure nanoarrays for boosting overall water splitting. <b>2021</b> , 50, 6650-6658	3
124	Controllable synthesis of NiS@MOOH/NF (M = Fe, Ni, Cu, Mn and Co) hybrid structure for the efficient hydrogen evolution reaction. <b>2021</b> , 50, 14001-14008	6
123	MOF-derived CoNi,CoO,NiO@N-C bifunctional oxygen electrocatalysts for liquid and all-solid-state Zn-air batteries. <b>2021</b> , 13, 17655-17662	3
122	Morphology and defect modification on in-situ derived Co <sub>9</sub> S <sub>8</sub> -porous nitrogen-doped carbon as a bifunctional electrocatalyst for oxygen evolution and reduction. <b>2020</b> , 285, 121185	8
121	Synthesis of porous carbon-coated polycrystalline Co <sub>9</sub> S <sub>8</sub> for long-term lithium ion battery. <b>2018</b> , 210, 88-91	15

120	Surface/interface nanoengineering for rechargeable Zn  air batteries. <i>Energy and Environmental Science</i> , <b>2020</b> , 13, 1132-1153	35.4	148
119	Cobalt and nitrogen co-doped porous carbon/carbon nanotube hybrids anchored with nickel nanoparticles as high-performance electrocatalysts for oxygen reduction reactions. <b>2020</b> , 12, 13028-13033		18
118	One-step fabrication of a self-supported Co@CoTe <sub>2</sub> electrocatalyst for efficient and durable oxygen evolution reactions. <b>2020</b> , 7, 2523-2532		16
117	Nitrogen-doped carbon-coated nanodiamonds for electrocatalytic applications. <b>2021</b> , 54, 085303		3
116	Electrochemical Synthesis of Multilayered Graphene and Its Use in Co-Ni Electrocatalysts of Oxygen Reduction and Hydrogen Evolution. <b>2020</b> , 56, 271-284		5
115	Review 2D Graphene and Graphene-Like Materials and Their Promising Applications in the Generation of Hydrogen Peroxide. <b>2020</b> , 167, 126502		5
114	A Unique Synthesis of Macroporous N-Doped Carbon Composite Catalyst for Oxygen Reduction Reaction. <b>2020</b> , 11,		0
113	Weakened lattice-strain effect in MoOx@NPC-supported ruthenium dots toward high-efficiency hydrogen generation.		2
112	Design principles of noble metal-free electrocatalysts for hydrogen production in alkaline media: combining theory and experiment.		2
111	Insights on the Electrocatalytic Seawater Splitting at Heterogeneous Nickel-Cobalt Based Electrocatalysts Engineered from Oxidative Aniline Polymerization and Calcination. <b>2021</b> , 26,		1
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109	(Fe, Ni, Co) <sub>9</sub> S <sub>8</sub> @CS catalyst decorated on N-doped carbon as an efficient electrocatalyst for oxygen evolution reaction.		1
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107	In situ produced CoS nanoclusters/Co/Mn-S, N multi-doped 3D porous carbon derived from eriochrome black T as an effective bifunctional oxygen electrocatalyst for rechargeable Zn-air batteries. <b>2021</b> , 608, 2100-2110		47
106	Three-dimensionally ordered mesoporous trimetal sulfide as efficient electrocatalyst for rechargeable zinc-air batteries. <b>2021</b> , 575, 151728		3
105	Zinc/graphitic carbon nitride co-mediated dual-template synthesis of densely populated Fe-Nx-embedded 2D carbon nanosheets towards oxygen reduction reactions for Zn  air batteries.		1
104	Nickel sulfide and cobalt sulfide nanoparticles deposited on ultrathin carbon two-dimensional nanosheets for hybrid supercapacitors. <b>2022</b> , 574, 151727		2
103	Review of electrochemical production of doped graphene for energy storage applications. <b>2021</b> , 46, 103527		2

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101	Fabrication of amorphous molybdenum sulfide/nitrogen-doped reduced graphene oxide nanocomposites with a tailored composition and hydrogen evolution activity via plasma treatment. <b>2022</b> , 187, 386-395	2
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98	Unveiling the Impact of Fe Incorporation on Intrinsic Performance of Reconstructed Water Oxidation Electrocatalyst. 4345-4354	8
97	A Pacman-Like Titanium-Doped Cobalt Sulfide Hollow Superstructure for Electrocatalytic Oxygen Evolution. <b>2021</b> , e2103106	1
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95	Defect-rich CoMoS nanosheets on PANI nanowires as excellent hybrid electrocatalyst for water splitting. <b>2021</b> , 403, 139586	0
94	Three-Dimensional Crumpled Reduced Graphene Oxide/Co <sub>9</sub> S <sub>8</sub> Nanocomposites as Efficient Electrocatalyst for Oxygen Evolution Reaction.	
93	Construction of a three-dimensional S,N co-doped ZIF-67 derivative assisted by PEDOT nanowires and its application in rechargeable Zn  air batteries. <b>2021</b> , 45, 22787-22797	1
92	Intercalation of cobalt cations into Co <sub>9</sub> S <sub>8</sub> interlayers for highly efficient and stable electrocatalytic hydrogen evolution.	1
91	Co Nanoparticles Encapsulated in N-Doped Carbon Nanotubes Grafted CNTs as Electrocatalysts for Enhanced Oxygen Reduction Reaction. 2101877	2
90	New Advances in Graphene-Based Three-Dimensional Structures. <b>2022</b> , 101-128	0
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88	In situ synthesis of CoFe <sub>2</sub> O <sub>4</sub> nanoparticles embedded in N-doped carbon nanotubes for efficient electrocatalytic oxygen reduction reaction. <b>2022</b> , 47, 6059-6066	1
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84	Metal-organic framework-based electrocatalysts for ORR, OER, and HER. <b>2022</b> , 111-144	
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81	N, P-doped multiphase transition metal sulfides are used for efficient electrocatalytic oxygen evolution reaction. <b>2022</b> , 584, 152546	1
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73	Hollow-Co <sub>3</sub> O <sub>4</sub> @CoP/NS-RGO Heterojunction Structure Derived from ZIF-67 Promotes Hydrogen Evolution Reaction and Oxygen Evolution Reaction Bifunctional Catalysis.	3
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