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Recent advances in transition metal phosphide nanomaterials: synthesis and applications in hydrogen evolution reaction

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2260	Cobalt Selenide Nanostructures: An Efficient Bifunctional Catalyst with High Current Density at Low Coverage.		
2259	Ruthenium-Decorated Cobalt Selenide Nanocrystals for Hydrogen Evolution.		
2258	Cobalt phosphide nanowires: an efficient electrocatalyst for enzymeless hydrogen peroxide detection. <b>2016</b> , 27, 33LT01		24
2257	ChemInform Abstract: Recent Advances in Transition Metal Phosphide Nanomaterials: Synthesis and Applications in Hydrogen Evolution Reaction. <b>2016</b> , 47, no		
2256	High-efficiency hydrogen evolution reaction catalyzed by iron phosphide nanocrystals. <b>2016</b> , 6, 114430-114435		16
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2254	Surface-Oxidized Dicobalt Phosphide Nanoneedles as a Nonprecious, Durable, and Efficient OER Catalyst. <b>2016</b> , 1, 169-174		190
2253	Ni <sub>3</sub> Se <sub>2</sub> nanoforest/Ni foam as a hydrophilic, metallic, and self-supported bifunctional electrocatalyst for both H <sub>2</sub> and O <sub>2</sub> generations. <b>2016</b> , 24, 103-110		297
2252	Hierarchical MoS <sub>2</sub> @MoP core-shell heterojunction electrocatalysts for efficient hydrogen evolution reaction over a broad pH range. <b>2016</b> , 8, 11052-9		134
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2249	High-pressure elastic properties of cubic Ir <sub>2</sub> P from ab initio calculations. <b>2016</b> , 380, 3672-3677		9
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2102	Iron-assisted engineering of molybdenum phosphide nanowires on carbon cloth for efficient hydrogen evolution in a wide pH range. <b>2017</b> , 5, 22790-22796	27
2101	High-Performance Oxygen Evolution Anode from Stainless Steel via Controlled Surface Oxidation and Cr Removal. <b>2017</b> , 5, 10072-10083	51
2100	Engineering a nanotubular mesoporous cobalt phosphide electrocatalyst by the Kirkendall effect towards highly efficient hydrogen evolution reactions. <b>2017</b> , 9, 16313-16320	39

2099	Powerful synergy: efficient PtAuBi nanocomposites as state-of-the-art catalysts for electrochemical hydrogen evolution. <b>2017</b> , 5, 21903-21908	13
2098	Synthesis of metastable chromium carbide nanomaterials and their electrocatalytic activity for the hydrogen evolution reaction. <b>2017</b> , 46, 13524-13530	35
2097	Hierarchically interconnected nitrogen-doped carbon nanosheets for an efficient hydrogen evolution reaction. <b>2017</b> , 9, 16342-16348	27
2096	Multifunctional MoN/C@MoS <sub>2</sub> Electrocatalysts for HER, OER, ORR, and ZnAir Batteries. <b>2017</b> , 27, 1702300	519
2095	Molybdenum carbide on hierarchical porous carbon synthesized from Cu-MoO <sub>2</sub> as efficient electrocatalysts for electrochemical hydrogen generation. <b>2017</b> , 41, 749-757	88
2094	Lanthanide metal-assisted synthesis of rhombic dodecahedral MNi (M = Ir and Pt) nanoframes toward efficient oxygen evolution catalysis. <b>2017</b> , 42, 17-25	72
2093	Photocatalytic water splitting for hydrogen production. <b>2017</b> , 5, 56-62	64
2092	Recent advances in cobalt phosphide based materials for energy-related applications. <b>2017</b> , 5, 22913-22932	88
2091	Tunable active edge sites in PtSe <sub>2</sub> films towards hydrogen evolution reaction. <b>2017</b> , 42, 26-33	77
2090	Efficient electrocatalysis of hydrogen evolution by ultralow-Pt-loading bamboo-like nitrogen-doped carbon nanotubes. <b>2017</b> , 6, 173-180	14
2089	Precious metal-free approach to hydrogen electrocatalysis for energy conversion: From mechanism understanding to catalyst design. <b>2017</b> , 42, 69-89	109
2088	A nanohybrid consisting of NiPS <sub>3</sub> nanoparticles coupled with defective graphene as a pH-universal electrocatalyst for efficient hydrogen evolution. <b>2017</b> , 5, 23536-23542	102
2087	Thermocatalytic syntheses of highly defective hybrid nano-catalysts for photocatalytic hydrogen evolution. <b>2017</b> , 5, 23766-23775	12
2086	Salt-templated synthesis of defect-rich MoN nanosheets for boosted hydrogen evolution reaction. <b>2017</b> , 5, 24193-24198	110
2085	Phase Effect of NiP Hybridized with g-CN for Photocatalytic Hydrogen Generation. <b>2017</b> , 9, 30583-30590	95
2084	Hollow CoP nanoflowers assembled from nanorods for ultralong cycle-life supercapacitors. <b>2017</b> , 9, 14162-14170	117
2083	Coupling Ag-doping and rich oxygen vacancies in mesoporous NiCoO nanorods supported on nickel foam for highly efficient oxygen evolution. <b>2017</b> , 4, 1783-1790	27
2082	Evolution of layered double hydroxides (LDH) as high performance water oxidation electrocatalysts: A review with insights on structure, activity and mechanism. <b>2017</b> , 6, 1-26	194

2081	Pd@TTF Tailored Nanostructured Platform: Voltammetric Estimation of Ceftazidime. <b>2017</b> , 2, 7432-7438	2
2080	Operando Spectroscopic Analysis of CoP Films Electrocatalyzing the Hydrogen-Evolution Reaction. <b>2017</b> , 139, 12927-12930	92
2079	Ni(ii) phosphine and phosphide complexes supported by a PNP-pyrrole pincer ligand. <b>2017</b> , 46, 12125-12131	11
2078	Large-scale production of Cu <sub>3</sub> P nanocrystals for ultrahigh-rate supercapacitor. <b>2017</b> , 23, 3249-3254	17
2077	Developing bifunctional electrocatalyst for overall water splitting using three-dimensional porous CoP <sub>3</sub> nanospheres integrated on carbon cloth. <b>2017</b> , 729, 203-209	31
2076	Chalcogenide and pnictide nanocrystals from the silylative deoxygenation of metal oxides. <b>2017</b> , 5, 20351-20358	58
2075	Synthesis of bifunctional non-noble monolithic catalyst Co-W-P/carbon cloth for sodium borohydride hydrolysis and reduction of 4-nitrophenol. <b>2017</b> , 42, 25860-25868	22
2074	The Enhanced CO Tolerance of Platinum Supported on FeP Nanosheet for Superior Catalytic Activity Toward Methanol Oxidation. <b>2017</b> , 254, 36-43	31
2073	Mo <sub>2</sub> C@NC@MoS <sub>x</sub> porous nanospheres with sandwich shell based on MoO <sub>4</sub> <sup>2-</sup> -polymer precursor for efficient hydrogen evolution in both acidic and alkaline media. <b>2017</b> , 124, 555-564	47
2072	Investigating Catalyst Support Interactions To Improve the Hydrogen Evolution Reaction Activity of Thiomolybdate [Mo <sub>3</sub> S <sub>13</sub> ] <sup>2-</sup> Nanoclusters. <b>2017</b> , 7, 7126-7130	55
2071	Self-Supported Nickel Iron Layered Double Hydroxide-Nickel Selenide Electrocatalyst for Superior Water Splitting Activity. <b>2017</b> , 9, 33766-33774	176
2070	Glucose-derived carbon sphere supported CoP as efficient and stable electrocatalysts for hydrogen evolution reaction. <b>2017</b> , 26, 1147-1152	24
2069	Hydrogen evolution reaction activity of nickel phosphide is highly sensitive to electrolyte pH. <b>2017</b> , 5, 20390-20397	71
2068	Highly dispersed NiCoP nanoparticles on carbon nanotubes modified nickel foam for efficient electrocatalytic hydrogen production. <b>2017</b> , 252, 101-108	37
2067	Nickel-Based Electrocatalysts for Energy-Related Applications: Oxygen Reduction, Oxygen Evolution, and Hydrogen Evolution Reactions. <b>2017</b> , 7, 7196-7225	568
2066	Core-shell and alloy integrating PdAu bimetallic nanoplates on reduced graphene oxide for efficient and stable hydrogen evolution catalysis. <b>2017</b> , 7, 43373-43379	7
2065	Iron-Doped Nickel Phosphide Nanosheet Arrays: An Efficient Bifunctional Electrocatalyst for Water Splitting. <b>2017</b> , 9, 26001-26007	158
2064	Porous Structured Ni-Fe-P Nanocubes Derived from a Prussian Blue Analogue as an Electrocatalyst for Efficient Overall Water Splitting. <b>2017</b> , 9, 26134-26142	162

2063	Bifunctional metal phosphide FeMnP films from single source metal organic chemical vapor deposition for efficient overall water splitting. <b>2017</b> , 39, 444-453	89
2062	Spatially Separated CdS Shells Exposed with Reduction Surfaces for Enhancing Photocatalytic Hydrogen Evolution. <b>2017</b> , 27, 1702624	191
2061	Supercritical-Fluid-Assisted Decoration of MoS <sub>2</sub> @ MWCNTs and Their Superior Performance in the Electrochemical Hydrogen Evolution Reaction. <b>2017</b> , 2, 5978-5983	4
2060	Cost-Effective Alkaline Water Electrolysis Based on Nitrogen- and Phosphorus-Doped Self-Supportive Electrocatalysts. <b>2017</b> , 29, 1702095	139
2059	Graphene Composites with Cobalt Sulfide: Efficient Trifunctional Electrocatalysts for Oxygen Reversible Catalysis and Hydrogen Production in the Same Electrolyte. <b>2017</b> , 13, 1701025	83
2058	Superior Li storage anode based on novel Fe-Sn-P alloy prepared by electroplating. <b>2017</b> , 247, 314-320	14
2057	Plasma for Rapid Conversion Reactions and Surface Modification of Electrode Materials. <b>2017</b> , 1, 1700164	39
2056	Microbial-Phosphorus-Enabled Synthesis of Phosphide Nanocomposites for Efficient Electrocatalysts. <b>2017</b> , 139, 11248-11253	53
2055	Synthesis and oxygen evolution reaction (OER) catalytic performance of Ni <sub>2</sub> Ru <sub>3</sub> P nanocrystals: enhancing activity by dilution of the noble metal. <b>2017</b> , 5, 17609-17618	35
2054	Mo doped NiP nanowire arrays: an efficient electrocatalyst for the hydrogen evolution reaction with enhanced activity at all pH values. <b>2017</b> , 9, 16674-16679	143
2053	Boosting Electrocatalytic Activity of Binary Ag-Fe-doped Co <sub>2</sub> P Nanospheres as Bifunctional Electrocatalysts for Overall Water Splitting. <b>2017</b> , 249, 16-25	18
2052	A high active hydrogen evolution reaction electrocatalyst from ionic liquids-originated cobalt phosphide/carbon nanotubes. <b>2017</b> , 42, 21786-21792	11
2051	Graphite oxide and molybdenum disulfide composite for hydrogen evolution reaction. <b>2017</b> , 685, 451-456	22
2050	Strategies for Improving the Functionality of Zeolitic Imidazolate Frameworks: Tailoring Nanoarchitectures for Functional Applications. <b>2017</b> , 29, 1700213	270
2049	Noble-Metal-Free Iron Phosphide Cocatalyst Loaded Graphitic Carbon Nitride as an Efficient and Robust Photocatalyst for Hydrogen Evolution under Visible Light Irradiation. <b>2017</b> , 5, 8053-8060	75
2048	Combining Heterojunction Engineering with Surface Cocatalyst Modification To Synergistically Enhance the Photocatalytic Hydrogen Evolution Performance of Cadmium Sulfide Nanorods. <b>2017</b> , 5, 7670-7677	107
2047	Ultrathin N-Doped MoC Nanosheets with Exposed Active Sites as Efficient Electrocatalyst for Hydrogen Evolution Reactions. <b>2017</b> , 11, 12509-12518	238
2046	Amorphous Co <sub>3</sub> FeP nanospheres for efficient water oxidation. <b>2017</b> , 5, 25378-25384	78

2045	Mn doped porous cobalt nitride nanowires with high activity for water oxidation under both alkaline and neutral conditions. <b>2017</b> , 53, 13237-13240	39
2044	Rational Bottom-Up Engineering of Electrocatalysts by Atomic Layer Deposition: A Case Study of Fe <sub>x</sub> Co <sub>1-x</sub> Sy-Based Catalysts for Electrochemical Hydrogen Evolution. <b>2017</b> , 2, 2778-2785	50
2043	Diethylenetriamine-mediated self-assembly of three-dimensional hierarchical nanoporous CoP nanoflowers/pristine graphene interconnected networks as efficient electrocatalysts toward hydrogen evolution. <b>2017</b> , 1, 2172-2180	29
2042	Electronic Structure Reconfiguration toward Pyrite NiS via Engineered Heteroatom Defect Boosting Overall Water Splitting. <b>2017</b> , 11, 11574-11583	227
2041	Engineering transition metal phosphide nanomaterials as highly active electrocatalysts for water splitting. <b>2017</b> , 46, 16770-16773	20
2040	Metal Phosphides as Co-Catalysts for Photocatalytic and Photoelectrocatalytic Water Splitting. <b>2017</b> , 10, 4306-4323	111
2039	Colloidal synthesis of monodisperse trimetallic IrNiFe nanoparticles as highly active bifunctional electrocatalysts for acidic overall water splitting. <b>2017</b> , 5, 24836-24841	65
2038	MoS <sub>2</sub> quantum dot-modified Ag/polyaniline composites with enhanced photogenerated carrier separation for highly efficient visible light photocatalytic H <sub>2</sub> evolution performance. <b>2017</b> , 7, 3531-3538	24
2037	Optical and photocatalytic properties of indium phosphide nanoneedles and nanotubes. <b>2017</b> , 68, 270-274	4
2036	Electrodeposited cobalt phosphide superstructures for solar-driven thermoelectrocatalytic overall water splitting. <b>2017</b> , 5, 16580-16584	37
2035	Ni <sub>12</sub> P <sub>5</sub> nanoparticles embedded into porous g-C <sub>3</sub> N <sub>4</sub> nanosheets as a noble-metal-free hetero-structure photocatalyst for efficient H <sub>2</sub> production under visible light. <b>2017</b> , 5, 16171-16178	159
2034	Hollow nanocubes composed of well-dispersed mixed metal-rich phosphides in N-doped carbon as highly efficient and durable electrocatalysts for the oxygen evolution reaction at high current densities. <b>2017</b> , 5, 19656-19663	74
2033	Strategies for developing transition metal phosphides as heterogeneous electrocatalysts for water splitting. <b>2017</b> , 15, 26-55	367
2032	Controlled Synthesis of Unique Porous FeSe <sub>2</sub> Nanomesh Arrays towards Efficient Hydrogen Evolution Reaction. <b>2017</b> , 247, 435-442	21
2031	Porphyritic Metal-Organic Framework-Templated Fe-Ni-P/Reduced Graphene Oxide for Efficient Electrocatalytic Oxygen Evolution. <b>2017</b> , 9, 23852-23858	85
2030	Graphene Dots Embedded Phosphide Nanosheet-Assembled Tubular Arrays for Efficient and Stable Overall Water Splitting. <b>2017</b> , 9, 24600-24607	40
2029	Efficient Activation of Li <sub>2</sub> S by Transition Metal Phosphides Nanoparticles for Highly Stable Lithium-Sulfur Batteries. <b>2017</b> , 2, 1711-1719	180
2028	Transition metal-phosphorus-based materials for electrocatalytic energy conversion reactions. <b>2017</b> , 7, 330-347	100

2027	Efficient photoelectrochemical hydrogen production over p-Si nanowire arrays coupled with molybdenum-sulfur clusters. <b>2017</b> , 42, 2832-2838	13
2026	Spray-drying of milk for oxygen evolution electrocatalyst and solar water splitting. <b>2017</b> , 487, 118-122	8
2025	Mn Doping of CoP Nanosheets Array: An Efficient Electrocatalyst for Hydrogen Evolution Reaction with Enhanced Activity at All pH Values. <b>2017</b> , 7, 98-102	362
2024	Wire-on-flake heterostructured ternary Co <sub>0.5</sub> Ni <sub>0.5</sub> P/CC: an efficient hydrogen evolution electrocatalyst. <b>2017</b> , 5, 982-987	41
2023	An efficient hydrogen evolution catalyst composed of palladium phosphorous sulphide (PdP~0.33S~1.67) and twin nanocrystal Zn <sub>0.5</sub> Cd <sub>0.5</sub> S solid solution with both homo- and hetero-junctions. <b>2017</b> , 10, 225-235	135
2022	Effects of Growth Temperature on Electrocatalytic Properties of Three-dimensional Sulfur-doped Graphene Foam. <b>2017</b> , 275, 012003	
2021	Metal-Organic Frameworks and Their Derivatives for Photocatalytic Water Splitting. <b>2017</b> , 5, 40	50
2020	Two-Dimensional Material Molybdenum Disulfides as Electrocatalysts for Hydrogen Evolution. <b>2017</b> , 7, 285	52
2019	Self-Supported Ni(P, O)-MoO Nanowire Array on Nickel Foam as an Efficient and Durable Electrocatalyst for Alkaline Hydrogen Evolution. <b>2017</b> , 7,	3
2018	Dual-Native Vacancy Activated Basal Plane and Conductivity of MoSe with High-Efficiency Hydrogen Evolution Reaction. <b>2018</b> , 14, e1704150	78
2017	In situ electrodeposition of CoP nanoparticles on carbon nanomaterial doped polyphenylene sulfide flexible electrode for electrochemical hydrogen evolution. <b>2018</b> , 442, 1-11	14
2016	Al-Doped NiP nanosheet array: a superior and durable electrocatalyst for alkaline hydrogen evolution. <b>2018</b> , 54, 2894-2897	84
2015	Precision and correctness in the evaluation of electrocatalytic water splitting: revisiting activity parameters with a critical assessment. <b>2018</b> , 11, 744-771	628
2014	Aerosol-spray metal phosphide microspheres with bifunctional electrocatalytic properties for water splitting. <b>2018</b> , 6, 4783-4792	48
2013	Traditional NiCo <sub>2</sub> S <sub>4</sub> Phase with Porous Nanosheets Array Topology on Carbon Cloth: A Flexible, Versatile and Fabulous Electrocatalyst for Overall Water and Urea Electrolysis. <b>2018</b> , 6, 5011-5020	114
2012	High Crystal Quality 2D Manganese Phosphorus Trichalcogenide Nanosheets and their Photocatalytic Activity. <b>2018</b> , 28, 1800548	86
2011	Elaborately assembled core-shell structured metal sulfides as a bifunctional catalyst for highly efficient electrochemical overall water splitting. <b>2018</b> , 47, 494-502	302
2010	A structurally versatile nickel phosphite acting as a robust bifunctional electrocatalyst for overall water splitting. <b>2018</b> , 11, 1287-1298	160

2009	Controlled Synthesis of Eutectic NiSe/Ni <sub>3</sub> Se <sub>2</sub> Self-Supported on Ni Foam: An Excellent Bifunctional Electrocatalyst for Overall Water Splitting. <b>2018</b> , 5, 1701507	49
2008	CuO Nanorod Arrays Shelled with Amorphous NiFe Layered Double Hydroxide Film for Enhanced Electrocatalytic Water Oxidation Activity. <b>2018</b> , 1, 1364-1373	40
2007	Nickel Cobalt Sulfide Double-Shelled Hollow Nanospheres as Superior Bifunctional Electrocatalysts for Photovoltaics and Alkaline Hydrogen Evolution. <b>2018</b> , 10, 9379-9389	64
2006	Porous superstructures constructed from ultrafine FeP nanoparticles for highly active and exceptionally stable hydrogen evolution reaction. <b>2018</b> , 6, 6387-6392	65
2005	Facile synthesis of porous dendritic Pt <sub>68</sub> Ag <sub>32</sub> nanodandelions for greatly boosting electrocatalytic activity towards oxygen reduction and hydrogen evolution. <b>2018</b> , 43, 6096-6106	7
2004	Nanohybrid of Carbon Quantum Dots/Molybdenum Phosphide Nanoparticle for Efficient Electrochemical Hydrogen Evolution in Alkaline Medium. <b>2018</b> , 10, 9460-9467	54
2003	Probing the active sites of Co <sub>3</sub> O <sub>4</sub> for the acidic oxygen evolution reaction by modulating the Co <sup>2+</sup> /Co <sup>3+</sup> ratio. <b>2018</b> , 6, 5678-5686	86
2002	NiTe Nanowire Outperforms Pt/C in High-Rate Hydrogen Evolution at Extreme pH Conditions. <b>2018</b> , 57, 3082-3096	55
2001	A nanoporous metal phosphide catalyst for bifunctional water splitting. <b>2018</b> , 6, 5574-5579	76
2000	Electrocatalytic performance of ultrasmall MoC affected by different transition metal dopants in hydrogen evolution reaction. <b>2018</b> , 10, 6080-6087	105
1999	Nanoscale engineering MoP/Fe <sub>2</sub> P/RGO toward efficient electrocatalyst for hydrogen evolution reaction. <b>2018</b> , 43, 13939-13945	21
1998	Controllable synthesis of carbon encapsulated iron phosphide nanoparticles for the chemoselective hydrogenation of aromatic nitroarenes to anilines. <b>2018</b> , 5, 1094-1099	19
1997	Ultrasmall Ir nanoparticles for efficient acidic electrochemical water splitting. <b>2018</b> , 5, 1121-1125	28
1996	Nanoporous Carbon-Coated Bimetallic Phosphides for Efficient Electrochemical Water Splitting. <b>2018</b> , 18, 3404-3410	14
1995	One-Step Facile Synthesis of Cobalt Phosphides for Hydrogen Evolution Reaction Catalysts in Acidic and Alkaline Medium. <b>2018</b> , 10, 15673-15680	51
1994	A selective ion replacement strategy for the synthesis of copper doped carbon nitride nanotubes with improved photocatalytic hydrogen evolution. <b>2018</b> , 234, 19-25	39
1993	Metal (Ag, Pt)MoS <sub>2</sub> Hybrids Greenly Prepared Through Photochemical Reduction of Femtosecond Laser Pulses for SERS and HER. <b>2018</b> , 6, 7704-7714	38
1992	Effects of Catalyst Phase on the Hydrogen Evolution Reaction of Water Splitting: Preparation of Phase-Pure Films of FeP, Fe <sub>2</sub> P, and Fe <sub>3</sub> P and Their Relative Catalytic Activities. <b>2018</b> , 30, 3588-3598	86



1991	Controllable Synthesis of Ruthenium Phosphides (RuP and RuP <sub>2</sub> ) for pH-Universal Hydrogen Evolution Reaction. <b>2018</b> , 6, 6388-6394	52
1990	Synthesis of single crystalline two-dimensional transition-metal phosphides via a salt-templating method. <b>2018</b> , 10, 6844-6849	43
1989	Defect-rich (Co <sub>1-x</sub> S <sub>2</sub> ) <sub>x</sub> @Co <sub>9</sub> S <sub>8</sub> nanosheets derived from monomolecular precursor pyrolysis with excellent catalytic activity for hydrogen evolution reaction. <b>2018</b> , 6, 7977-7987	32
1988	Phase transformation of iron phosphide nanoparticles for hydrogen evolution reaction electrocatalysis. <b>2018</b> , 43, 11326-11334	31
1987	Solid-phase hot-pressing synthesis of POMOFs on carbon cloth and derived phosphides for all pH value hydrogen evolution. <b>2018</b> , 6, 21969-21977	34
1986	Fabrication of hierarchical CoP nanosheet@microwire arrays via space-confined phosphidation toward high-efficiency water oxidation electrocatalysis under alkaline conditions. <b>2018</b> , 10, 7941-7945	178
1985	Toward High-Performance and Low-Cost Hydrogen Evolution Reaction Electrocatalysts: Nanostructuring Cobalt Phosphide (CoP) Particles on Carbon Fiber Paper. <b>2018</b> , 10, 14777-14785	73
1984	Cation-Controlled Electrocatalytical Activity of Transition-Metal Disulfides. <b>2018</b> , 8, 2774-2781	41
1983	CVD-grown three-dimensional sulfur-doped graphene as a binder-free electrocatalytic electrode for highly effective and stable hydrogen evolution reaction. <b>2018</b> , 53, 7767-7777	29
1982	Preparation of mesoporous Ni <sub>2</sub> P nanobelts with high performance for electrocatalytic hydrogen evolution and supercapacitor. <b>2018</b> , 43, 3697-3704	51
1981	Self-Template Synthesis of Co-Se-S-O Hierarchical Nanotubes as Efficient Electrocatalysts for Oxygen Evolution under Alkaline and Neutral Conditions. <b>2018</b> , 10, 8231-8237	32
1980	Nanocatalysts for hydrogen evolution reactions. <b>2018</b> , 20, 6777-6799	70
1979	Anion/Cation Double Substitution in Transition Metal Dichalcogenide to Accelerate Water Dissociation Kinetic for Electrocatalysis. <b>2018</b> , 8, 1702139	47
1978	Conceptual design of three-dimensional CoN/Ni <sub>3</sub> N-coupled nanograsses integrated on N-doped carbon to serve as efficient and robust water splitting electrocatalysts. <b>2018</b> , 6, 4466-4476	107
1977	Cathodic electrochemical activation of CoO nanoarrays: a smart strategy to significantly boost the hydrogen evolution activity. <b>2018</b> , 54, 2150-2153	48
1976	Wet-chemistry topotactic synthesis of bimetallic iron/nickel sulfide nanoarrays: an advanced and versatile catalyst for energy efficient overall water and urea electrolysis. <b>2018</b> , 6, 4346-4353	127
1975	Template-directed synthesis of sulphur doped NiCoFe layered double hydroxide porous nanosheets with enhanced electrocatalytic activity for the oxygen evolution reaction. <b>2018</b> , 6, 3224-3230	122
1974	MoP Nanoparticles Supported on Indium-Doped Porous Carbon: Outstanding Catalysts for Highly Efficient CO <sub>2</sub> Electroreduction. <b>2018</b> , 130, 2451-2455	37

1973	MoP Nanoparticles Supported on Indium-Doped Porous Carbon: Outstanding Catalysts for Highly Efficient CO Electroreduction. <b>2018</b> , 57, 2427-2431	142
1972	Triphenyl Phosphite as the Phosphorus Source for the Scalable and Cost-Effective Production of Transition Metal Phosphides. <b>2018</b> , 30, 1799-1807	45
1971	Ru Modulation Effects in the Synthesis of Unique Rod-like Ni@NiP-Ru Heterostructures and Their Remarkable Electrocatalytic Hydrogen Evolution Performance. <b>2018</b> , 140, 2731-2734	211
1970	A platinum oxide decorated amorphous cobalt oxide hydroxide nanosheet array towards alkaline hydrogen evolution. <b>2018</b> , 6, 3864-3868	51
1969	Design of Electroactive Carbon Fibers Decorated with Metal and Metal-Phosphide Nanoparticles for Hydrogen Evolution Technology. <b>2018</b> , 6, 1310-1331	11
1968	In Situ Grown Epitaxial Heterojunction Exhibits High-Performance Electrocatalytic Water Splitting. <b>2018</b> , 30, e1705516	273
1967	High Activity Hydrogen Evolution Catalysis by Uniquely Designed Amorphous/Metal Interface of Core-Shell Phosphosulfide/N-Doped CNTs. <b>2018</b> , 8, 1702806	35
1966	CoHPi Nanoflakes for Enhanced Oxygen Evolution Reaction. <b>2018</b> , 10, 6288-6298	50
1965	Co2P Nanorods as an Efficient Cocatalyst Decorated Porous g-C3N4 Nanosheets for Photocatalytic Hydrogen Production under Visible Light Irradiation. <b>2018</b> , 35, 1700251	61
1964	Phosphonium-Based Ionic Liquid: A New Phosphorus Source toward Microwave-Driven Synthesis of Nickel Phosphide for Efficient Hydrogen Evolution Reaction. <b>2018</b> , 6, 1468-1477	36
1963	Stainless Steel Scrubber: A Cost Efficient Catalytic Electrode for Full Water Splitting in Alkaline Medium. <b>2018</b> , 6, 2498-2509	44
1962	Water Remediation. <b>2018</b> ,	5
1961	Water Splitting by Using Electrochemical Properties of Material. <b>2018</b> , 135-153	4
1960	Bio-inspired design of hierarchical FeP nanostructure arrays for the hydrogen evolution reaction. <b>2018</b> , 11, 3537-3547	63
1959	Biphasic nickel phosphide nanosheets: Self-supported electrocatalyst for sensitive and selective electrochemical H2O2 detection and its practical applications in blood and living cells. <b>2018</b> , 258, 789-795	10
1958	Amine-Modulated/Engineered Interfaces of NiMo Electrocatalysts for Improved Hydrogen Evolution Reaction in Alkaline Solutions. <b>2018</b> , 10, 1728-1733	45
1957	2D Co6Mo6C Nanosheets as Robust Hydrogen Evolution Reaction Electrocatalyst. <b>2018</b> , 2, 1700136	18
1956	Atomic-Scale Understanding of Gold Cluster Growth on Different Substrates and Adsorption-Induced Structural Change. <b>2018</b> , 122, 1753-1760	17

1955	A Co P/WC Nano-Heterojunction Covered with N-Doped Carbon as Highly Efficient Electrocatalyst for Hydrogen Evolution Reaction. <b>2018</b> , 11, 1082-1091	59
1954	Nickel Hydr(oxy)oxide Nanoparticles on Metallic MoS Nanosheets: A Synergistic Electrocatalyst for Hydrogen Evolution Reaction. <b>2018</b> , 5, 1700644	83
1953	Electrochemically Synthesized Nanoporous Molybdenum Carbide as a Durable Electrocatalyst for Hydrogen Evolution Reaction. <b>2018</b> , 5, 1700601	35
1952	MOF-Derived Cobalt Phosphide/Carbon Nanocubes for Selective Hydrogenation of Nitroarenes to Anilines. <b>2018</b> , 24, 4234-4238	53
1951	Iron oxide embedded titania nanowires ▯An active and stable electrocatalyst for oxygen evolution in acidic media. <b>2018</b> , 45, 118-126	76
1950	Ultrafine PtO nanoparticles coupled with a Co(OH)F nanowire array for enhanced hydrogen evolution. <b>2018</b> , 54, 810-813	54
1949	The synergistic catalysis effect within a dinuclear nickel complex for efficient and selective electrocatalytic reduction of CO <sub>2</sub> to CO. <b>2018</b> , 20, 798-803	38
1948	MOF-Derived Bifunctional Cu P Nanoparticles Coated by a N,P-Codoped Carbon Shell for Hydrogen Evolution and Oxygen Reduction. <b>2018</b> , 30, 1703711	371
1947	Extraction of nickel from NiFe-LDH into NiP@NiFe hydroxide as a bifunctional electrocatalyst for efficient overall water splitting. <b>2018</b> , 9, 1375-1384	183
1946	Few-Layer Iron Selenophosphate, FePSe <sub>3</sub> : Efficient Electrocatalyst toward Water Splitting and Oxygen Reduction Reactions. <b>2018</b> , 1, 220-231	48
1945	Alkaline-Acid Zn-H <sub>2</sub> O Fuel Cell for the Simultaneous Generation of Hydrogen and Electricity. <b>2018</b> , 57, 3910-3915	58
1944	One step electrochemical route to the fabrication of highly ordered array of cylindrical nano porous structure and its electrocatalytic performance toward efficient hydrogen evolution. <b>2018</b> , 515, 189-197	4
1943	Hierarchical tubular structures composed of CoP <sub>x</sub> and carbon nanotubes: Highly effective electrocatalyst for oxygen reduction. <b>2018</b> , 130, 241-249	23
1942	In Situ Engineering of Double-Phase Interface in Mo/Mo <sub>2</sub> C Heteronanoshets for Boosted Hydrogen Evolution Reaction. <b>2018</b> , 3, 341-348	111
1941	Oriented Growth of ZIF-67 to Derive 2D Porous CoPO Nanosheets for Electrochemical-/Photovoltage-Driven Overall Water Splitting. <b>2018</b> , 28, 1706120	127
1940	Molybdenum Sulphoselenophosphide Spheroids as an Effective Catalyst for Hydrogen Evolution Reaction. <b>2018</b> , 14, 1703862	30
1939	Self-Supported Ternary Ni-S-Se Nanorod Arrays as Highly Active Electrocatalyst for Hydrogen Generation in Both Acidic and Basic Media: Experimental Investigation and DFT Calculation. <b>2018</b> , 10, 2430-2441	68
1938	Selective phosphidation: an effective strategy toward CoP/CeO <sub>2</sub> interface engineering for superior alkaline hydrogen evolution electrocatalysis. <b>2018</b> , 6, 1985-1990	151

1937	An electrochemically neutralized energy-assisted low-cost acid-alkaline electrolyzer for energy-saving electrolysis hydrogen generation. <b>2018</b> , 6, 4948-4954	61
1936	Preparation of amorphous NiP-based catalysts for hydrogen evolution reactions. <b>2018</b> , 46, 473-478	12
1935	Porous carbon incorporated $\text{NiMo}_2\text{C}$ hollow sphere: An efficient electrocatalyst for hydrogen evolution reaction. <b>2018</b> , 43, 21655-21664	20
1934	Mesoporous NiCoP microflowers as a superior electrode material for supercapacitors. <b>2018</b> , 450, 170-179	59
1933	FeOx/FeP hybrid nanorods neutral hydrogen evolution electrocatalysis: insight into interface. <b>2018</b> , 6, 9467-9472	77
1932	Dimensional construction and morphological tuning of heterogeneous MoS <sub>2</sub> /NiS electrocatalysts for efficient overall water splitting. <b>2018</b> , 6, 9833-9838	75
1931	Facile Dispersion of Nanosized NiFeP for Highly Effective Catalysis of Oxygen Evolution Reaction. <b>2018</b> , 6, 7206-7211	32
1930	Highly efficient catalytic activity for the hydrogen evolution reaction on pristine and monovacancy defected WP systems: a first-principles investigation. <b>2018</b> , 20, 13757-13764	20
1929	A metal-vacancy-solid-solution NiAlP nanowall array bifunctional electrocatalyst for exceptional all-pH overall water splitting. <b>2018</b> , 6, 9420-9427	47
1928	Study of cobalt boride-derived electrocatalysts for overall water splitting. <b>2018</b> , 43, 6076-6087	56
1927	Dual Tuning of Ni-Co-A (A = P, Se, O) Nanosheets by Anion Substitution and Holey Engineering for Efficient Hydrogen Evolution. <b>2018</b> , 140, 5241-5247	347
1926	Hollow Mo-doped CoP nanoarrays for efficient overall water splitting. <b>2018</b> , 48, 73-80	418
1925	Boosting hydrogen evolution via optimized hydrogen adsorption at the interface of CoP <sub>3</sub> and Ni <sub>2</sub> P. <b>2018</b> , 6, 5560-5565	76
1924	Ni <sub>2</sub> P hollow microspheres for electrocatalytic oxygen evolution and reduction reactions. <b>2018</b> , 8, 2289-2293	35
1923	Palladium - silicon nanocomposites as a stable electrocatalyst for hydrogen evolution reaction. <b>2018</b> , 522, 242-248	19
1922	Amorphous nickel pyrophosphate modified graphitic carbon nitride: an efficient photocatalyst for hydrogen generation from water splitting. <b>2018</b> , 231, 43-50	64
1921	Engineering Ultrathin C <sub>3</sub> N <sub>4</sub> Quantum Dots on Graphene as a Metal-Free Water Reduction Electrocatalyst. <b>2018</b> , 8, 3965-3970	99
1920	N-doped graphitic carbon materials hybridized with transition metals (compounds) for hydrogen evolution reaction: Understanding the synergistic effect from atomistic level. <b>2018</b> , 133, 260-266	75

1919	Facile fabrication of a 3D network composed of N-doped carbon-coated core-shell metal oxides/phosphides for highly efficient water splitting. <b>2018</b> , 2, 1085-1092	31
1918	Ultrasmall CoP Nanoparticles as Efficient Cocatalysts for Photocatalytic Formic Acid Dehydrogenation. <b>2018</b> , 2, 549-557	79
1917	Nickelo-Sulfurization of DNA Leads to an Efficient Alkaline Water Oxidation Electrocatalyst with Low Ni Quantity. <b>2018</b> , 6, 6802-6810	13
1916	Facile air oxidative induced dealloying of hierarchical branched PtCu nanodendrites with enhanced activity for hydrogen evolution. <b>2018</b> , 557, 72-78	20
1915	Mn-doped NiP <sub>2</sub> nanosheets as an efficient electrocatalyst for enhanced hydrogen evolution reaction at all pH values. <b>2018</b> , 387, 1-8	91
1914	Two-dimensional Co <sub>3</sub> W <sub>3</sub> C nanosheets on graphene nanocomposition: An Pt-like electrocatalyst toward hydrogen evolution reaction in wide pH range. <b>2018</b> , 8, 65-72	16
1913	Recent advances in two-dimensional transition metal dichalcogenides-graphene heterostructured materials for electrochemical applications. <b>2018</b> , 96, 51-85	90
1912	Bifunctional porous iron phosphide/carbon nanostructure enabled high-performance sodium-ion battery and hydrogen evolution reaction. <b>2018</b> , 15, 98-107	80
1911	Triple Ni-Co-Mo metal sulfides with one-dimensional and hierarchical nanostructures towards highly efficient hydrogen evolution reaction. <b>2018</b> , 361, 204-213	83
1910	Heteromorphic NiCoS/NiS/Ni Foam as a Self-Standing Electrode for Hydrogen Evolution Reaction in Alkaline Solution. <b>2018</b> , 10, 10890-10897	102
1909	Highly efficient and durable phosphine reduced iron-doped tungsten oxide/reduced graphene oxide nanocomposites for the hydrogen evolution reaction. <b>2018</b> , 43, 6481-6490	24
1908	A review of transition-metal boride/phosphide-based materials for catalytic hydrogen generation from hydrolysis of boron-hydrides. <b>2018</b> , 5, 760-772	58
1907	Electrocatalytic performance evaluation of cobalt hydroxide and cobalt oxide thin films for oxygen evolution reaction. <b>2018</b> , 427, 253-259	98
1906	Co(OH) <sub>2</sub> hollow nanoflowers as highly efficient electrocatalysts for oxygen evolution reaction. <b>2018</b> , 33, 568-580	11
1905	Porous Ni <sub>3</sub> Mo <sub>3</sub> Nanowire Network Film Electrode as a High-Efficiency Bifunctional Electrocatalyst for Overall Water Splitting. <b>2018</b> , 5, 335-342	41
1904	One-pot synthesis of in situ carbon-decorated Cu <sub>3</sub> P particles with enhanced electrocatalytic hydrogen evolution performance. <b>2018</b> , 33, 546-555	18
1903	Cobalt-Iron Pyrophosphate Porous Nanosheets as Highly Active Electrocatalysts for the Oxygen Evolution Reaction. <b>2018</b> , 5, 36-43	26
1902	Optimized expanding of interlayer distance for molybdenum disulfide towards enhanced hydrogen evolution reaction. <b>2018</b> , 428, 948-953	7

1901	Hierarchical honeycomb-like Co <sub>3</sub> O <sub>4</sub> pores coating on CoMoO <sub>4</sub> nanosheets as bifunctional efficient electrocatalysts for overall water splitting. <b>2018</b> , 433, 256-263	37
1900	Advanced catalysts for sustainable hydrogen generation and storage via hydrogen evolution and carbon dioxide/nitrogen reduction reactions. <b>2018</b> , 92, 64-111	161
1899	Recent developments in electrochemical hydrogen evolution reaction. <b>2018</b> , 7, 7-14	69
1898	Encapsulating Co P@C Core-Shell Nanoparticles in a Porous Carbon Sandwich as Dual-Doped Electrocatalyst for Hydrogen Evolution. <b>2018</b> , 11, 376-388	40
1897	Ripple-like NiFeCo sulfides on nickel foam derived from in-situ sulfurization of precursor oxides as efficient anodes for water oxidation. <b>2018</b> , 428, 370-376	17
1896	Zinc vacancy-promoted photocatalytic activity and photostability of ZnS for efficient visible-light-driven hydrogen evolution. <b>2018</b> , 221, 302-311	276
1895	Sub 1 nm aggregation-free AuPd nanocatalysts confined inside amino-functionalized organosilica nanotubes for visible-light-driven hydrogen evolution from formaldehyde. <b>2018</b> , 220, 303-313	30
1894	Thermal and photocatalytic production of hydrogen with earth-abundant metal complexes. <b>2018</b> , 355, 54-73	93
1893	Self-supported CoMoS <sub>4</sub> nanosheet array as an efficient catalyst for hydrogen evolution reaction at neutral pH. <b>2018</b> , 11, 2024-2033	120
1892	Hierarchical cobalt poly-phosphide hollow spheres as highly active and stable electrocatalysts for hydrogen evolution over a wide pH range. <b>2018</b> , 427, 800-806	28
1891	Metal-organic frameworks for electrocatalysis. <b>2018</b> , 373, 22-48	245
1890	Initial Stages in the Formation of Nickel Phosphides. <b>2018</b> , 122, 672-678	9
1889	Self-Supported Hierarchical Nanostructured NiFe-LDH and Cu <sub>3</sub> P Weaving Mesh Electrodes for Efficient Water Splitting. <b>2018</b> , 6, 380-388	63
1888	Enhanced Solar Fuel H <sub>2</sub> Generation over g-C <sub>3</sub> N <sub>4</sub> Nanosheet Photocatalysts by the Synergetic Effect of Noble Metal-Free Co <sub>2</sub> P Cocatalyst and the Environmental Phosphorylation Strategy. <b>2018</b> , 6, 816-826	170
1887	Polyoxometalate and Resin-Derived P-Doped Mo C@N-Doped Carbon as a Highly Efficient Hydrogen-Evolution Reaction Catalyst at All pH Values. <b>2018</b> , 13, 158-163	28
1886	Phosphorus-Doped MoS <sub>2</sub> Nanosheets Supported on Carbon Cloths as Efficient Hydrogen-Generation Electrocatalysts. <b>2018</b> , 10, 1571-1577	36
1885	Host-Guest Interaction Creates Hydrogen-Evolution Electrocatalytic Active Sites in 3d Transition Metal-Intercalated Titanates. <b>2018</b> , 10, 696-703	13
1884	A novel method to significantly boost the electrocatalytic activity of carbon cloth for oxygen evolution reaction. <b>2018</b> , 129, 468-475	16

1883	CoBP nanoparticles supported on three-dimensional nitrogen-doped graphene hydrogel and their superior catalysis for hydrogen generation from hydrolysis of ammonia borane. <b>2018</b> , 735, 1271-1276	30
1882	Hydrogen Evolution Activity of Ruthenium Phosphides Encapsulated in Nitrogen- and Phosphorous-Codoped Hollow Carbon Nanospheres. <b>2018</b> , 11, 743-752	67
1881	Nitrogen-doped mesoporous carbon-armored cobalt nanoparticles as efficient hydrogen evolving electrocatalysts. <b>2018</b> , 514, 281-288	11
1880	One-step synthesis of the 3D flower-like heterostructure MoS <sub>2</sub> /CuS nanohybrid for electrocatalytic hydrogen evolution. <b>2018</b> , 43, 1251-1260	33
1879	Turning Ni-based hydroxide into an efficient hydrogen evolution electrocatalyst by fluoride incorporation. <b>2018</b> , 86, 108-112	17
1878	Thermally oxidized porous NiO as an efficient oxygen evolution reaction (OER) electrocatalyst for electrochemical water splitting application. <b>2018</b> , 60, 493-497	97
1877	High-efficiency and stable alloyed nickel based electrodes for hydrogen evolution by seawater splitting. <b>2018</b> , 732, 248-256	34
1876	Polyaniline Derived N-Doped Carbon-Coated Cobalt Phosphide Nanoparticles Deposited on N-Doped Graphene as an Efficient Electrocatalyst for Hydrogen Evolution Reaction. <b>2018</b> , 14, 1702895	99
1875	Bimetal metal-organic frameworks derived Co <sub>0.4</sub> Fe <sub>0.28</sub> P and Co <sub>0.37</sub> Fe <sub>0.26</sub> S nanocubes for enhanced oxygen evolution reaction. <b>2018</b> , 263, 576-584	27
1874	Electrocatalysts for Hydrogen Evolution in Alkaline Electrolytes: Mechanisms, Challenges, and Prospective Solutions. <b>2018</b> , 5, 1700464	647
1873	The effect of phosphating time on the electrocatalytic activity of nickel phosphide nanorod arrays grown on Ni foam. <b>2018</b> , 33, 556-567	12
1872	Toward noble-metal-free visible-light-driven photocatalytic hydrogen evolution: Monodisperse sub-15 nm Ni <sub>2</sub> P nanoparticles anchored on porous g-C <sub>3</sub> N <sub>4</sub> nanosheets to engineer 0D-2D heterojunction interfaces. <b>2018</b> , 221, 47-55	210
1871	Hydrogen evolution activity enhancement by tuning the oxygen vacancies in self-supported mesoporous spinel oxide nanowire arrays. <b>2018</b> , 11, 603-613	102
1870	Alkaline/Acid Zn/H <sub>2</sub> O Fuel Cell for the Simultaneous Generation of Hydrogen and Electricity. <b>2018</b> , 130, 3974-3979	38
1869	C-Decorated nickel-cobalt phosphide as an efficient and robust electrocatalyst for hydrogen evolution reaction. <b>2018</b> , 10, 23070-23079	30
1868	CrO nanofiber: a high-performance electrocatalyst toward artificial N fixation to NH <sub>3</sub> under ambient conditions. <b>2018</b> , 54, 12848-12851	86
1867	Electrochemically activated Cu <sub>2</sub> O/Co <sub>3</sub> O <sub>4</sub> nanocomposites on defective carbon nanotubes for the hydrogen evolution reaction. <b>2018</b> , 42, 19400-19406	11
1866	Cobalt layered double hydroxides derived CoP/CoP hybrids for electrocatalytic overall water splitting. <b>2018</b> , 10, 21019-21024	54

1865	Tungsten nitride/carbide nanocomposite encapsulated in nitrogen-doped carbon shell as an effective and durable catalyst for hydrogen evolution reaction. <b>2018</b> , 42, 19557-19563	9
1864	Enhanced photocarriers separation of novel CdS/pt/MoC heterostructure for visible-light-driven hydrogen evolution.. <b>2018</b> , 8, 33993-33999	10
1863	Visible-light-driven H <sub>2</sub> production and decomposition of 4-nitrophenol over nickel phosphides.. <b>2018</b> , 8, 34259-34265	8
1862	3D nanoporous Ni/V <sub>2</sub> O <sub>3</sub> hybrid nanoplate assemblies for highly efficient electrochemical hydrogen evolution. <b>2018</b> , 6, 21452-21457	25
1861	Porous NiCoP in situ grown on Ni foam using molten-salt electrodeposition for asymmetric supercapacitors. <b>2018</b> , 6, 23746-23756	55
1860	Chainmail catalyst of ultrathin P-doped carbon shell-encapsulated nickel phosphides on graphene towards robust and efficient hydrogen generation. <b>2018</b> , 6, 24107-24113	31
1859	Design of atomically precise Au <sub>2</sub> Pd <sub>6</sub> nanoclusters for boosting electrocatalytic hydrogen evolution on MoS <sub>2</sub> . <b>2018</b> , 5, 2948-2954	25
1858	Highly efficient visible-light-assisted photocatalytic hydrogen generation from water splitting catalyzed by Zn <sub>0.5</sub> Cd <sub>0.5</sub> Ni <sub>2</sub> P heterostructures. <b>2018</b> , 43, 22917-22928	18
1857	Carbon-coated cobalt molybdenum oxide as a high-performance electrocatalyst for hydrogen evolution reaction. <b>2018</b> , 43, 23101-23108	6
1856	Layered Ternary and Quaternary Transition Metal Chalcogenide Based Catalysts for Water Splitting. <b>2018</b> , 8, 551	31
1855	One-Dimensional Porous Hybrid Structure of MoC-CoP Encapsulated in N-Doped Carbon Derived from MOF: An Efficient Electrocatalyst for Hydrogen Evolution Reaction over the Entire pH Range. <b>2018</b> , 10, 42335-42347	67
1854	Remarkable Bifunctional Oxygen and Hydrogen Evolution Electrocatalytic Activities with Trace-Level Fe Doping in Ni- and Co-Layered Double Hydroxides for Overall Water-Splitting. <b>2018</b> , 10, 42453-42468	68
1853	Tailoring of Magnetic Properties of NiO/Ni Composite Particles Fabricated by Pulsed Laser Irradiation. <b>2018</b> , 8,	7
1852	Structurally Engineered Hyperbranched NiCoP Arrays with Superior Electrocatalytic Activities toward Highly Efficient Overall Water Splitting. <b>2018</b> , 10, 41237-41245	70
1851	Recent developments of transition metal phosphides as catalysts in the energy conversion field. <b>2018</b> , 6, 23220-23243	135
1850	Tunable Synthesis of CoP and CoP <sub>2</sub> Decorated 3D Carbon Nanohybrids and the Application of CoP <sub>2</sub> Decorated One in Electrochemical Detection of Chloramphenicol in Milk and Honey. <b>2018</b> , 165, B916-B923	13
1849	Earth-Abundant Electrocatalysts in Proton Exchange Membrane Electrolyzers. <b>2018</b> , 8, 657	27
1848	A brief review on plasma for synthesis and processing of electrode materials. <b>2018</b> , 3, 28-47	30



1847	Next-Generation Energy Storage Materials Explored by Advanced Scanning Techniques. <b>2018</b> , 2018, 3280283	
1846	Recent developments in earth-abundant and non-noble electrocatalysts for water electrolysis. <b>2018</b> , 7, 121-138	119
1845	Single-atomic cobalt sites embedded in hierarchically ordered porous nitrogen-doped carbon as a superior bifunctional electrocatalyst. <b>2018</b> , 115, 12692-12697	222
1844	Phosphorized MXene-Phase Molybdenum Carbide as an Earth-Abundant Hydrogen Evolution Electrocatalyst. <b>2018</b> , 1, 7206-7212	48
1843	Sulfur-Doped Dicobalt Phosphide Outperforming Precious Metals as a Bifunctional Electrocatalyst for Alkaline Water Electrolysis. <b>2018</b> , 30, 8861-8870	50
1842	Iron phosphide encapsulated in P-doped graphitic carbon as efficient and stable electrocatalyst for hydrogen and oxygen evolution reactions. <b>2018</b> , 10, 21327-21334	58
1841	MOF-Derived CoP <sub>x</sub> Nanoparticles Embedded in Nitrogen-Doped Porous Carbon Polyhedrons for Nanomolar Sensing of p-Nitrophenol. <b>2018</b> , 1, 5843-5853	35
1840	Nanosponge Pt Modified Graphene Nanocomposites Using Silicon Monoxides as a Reducing Agent: High Efficient Electrocatalysts for Hydrogen Evolution. <b>2018</b> , 6, 15238-15244	9
1839	Constructing Successive Active Sites for Metal-free Electrocatalyst with Boosted Electrocatalytic Activities Toward Hydrogen Evolution and Oxygen Reduction Reactions. <b>2018</b> , 10, 5194-5200	22
1838	Improving the electrocatalytic property of CoP for hydrogen evolution by constructing porous ternary CeO <sub>2</sub> -CoP-C hybrid nanostructure via ionic exchange of MOF. <b>2018</b> , 43, 20372-20381	27
1837	Amorphous Iron(III)-Borate Nanolattices as Multifunctional Electrodes for Self-Driven Overall Water Splitting and Rechargeable Zinc-Air Battery. <b>2018</b> , 14, e1802829	27
1836	Bimetal Prussian Blue as a Continuously Variable Platform for Investigating the Composition-Activity Relationship of Phosphides-Based Electrocatalysts for Water Oxidation. <b>2018</b> , 10, 35904-35910	22
1835	Synthetic strategy and evaluation of hierarchical nanoporous NiO/NiCoP microspheres as efficient electrocatalysts for hydrogen evolution reaction. <b>2018</b> , 292, 88-97	23
1834	Phosphorus-Based Mesoporous Materials for Energy Storage and Conversion. <b>2018</b> , 2, 2289-2306	46
1833	Palladium Phosphide as a Stable and Efficient Electrocatalyst for Overall Water Splitting. <b>2018</b> , 57, 14862-14867	58
1832	Layered Trichalcogenidophosphate: A New Catalyst Family for Water Splitting. <b>2018</b> , 10, 67	44
1831	Urchin-like CoP with Controlled Manganese Doping toward Efficient Hydrogen Evolution Reaction in Both Acid and Alkaline Solution. <b>2018</b> , 6, 15162-15169	20
1830	Palladium Phosphide as a Stable and Efficient Electrocatalyst for Overall Water Splitting. <b>2018</b> , 130, 15078-15083	

1829	A Janus Nickel Cobalt Phosphide Catalyst for High-Efficiency Neutral-pH Water Splitting. <b>2018</b> , 57, 15445-15449	82
1828	A Janus Nickel Cobalt Phosphide Catalyst for High-Efficiency Neutral-pH Water Splitting. <b>2018</b> , 130, 15671-15675	75
1827	Doping of CoMoO Nanoplates with Phosphorus for Efficient Hydrogen Evolution Reaction in Alkaline Media. <b>2018</b> , 10, 37038-37045	55
1826	Molecular Mimics of Heterogeneous Metal Phosphides: Thermochemistry, Hydride-Proton Isomerism, and HER Reactivity. <b>2018</b> , 57, 16329-16333	12
1825	Scanning gel electrochemical microscopy (SGECM): The potentiometric measurements. <b>2018</b> , 97, 64-67	10
1824	Promise and Challenge of Phosphorus in Science, Technology, and Application. <b>2018</b> , 28, 1803471	49
1823	Novel Cobalt-Doped NiSe Chalcogenides (Co NiSe) as High Active and Stable Electrocatalysts for Hydrogen Evolution Reaction in Electrolysis Water Splitting. <b>2018</b> , 10, 40491-40499	58
1822	Mechanochemical Coupling of MoS <sub>2</sub> and Perovskites for Hydrogen Generation. <b>2018</b> , 1, 6409-6416	21
1821	Catalyst or Precatalyst? The Effect of Oxidation on Transition Metal Carbide, Pnictide, and Chalcogenide Oxygen Evolution Catalysts. <b>2018</b> , 3, 2956-2966	196
1820	Tuning Sulfur Doping for Bifunctional Electrocatalyst with Selectivity between Oxygen and Hydrogen Evolution. <b>2018</b> , 1, 5822-5829	12
1819	Rhenium-Doped and Stabilized MoS Atomic Layers with Basal-Plane Catalytic Activity. <b>2018</b> , 30, e1803477	110
1818	In Situ Fabrication of Ni <sub>2</sub> P Nanoparticles Embedded in Nitrogen and Phosphorus Codoped Carbon Nanofibers as a Superior Anode for Li-Ion Batteries. <b>2018</b> , 6, 14795-14801	26
1817	Molecular Mimics of Heterogeneous Metal Phosphides: Thermochemistry, Hydride-Proton Isomerism, and HER Reactivity. <b>2018</b> , 130, 16567-16571	4
1816	Transition Metal Phosphide As Cocatalysts for Semiconductor-Based Photocatalytic Hydrogen Evolution Reaction. <b>2018</b> , 375-402	2
1815	Activating the MoS Basal Plane by Controllable Fabrication of Pores for an Enhanced Hydrogen Evolution Reaction. <b>2018</b> , 24, 19075-19080	14
1814	Enhancing the hydrogen evolution reaction with Ni-W-TiO <sub>2</sub> composites. <b>2018</b> , 96, 108-112	9
1813	Nickel-hydrogen batteries for large-scale energy storage. <b>2018</b> , 115, 11694-11699	37
1812	Morphological variation of electrodeposited nanostructured Ni-Co alloy electrodes and their property for hydrogen evolution reaction. <b>2018</b> , 43, 22012-22020	15

1811	Sub-1.5 nm Ultrathin CoP Nanosheet Aerogel: Efficient Electrocatalyst for Hydrogen Evolution Reaction at All pH Values. <b>2018</b> , 14, e1802824	70
1810	From an FeP complex to FeP nanoparticles as efficient electrocatalysts for water-splitting. <b>2018</b> , 9, 8590-8597	73
1809	High catalytic activity of oxygen-vacancy-rich tungsten oxide nanowires supported by nitrogen-doped reduced graphene oxide for the hydrogen evolution reaction. <b>2018</b> , 6, 19767-19774	23
1808	Co-Mo-P Based Electrocatalyst for Superior Reactivity in the Alkaline Hydrogen Evolution Reaction. <b>2018</b> , 10, 4832-4837	19
1807	Template-Directed Growth of Bimetallic Prussian Blue-Analogue Nanosheet Arrays and Their Derived Porous Metal Oxides for Oxygen Evolution Reaction. <b>2018</b> , 11, 3708-3713	24
1806	Electrocatalytic hydrogen evolution using metal-free porphyrins. <b>2018</b> , 43, 18843-18849	14
1805	Metallic-Phase MoS <sub>2</sub> Nanopetals with Enhanced Electrocatalytic Activity for Hydrogen Evolution. <b>2018</b> , 6, 13435-13442	36
1804	Nitrate-induced and in situ electrochemical activation synthesis of oxygen deficiencies-rich nickel/nickel (oxy)hydroxide hybrid films for enhanced electrocatalytic water splitting. <b>2018</b> , 10, 17546-17551	19
1803	Mosaic-Structured Cobalt Nickel Thiophosphate Nanosheets Incorporated N-doped Carbon for Efficient and Stable Electrocatalytic Water Splitting. <b>2018</b> , 28, 1805075	38
1802	Rhodium Nanoparticles/F-Doped Graphene Composites as Multifunctional Electrocatalyst Superior to Pt/C for Hydrogen Evolution and Formic Acid Oxidation Reaction. <b>2018</b> , 10, 33153-33161	44
1801	Carbon-Based, Metal-Free Electrocatalysts for Renewable Energy Technologies. <b>2018</b> , 313-334	
1800	Low-Temperature Tailoring of Copper-Deficient Cu <sub>3</sub> P Electric Properties, Phase Transitions, and Performance in Lithium-Ion Batteries. <b>2018</b> , 30, 7111-7123	20
1799	CeO <sub>2</sub> -Decorated NiFe-Layered Double Hydroxide for Efficient Alkaline Hydrogen Evolution by Oxygen Vacancy Engineering. <b>2018</b> , 10, 35145-35153	93
1798	MOF-derived Mn doped porous CoP nanosheets as efficient and stable bifunctional electrocatalysts for water splitting. <b>2018</b> , 47, 14679-14685	66
1797	Rhombic porous CoP <sub>2</sub> nanowire arrays synthesized by alkaline etching as highly active hydrogen-evolution-reaction electrocatalysts. <b>2018</b> , 6, 19038-19046	50
1796	Spherical Ruthenium Disulfide-Sulfur-Doped Graphene Composite as an Efficient Hydrogen Evolution Electrocatalyst. <b>2018</b> , 10, 34098-34107	41
1795	Self-supported nickel-cobalt nanowires as highly efficient and stable electrocatalysts for overall water splitting. <b>2018</b> , 10, 18767-18773	36
1794	A Universal Strategy to Design Superior Water-Splitting Electrocatalysts Based on Fast In Situ Reconstruction of Amorphous Nanofilm Precursors. <b>2018</b> , 30, e1804333	86

1793	Neural Network Inspired Design of Highly Active and Durable N-Doped Carbon Interconnected Molybdenum Phosphide for Hydrogen Evolution Reaction. <b>2018</b> ,	5
1792	Molybdenum carbide nanoparticle decorated hierarchical tubular carbon superstructures with vertical nanosheet arrays for efficient hydrogen evolution. <b>2018</b> , 6, 18833-18838	10
1791	Charge State Manipulation of Cobalt Selenide Catalyst for Overall Seawater Electrolysis. <b>2018</b> , 8, 1801926	140
1790	Fabrication of 0D/2D Carbon Nitride Quantum Dots/SnNb <sub>2</sub> O <sub>6</sub> Ultrathin Nanosheets with Enhanced Photocatalytic Hydrogen Production. <b>2018</b> , 6, 14332-14339	33
1789	Bifunctional sulfur-doped cobalt phosphide electrocatalyst outperforms all-noble-metal electrocatalysts in alkaline electrolyzer for overall water splitting. <b>2018</b> , 53, 286-295	119
1788	Emerging core-shell nanostructured catalysts of transition metal encapsulated by two-dimensional carbon materials for electrochemical applications. <b>2018</b> , 22, 100-131	59
1787	Octopus tentacles-like WO <sub>3</sub> /C@CoO as high property and long life-time electrocatalyst for hydrogen evolution reaction. <b>2018</b> , 281, 1-8	13
1786	CoSe /MoSe Heterostructures with Enriched Water Adsorption/Dissociation Sites towards Enhanced Alkaline Hydrogen Evolution Reaction. <b>2018</b> , 24, 11158-11165	55
1785	Nitrogen-Doped CoP Electrocatalysts for Coupled Hydrogen Evolution and Sulfur Generation with Low Energy Consumption. <b>2018</b> , 30, e1800140	224
1784	Reconstructing Supramolecular Aggregates to Nitrogen-Deficient g-CN Bunchy Tubes with Enhanced Photocatalysis for H <sub>2</sub> Production. <b>2018</b> , 10, 18746-18753	69
1783	Structure and Electrocatalytic Reactivity of Cobalt Phosphosulfide Nanomaterials. <b>2018</b> , 61, 958-964	16
1782	Carbon-coated molybdenum carbide nanosheets derived from molybdenum disulfide for hydrogen evolution reaction. <b>2018</b> , 43, 12610-12617	22
1781	Self-supported three-dimensional Cu/CuO-CuO/rGO nanowire array electrodes for an efficient hydrogen evolution reaction. <b>2018</b> , 54, 6388-6391	24
1780	A triple synergistic effect from pitaya-like MoNixMoCx hybrids encapsulated in N-doped C nanospheres for efficient hydrogen evolution. <b>2018</b> , 2, 1610-1620	17
1779	Activating rhodium phosphide-based catalysts for the pH-universal hydrogen evolution reaction. <b>2018</b> , 10, 12407-12412	68
1778	Pt nanoparticles decorated high-defective graphene nanospheres as highly efficient catalysts for the hydrogen evolution reaction. <b>2018</b> , 137, 405-410	31
1777	Efficient alkaline hydrogen evolution electrocatalysis enabled by an amorphous Co-Mo-B film. <b>2018</b> , 47, 7640-7643	11
1776	Highly efficient hydrogen evolution triggered by a multi-interfacial Ni/WC hybrid electrocatalyst. <b>2018</b> , 11, 2114-2123	142

1775	An electron deficiency strategy for enhancing hydrogen evolution on CoP nano-electrocatalysts. <b>2018</b> , 50, 273-280	64
1774	Hierarchical CoP/Ni <sub>5</sub> P <sub>4</sub> /CoP microsheet arrays as a robust pH-universal electrocatalyst for efficient hydrogen generation. <b>2018</b> , 11, 2246-2252	204
1773	Photocatalytic hydrogen evolution from formate and aldehyde over molecular iridium complexes stabilized by bipyridine-bridging organosilica nanotubes. <b>2018</b> , 236, 466-474	18
1772	Stepwise synthesis of CoS <sub>2</sub> @CoS <sub>2</sub> yolk-shell nanocages with much enhanced electrocatalytic performances both in solar cells and hydrogen evolution reactions. <b>2018</b> , 6, 12056-12065	39
1771	Structure-optimized CoP-carbon nanotube composite microspheres synthesized by spray pyrolysis for hydrogen evolution reaction. <b>2018</b> , 763, 652-661	27
1770	Synthesis of nickel germanide (GeNi) nanoparticles for durable hydrogen evolution reaction in acid solutions. <b>2018</b> , 10, 11072-11078	7
1769	Core-Shell Structured NiCo <sub>2</sub> O <sub>4</sub> @FeOOH Nanowire Arrays as Bifunctional Electrocatalysts for Efficient Overall Water Splitting. <b>2018</b> , 10, 4119-4125	22
1768	Ni <sub>2</sub> P@carbon core-shell nanorod array derived from ZIF-67-Ni: Effect of phosphorization temperature on morphology, structure and hydrogen evolution reaction performance. <b>2018</b> , 457, 933-941	29
1767	Multiscale porous molybdenum phosphide of honeycomb structure for highly efficient hydrogen evolution. <b>2018</b> , 10, 14594-14599	30
1766	Self-supported transition metal phosphide based electrodes as high-efficient water splitting cathodes. <b>2018</b> , 12, 494-508	29
1765	Recent progress in single-atom electrocatalysts: concept, synthesis, and applications in clean energy conversion. <b>2018</b> , 6, 14025-14042	160
1764	Phosphorus-doped cobalt-iron oxyhydroxide with ultrafine nanosheet structure enable efficient oxygen evolution electrocatalysis. <b>2018</b> , 530, 146-153	39
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1761	A Polyoxometalate-Based Metal-Organic Framework-Derived FeP/MoP Hybrid Encapsulated in N/P Dual-Doped Carbon as Efficient Electrocatalyst for Hydrogen Evolution. <b>2018</b> , 18, 4265-4269	22
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1759	Hollow Rh nanoparticles with nanoporous shell as efficient electrocatalyst for hydrogen evolution reaction. <b>2018</b> , 282, 853-859	29
1758	A Peapod-like CoP@C Nanostructure from Phosphorization in a Low-Temperature Molten Salt for High-Performance Lithium-Ion Batteries. <b>2018</b> , 130, 10344-10348	33

1757	Engineering the nanostructure of molybdenum nitride nanodot embedded N-doped porous hollow carbon nanochains for rapid all pH hydrogen evolution. <b>2018</b> , 6, 14734-14741	41
1756	Electrospinning preparation of Sn <sup>4+</sup> -doped BiFeO <sub>3</sub> nanofibers as efficient visible-light-driven photocatalyst for O <sub>2</sub> evolution. <b>2018</b> , 766, 274-283	28
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1752	Revealing the Size Effect of Platinum Cocatalyst for Photocatalytic Hydrogen Evolution on TiO <sub>2</sub> Support: A DFT Study. <b>2018</b> , 8, 7270-7278	90
1751	Assembling Ni-Co phosphides/carbon hollow nanocages and nanosheets with carbon nanotubes into a hierarchical necklace-like nanohybrid for electrocatalytic oxygen evolution reaction. <b>2018</b> , 10, 13555-13564	58
1750	Nanoporous Co <sub>3</sub> P Nanowire Array: Acid Etching Preparation and Application as a Highly Active Electrocatalyst for the Hydrogen Evolution Reaction in Alkaline Solution. <b>2018</b> , 6, 11186-11189	122
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1745	MOF derived carbon based nanocomposite materials as efficient electrocatalysts for oxygen reduction and oxygen and hydrogen evolution reactions.. <b>2018</b> , 8, 26728-26754	45
1744	MOF-Derived Bifunctional Iron Oxide and Iron Phosphide Nanoarchitecture Photoelectrode for Neutral Water Splitting. <b>2018</b> , 5, 2842-2849	21
1743	Oxygen Doping to Optimize Atomic Hydrogen Binding Energy on NiCoP for Highly Efficient Hydrogen Evolution. <b>2018</b> , 14, e1800421	73
1742	Metal-organic-framework template-derived hierarchical porous CoP arrays for energy-saving overall water splitting. <b>2018</b> , 284, 504-512	42
1741	CoP porous hexagonal nanoplates in situ grown on RGO as active and durable electrocatalyst for hydrogen evolution. <b>2018</b> , 284, 534-541	22
1740	Recent advances in 2-D nanostructured metal nitrides, carbides, and phosphides electrodes for electrochemical supercapacitors [A brief review. <b>2018</b> , 67, 12-27	78

1739	Multifold Nanostructuring and Atomic-Scale Modulation of Cobalt Phosphide to Significantly Boost Hydrogen Production. <b>2018</b> , 24, 13800-13806	10
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1697	Stress-Transfer-Induced In Situ Formation of Ultrathin Nickel Phosphide Nanosheets for Efficient Hydrogen Evolution. <b>2018</b> , 57, 13082-13085	75
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1622	Integrating Hydrogen Production with Aqueous Selective Semi-Dehydrogenation of Tetrahydroisoquinolines over a Ni P Bifunctional Electrode. <b>2019</b> , 58, 12014-12017	123
1621	Harnessing Native Iron Ore as an Efficient Electrocatalyst for Overall Water Splitting. <b>2019</b> , 6, 3667-3673	6
1620	Building MoS <sub>2</sub> /S-doped g-C <sub>3</sub> N <sub>4</sub> layered heterojunction electrocatalysts for efficient hydrogen evolution reaction. <b>2019</b> , 375, 441-447	37
1619	Recent advances in confining metal-based nanoparticles into carbon nanotubes for electrochemical energy conversion and storage devices. <b>2019</b> , 12, 2924-2956	104
1618	Self-supported cobalt-molybdenum oxide nanosheet clusters as efficient electrocatalysts for hydrogen evolution reaction. <b>2019</b> , 44, 21220-21228	9
1617	Hyperbranched CoP nanocrystals with 3D morphology for hydrogen generation in both alkaline and acidic media.. <b>2019</b> , 9, 20612-20617	5
1616	Nitrogen and Sulfur Co-Doped Mesoporous Carbon Embedded with Co S Nanoparticles: Efficient Electrocatalysts for Hydrogen Evolution. <b>2019</b> , 84, 1604-1609	3
1615	Enhanced Hydrogen Evolution Reaction Performance of NiCoP by Filling Oxygen Vacancies by Phosphorus in Thin-Coating CeO. <b>2019</b> , 11, 32460-32468	26
1614	Recent Advances in Cu-Based Cocatalysts toward Solar-to-Hydrogen Evolution: Categories and Roles. <b>2019</b> , 3, 1900256	31

1613	Synthesis of ternary NiCoP nanowire alloy and its enhanced electrochemical catalytic activity. <b>2019</b> , 6, 1150b3	4
1612	Surface-Modified Hollow Ternary NiCoP Catalysts for Efficient Electrochemical Water Splitting and Energy Storage. <b>2019</b> , 11, 39798-39808	13
1611	Flower-like MOF-derived Co <sub>N</sub> -doped carbon composite with remarkable activity and durability for electrochemical hydrogen evolution reaction. <b>2019</b> , 44, 30075-30083	22
1610	3D Hierarchical ZnIn <sub>2</sub> S <sub>4</sub> Nanosheets with Rich Zn Vacancies Boosting Photocatalytic CO <sub>2</sub> Reduction. <b>2019</b> , 29, 1905153	139
1609	Surface Engineering of 3D Gas Diffusion Electrodes for High-Performance H <sub>2</sub> Production with Nonprecious Metal Catalysts. <b>2019</b> , 9, 1901824	7
1608	Rapid Activation of Platinum with Black Phosphorus for Efficient Hydrogen Evolution. <b>2019</b> , 58, 19060-19066	51
1607	Fabrication of 2D/0D Heterojunction Based on the Dual Controls of Micro/Nano-Morphology and Structure Towards High-Efficiency Photocatalytic H <sub>2</sub> Production. <b>2019</b> , 11, 6263-6269	10
1606	Unveiling the Origin of the High Catalytic Activity of Ultrathin 1T/2H MoSe Nanosheets for the Hydrogen Evolution Reaction: A Combined Experimental and Theoretical Study. <b>2019</b> , 12, 5015-5022	21
1605	Highly efficient amorphous np-PdFePC catalyst for hydrogen evolution reaction. <b>2019</b> , 328, 135082	19
1604	Tungsten-Doped CoP Nanoneedle Arrays Grown on Carbon Cloth as Efficient Bifunctional Electrocatalysts for Overall Water Splitting. <b>2019</b> , 6, 5229-5236	23
1603	New insight on hydrogen evolution reaction activity of the most exposure (0 1 1) surface and its monovacancy defect for FeP system: A theoretical perspective. <b>2019</b> , 734, 136740	3
1602	Fabrication of Te@NiTe <sub>2</sub> /NiS heterostructures for electrocatalytic hydrogen evolution reaction. <b>2019</b> , 328, 135075	10
1601	Two-dimensional transition-metal dichalcogenides for electrochemical hydrogen evolution reaction. <b>2019</b> , 18, 100140	16
1600	Synthesis of ultrafine ruthenium phosphide nanoparticles and nitrogen/phosphorus dual-doped carbon hybrids as advanced electrocatalysts for all-pH hydrogen evolution reaction. <b>2019</b> , 44, 25632-25641	8
1599	Recent Trends in Synthesis and Investigation of Nickel Phosphide Compound/Hybrid-Based Electrocatalysts Towards Hydrogen Generation from Water Electrocatalysis. <b>2019</b> , 377, 29	17
1598	Encapsulated Rh nanoparticles in N-doped porous carbon polyhedrons derived from ZIF-8 for efficient HER and ORR electrocatalysis. <b>2019</b> , 326, 134982	20
1597	Hollow Cobalt Phosphide with N-Doped Carbon Skeleton as Bifunctional Electrocatalyst for Overall Water Splitting. <b>2019</b> , 58, 14652-14659	27
1596	Hierarchical ZnS@C@MoS <sub>2</sub> core-shell nanostructures as efficient hydrogen evolution electrocatalyst for alkaline water electrolysis. <b>2019</b> , 44, 25310-25318	19

1595	Modulating Electronic Structure of Cobalt Phosphide Precatalysts via Dual-Metal Incorporation for Highly Efficient Overall Water Splitting. <b>2019</b> , 2, 8022-8030	6
1594	FeP/MoS <sub>2</sub> Enriched with Dense Catalytic Sites and High Electrical Conductivity for the Hydrogen Evolution Reaction. <b>2019</b> , 7, 17671-17681	10
1593	Nanobundles of Iron Phosphide Fabricated by Direct Phosphorization of Metal-Organic Frameworks as an Efficient Hydrogen-Evolving Electrocatalyst. <b>2019</b> , 26, 4001	7
1592	Amorphous CoFeP/NC hybrids as highly efficient electrocatalysts for water oxidation. <b>2019</b> , 44, 30196-30207	22
1591	Rapid Activation of Platinum with Black Phosphorus for Efficient Hydrogen Evolution. <b>2019</b> , 131, 19236-19242	2
1590	Amorphous Ruthenium-Sulfide with Isolated Catalytic Sites for Pt-Like Electrocatalytic Hydrogen Production Over Whole pH Range. <b>2019</b> , 15, e1904043	35
1589	The catalytic performance enhancement of Ni <sub>2</sub> P electrocatalysts for hydrogen evolution reaction by carbon-based substrates. <b>2019</b> , 44, 31960-31968	12
1588	Highly purified dicobalt phosphide nanodendrites on exfoliated graphene: In situ synthesis and as robust bifunctional electrocatalysts for overall water splitting. <b>2019</b> , 14, 100336	13
1587	Solid-State Conversion Synthesis of Advanced Electrocatalysts for Water Splitting. <b>2019</b> , 26, 3961	3
1586	A Facile and Robust Method for Synthesis of Hierarchically Multibranched PtIrCo Alloyed Nanowires: Growth Mechanism and Efficient Electrocatalysis for Hydrogen Evolution Reaction. <b>2019</b> , 2, 7886-7892	14
1585	Supported Transition Metal Phosphides: Activity Survey for HER, ORR, OER, and Corrosion Resistance in Acid and Alkaline Electrolytes. <b>2019</b> , 9, 11515-11529	129
1584	Boosting hydrogen evolution activity and durability of PdNiP nanocatalyst via crystalline degree and surface chemical state modulations. <b>2019</b> , 44, 31053-31061	10
1583	Rational Design of Flexible Two-Dimensional MXenes with Multiple Functionalities. <b>2019</b> , 119, 11980-12031	137
1582	Boosting HER Performance of Pt-Based Catalysts Immobilized on Functionalized Vulcan Carbon by Atomic Layer Deposition. <b>2019</b> , 6,	27
1581	Modulation of Inverse Spinel Fe <sub>3</sub> O <sub>4</sub> by Phosphorus Doping as an Industrially Promising Electrocatalyst for Hydrogen Evolution. <b>2019</b> , 31, e1905107	114
1580	Self-Supportive Mesoporous Ni/Co/Fe Phosphosulfide Nanorods Derived from Novel Hydrothermal Electrodeposition as a Highly Efficient Electrocatalyst for Overall Water Splitting. <b>2019</b> , 15, e1905201	47
1579	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
1578	Fabrication of MoS <sub>2</sub> -Decorated Nickel-Cobalt Bimetal Phosphide Nanocubes as Efficient Electrocatalysts for Hydrogen Evolution. <b>2019</b> , 4, 11872-11878	5

1577	Surface Engineering of Rh Catalysts with N/S-Codoped Carbon Nanosheets toward High-Performance Hydrogen Evolution from Seawater. <b>2019</b> , 7, 18835-18843	24
1576	Correlation between Tafel Analysis and Electrochemical Impedance Spectroscopy by Prediction of Amperometric Response from EIS. <b>2019</b> , 4, 19307-19313	7
1575	Efficient and Durable 3D Self-Supported Nitrogen-Doped Carbon-Coupled Nickel/Cobalt Phosphide Electrodes: Stoichiometric Ratio Regulated Phase- and Morphology-Dependent Overall Water Splitting Performance. <b>2019</b> , 29, 1906316	62
1574	Confined Catalysis: Progress and Prospects in Energy Conversion. <b>2019</b> , 9, 1902307	50
1573	Unique Processing of Grape Wine Residue and Its Biosynthetic Platinum Nanoparticles for Efficient Photocatalytic Hydrogen Evolution. <b>2019</b> , 4, 11523-11530	0
1572	Highly dispersed Ni <sub>2</sub> MoxP nanoparticles on oxygen-defect-rich NiMoO <sub>4</sub> nanosheets as an active electrocatalyst for alkaline hydrogen evolution reaction. <b>2019</b> , 444, 227311	18
1571	Hierarchical Bimetallic Ni-Co-P Microflowers with Ultrathin Nanosheet Arrays for Efficient Hydrogen Evolution Reaction over All pH Values. <b>2019</b> , 11, 42233-42242	44
1570	Three-Dimensional Graphene Materials: Synthesis and Applications in Electrocatalysts and Electrochemical Sensors. <b>2019</b> , 93-145	
1569	Tungsten phosphide nanosheets seamlessly grown on tungsten foils toward efficient hydrogen evolution reaction in basic and acidic media. <b>2019</b> , 44, 27483-27491	5
1568	Pitaya-like cobalt/molybdenum carbide encapsulated in N-doped carbon nanospheres toward efficient hydrogen evolution. <b>2019</b> ,	
1567	Graphene Nanoarchitectonics: Recent Advances in Graphene-Based Electrocatalysts for Hydrogen Evolution Reaction. <b>2019</b> , 31, e1903415	170
1566	Triplet-Triplet Annihilation Upconversion for Photocatalytic Hydrogen Evolution. <b>2019</b> , 25, 16270-16276	16
1565	Precursor-Transformation Strategy Preparation of CuP Nanodots-Decorated CoP Nanowires Hybrid Catalysts for Boosting pH-Universal Electrocatalytic Hydrogen Evolution. <b>2019</b> , 15, e1904681	19
1564	Electrochemical exfoliation of hierarchical Co <sub>3</sub> O <sub>4</sub> microflowers and their conversion into CoP as high-efficiency hydrogen evolution electrocatalyst. <b>2019</b> , 322, 134768	4
1563	Modulating the surface segregation of PdCuRu nanocrystals for enhanced all-pH hydrogen evolution electrocatalysis. <b>2019</b> , 7, 20151-20157	27
1562	MoP/Co <sub>2</sub> P Hybrid Nanostructure Anchored on Carbon Fiber Paper as an Effective Electrocatalyst for Hydrogen Evolution. <b>2019</b> , 11, 6086-6091	18
1561	Hierarchical MoP Hollow Nanospheres Anchored on a N,P,S-Doped Porous Carbon Matrix as Efficient Electrocatalysts for the Hydrogen Evolution Reaction. <b>2019</b> , 12, 4662-4670	24
1560	Construction of CoP/B doped g-C <sub>3</sub> N <sub>4</sub> nanodots/g-C <sub>3</sub> N <sub>4</sub> nanosheets ternary catalysts for enhanced photocatalytic hydrogen production performance. <b>2019</b> , 496, 143738	25



1559	In situ growth of minimal Ir-incorporated $\text{CoNi}_{1-x}\text{O}$ nanowire arrays on Ni foam with improved electrocatalytic activity for overall water splitting. <b>2019</b> , 40, 1576-1584	14
1558	Tungsten phosphide (WP) nanoparticles with tunable crystallinity, W vacancies, and electronic structures for hydrogen production. <b>2019</b> , 323, 134798	18
1557	F or V-induced activation of $(\text{Co}, \text{Ni})_2\text{P}$ during electrocatalysis for efficient hydrogen evolution reaction. <b>2019</b> , 21, 6080-6092	7
1556	An enzyme-responsive membrane for antibiotic drug release and local periodontal treatment. <b>2019</b> , 183, 110454	15
1555	Self-supported NiCoP/nanoporous copper as highly active electrodes for hydrogen evolution reaction. <b>2019</b> , 173, 51-55	9
1554	Recent progress in Pt and Pd-based hybrid nanocatalysts for methanol electrooxidation. <b>2019</b> , 21, 21185-21199	
1553	A $\text{CoMo}_2\text{N}$ composite on a nitrogen-doped carbon matrix with hydrogen evolution activity comparable to that of Pt/C in alkaline media. <b>2019</b> , 7, 20579-20583	27
1552	A self-reconstructed (oxy)hydroxide@nanoporous metal phosphide electrode for high-performance rechargeable zinc batteries. <b>2019</b> , 7, 21069-21078	17
1551	Hydrogen on Cobalt Phosphide. <b>2019</b> , 141, 15390-15402	20
1550	The effect of carbon quantum dots on the electrocatalytic hydrogen evolution reaction of manganese/nickel phosphide nanosheets. <b>2019</b> , 7, 21488-21495	27
1549	Cerium and nitrogen doped CoP nanorod arrays for hydrogen evolution in all pH conditions. <b>2019</b> , 3, 3344-3351	5
1548	Application of phase-pure nickel phosphide nanoparticles as cathode catalysts for hydrogen production in microbial electrolysis cells. <b>2019</b> , 293, 122067	17
1547	Hydrogen Fuel Exhaling Zn/Nickel Cyanide Redox Flow Battery. <b>2019</b> , 7, 16241-16246	4
1546	N-Doped MoC Nanobelts/Graphene Nanosheets Bonded with Hydroxy Nanocellulose as Flexible and Editable Electrode for Hydrogen Evolution Reaction. <b>2019</b> , 19, 1090-1100	28
1545	Deep Dehalogenation of Florfenicol Using Crystalline CoP Nanosheet Arrays on a Ti Plate via Direct Cathodic Reduction and Atomic H. <b>2019</b> , 53, 11932-11940	26
1544	New Insight on Hydrogen Evolution Reaction Activity of MoP from Theoretical Perspective. <b>2019</b> , 9,	5
1543	Surface treated nickel phosphide nanosheet with oxygen as highly efficient bifunctional electrocatalysts for overall water splitting. <b>2019</b> , 496, 143741	4
1542	Recent Advances and Prospective in Ruthenium-Based Materials for Electrochemical Water Splitting. <b>2019</b> , 9, 9973-10011	269

1541	Ni/NiO@rGO as an efficient bifunctional electrocatalyst for enhanced overall water splitting reactions. <b>2019</b> , 44, 27001-27009	27
1540	NiO-rich Ni/NiO nanocrystals for efficient water-to-hydrogen conversion via urea electro-oxidation. <b>2019</b> , 496, 143710	22
1539	Electrochemically assisted synthesis of three-dimensional FeP nanosheets to achieve high electrocatalytic activity for hydrogen evolution reaction. <b>2019</b> , 44, 24197-24208	10
1538	Recent Progresses in Oxygen Reduction Reaction Electrocatalysts for Electrochemical Energy Applications. <b>2019</b> , 2, 518-538	103
1537	Group IV transition metal based phospho-chalcogenides@MoTe <sub>2</sub> for electrochemical hydrogen evolution reaction over wide range of pH. <b>2019</b> , 44, 24628-24641	12
1536	Ultrathin CdS shell-sensitized hollow S-doped CeO <sub>2</sub> spheres for efficient visible-light photocatalysis. <b>2019</b> , 9, 1357-1364	133
1535	Highly stable single Pt atomic sites anchored on aniline-stacked graphene for hydrogen evolution reaction. <b>2019</b> , 12, 1000-1007	264
1534	An FeP@C nanoarray vertically grown on graphene nanosheets: an ultrastable Li-ion battery anode with pseudocapacitance-boosted electrochemical kinetics. <b>2019</b> , 11, 1304-1312	33
1533	Graphene oxide supported cobalt phosphide nanorods designed from a molecular complex for efficient hydrogen evolution at low overpotential. <b>2019</b> , 55, 2186-2189	10
1532	Mo modulation effect on the hydrogen binding energy of hexagonal-close-packed Ru for hydrogen evolution. <b>2019</b> , 7, 2780-2786	33
1531	Downshifted d-Band Center of Ru/MWCNTs by Turbostratic Carbon Nitride for Efficient and Robust Hydrogen Evolution in Alkali. <b>2019</b> , 11, 1970-1976	24
1530	Insight into iron group transition metal phosphides (Fe <sub>2</sub> P, Co <sub>2</sub> P, Ni <sub>2</sub> P) for improving photocatalytic hydrogen generation. <b>2019</b> , 246, 330-336	78
1529	Nickel phosphide polymorphs with an active (001) surface as excellent catalysts for water splitting. <b>2019</b> , 21, 1143-1149	11
1528	2D-MoS <sub>2</sub> photocatalyzed cross dehydrogenative coupling reaction synchronized with hydrogen evolution reaction. <b>2019</b> , 9, 1201-1207	13
1527	The hydrolysis of ammonia borane catalyzed by NiCoP/OPC-300 nanocatalysts: high selectivity and efficiency, and mechanism. <b>2019</b> , 21, 850-860	35
1526	Hybridizing NiCo <sub>2</sub> O <sub>4</sub> and Amorphous Ni <sub>x</sub> Co <sub>y</sub> Layered Double Hydroxides with Remarkably Improved Activity toward Efficient Overall Water Splitting. <b>2019</b> , 7, 4784-4791	49
1525	Reactive insights into the hydrogen production from ammonia borane facilitated by phosphonium based ionic liquid. <b>2019</b> , 36, 456-467	4
1524	In-situ synthesis of porous Ni <sub>2</sub> P nanosheets for efficient and stable hydrogen evolution reaction. <b>2019</b> , 44, 5739-5747	40

1523	Carbothermal-Reduction-Assisted Phosphidation of Cobalt Affords Mesoporous Nitrogen-Doped Carbon-Embedded CoP Nanoelectrocatalysts for the Oxygen Reduction Reaction. <b>2019</b> , 2, 643-648	10
1522	A universal synthesis strategy for P-rich noble metal diphosphide-based electrocatalysts for the hydrogen evolution reaction. <b>2019</b> , 12, 952-957	265
1521	Two-dimensional transition metal chalcogenide composite/reduced graphene oxide hybrid materials for hydrogen evolution application. <b>2019</b> , 162, 201-206	21
1520	Palladium/Bismuth/Copper Hierarchical Nano-Architectures for Efficient Hydrogen Evolution and Stable Hydrogen Detection. <b>2019</b> , 11, 6248-6256	17
1519	Vertical nanosheet array of 1T phase MoS <sub>2</sub> for efficient and stable hydrogen evolution. <b>2019</b> , 246, 296-302	71
1518	Pulse-electrodeposited nickel phosphide for high-performance proton exchange membrane water electrolysis. <b>2019</b> , 785, 296-304	24
1517	Heterogeneous NiSe <sub>2</sub> /Ni Ultrafine Nanoparticles Embedded into an N,S-Codoped Carbon Framework for pH-Universal Hydrogen Evolution Reaction. <b>2019</b> , 7, 4119-4127	20
1516	Membrane free water electrolysis under 1.23 V with Ni <sub>3</sub> Se <sub>4</sub> /Ni anode in alkali and Pt cathode in acid. <b>2019</b> , 478, 784-792	22
1515	A phosphorus-doped carbon sphere supported CoP nanocatalyst for electrochemical hydrogen evolution. <b>2019</b> , 3, 823-830	14
1514	Computational Approaches to Photoelectrode Design through Molecular Functionalization for Enhanced Photoelectrochemical Water Splitting. <b>2019</b> , 12, 1858-1871	6
1513	MOF-derived hollow $\gamma$ -FeOOH polyhedra anchored with $\beta$ -Ni(OH) <sub>2</sub> nanosheets as efficient electrocatalysts for oxygen evolution. <b>2019</b> , 301, 258-266	25
1512	Fabrication of Three-Dimensional Multiscale Porous Alloy Foams at a Planar Substrate for Efficient Water Splitting. <b>2019</b> , 7, 5412-5419	14
1511	CoP-Doped MOF-Based Electrocatalyst for pH-Universal Hydrogen Evolution Reaction. <b>2019</b> , 58, 4679-4684	348
1510	Electrochemical hydrogen evolution reaction boosted by constructing Ru nanoparticles assembled as a shell over semimetal Te nanorod surfaces in acid electrolyte. <b>2019</b> , 55, 1490-1493	54
1509	Electrochemically chopped WS <sub>2</sub> quantum dots as an efficient and stable electrocatalyst for water reduction. <b>2019</b> , 9, 223-231	22
1508	In pursuit of advanced materials from single-source precursors based on metal carbonyls. <b>2019</b> , 48, 2248-2262	4
1507	Ni-foam supported Co(OH)F and CoP nanoarrays for energy-efficient hydrogen production via urea electrolysis. <b>2019</b> , 7, 3697-3703	140
1506	Highly efficient hydrogen evolution of platinum via tuning the interfacial dissolved-gas concentration. <b>2019</b> , 55, 1378-1381	18

1505	Construction of nickel-doped cobalt hydroxides hexagonal nanoplates for advanced oxygen evolution electrocatalysis. <b>2019</b> , 553, 713-719	8
1504	Recent progress in the hybrids of transition metals/carbon for electrochemical water splitting. <b>2019</b> , 7, 14380-14390	68
1503	Hierarchical Hollow Nanocages Derived from Polymer/Cobalt Complexes for Electrochemical Overall Water Splitting. <b>2019</b> , 7, 10912-10919	18
1502	Facile Fabrication of Amorphous Ni <sub>3</sub> B Supported on a 3D Biocarbon Skeleton as an Efficient Electrocatalyst for the Oxygen Evolution Reaction. <b>2019</b> , 6, 3071-3076	12
1501	Amorphous Cobalt Iron Borate Grown on Carbon Paper as a Precatalyst for Water Oxidation. <b>2019</b> , 12, 3524-3531	16
1500	Self-Supported Ni/NiSP <sub>x</sub> Microdendrite Structure for Highly Efficient and Stable Overall Water Splitting in Simulated Industrial Environment. <b>2019</b> , 7, 11778-11786	12
1499	Sustainable and efficient hydrogen evolution over a noble metal-free WP double modified ZnCdS photocatalyst driven by visible-light. <b>2019</b> , 48, 11122-11135	31
1498	Tungsten-inert gas welding electrodes as low-cost, green and pH-universal electrocatalysts for the hydrogen evolution reaction. <b>2019</b> , 43, 11529-11542	2
1497	A silicon-doped iridium electrode prepared by magnetron-sputtering as an advanced electrocatalyst for overall water splitting in acidic media. <b>2019</b> , 3, 2321-2328	6
1496	Converting surface-oxidized cobalt phosphides into Co(PO)-CoP heterostructures for efficient electrocatalytic hydrogen evolution. <b>2019</b> , 30, 394001	7
1495	Heterostructural NiFe-LDH@Ni <sub>3</sub> S <sub>2</sub> nanosheet arrays as an efficient electrocatalyst for overall water splitting. <b>2019</b> , 318, 42-50	40
1494	Monodispersed platinum nanoparticles embedded in Ni <sub>3</sub> S <sub>2</sub> -containing hollow carbon spheres with ultralow Pt loading and high alkaline hydrogen evolution activity. <b>2019</b> , 318, 590-596	7
1493	General Method for Synthesizing Transition-Metal Phosphide/N-Doped Carbon Nanomaterials for Hydrogen Evolution. <b>2019</b> , 35, 9161-9168	9
1492	Facile Synthesis of Monodispersed Ni(OH) <sub>2</sub> Microspheres Assembled by Ultrathin Nanosheets and Its Performance for Oxygen Evolution Reduction. <b>2019</b> , 6,	19
1491	Advanced CuSn and Selenized CuSn@Cu Foam as Electrocatalysts for Water Oxidation under Alkaline and Near-Neutral Conditions. <b>2019</b> , 58, 9490-9499	22
1490	In Situ Growth of Ni <sub>2</sub> P/Cu <sub>3</sub> P Bimetallic Phosphide with Bicontinuous Structure on Self-Supported NiCuC Substrate as an Efficient Hydrogen Evolution Reaction Electrocatalyst. <b>2019</b> , 9, 6919-6928	83
1489	Electrodeposition at Highly Negative Potentials of an Iron-Cobalt Oxide Catalyst for Use in Electrochemical Water Splitting. <b>2019</b> , 20, 3112-3119	9
1488	Self-assembled Ni <sub>2</sub> P/FeP heterostructural nanoparticles embedded in N-doped graphene nanosheets as highly efficient and stable multifunctional electrocatalyst for water splitting. <b>2019</b> , 318, 449-459	38

1487	Mixed Transition Metal Oxide with Vacancy-Induced Lattice Distortion for Enhanced Catalytic Activity of Oxygen Evolution Reaction. <b>2019</b> , 9, 7099-7108	52
1486	Hierarchical flower-like ZnIn <sub>2</sub> S <sub>4</sub> anchored with well-dispersed Ni <sub>12</sub> P <sub>5</sub> nanoparticles for high-quantum-yield photocatalytic H <sub>2</sub> evolution under visible light. <b>2019</b> , 9, 4010-4016	32
1485	Spinel Cobalt Titanium Binary Oxide as an All-Non-Precious Water Oxidation Electrocatalyst in Acid. <b>2019</b> , 58, 8570-8576	26
1484	3D hierarchical VNi-based nitride heterostructure as a highly efficient pH-universal electrocatalyst for the hydrogen evolution reaction. <b>2019</b> , 7, 15823-15830	65
1483	In situ construction of Ni enriched porous NiAl as long-lived electrode for hydrogen evolution at high current densities. <b>2019</b> , 489, 435-445	7
1482	Polydopamine coated prussian blue analogue derived hollow carbon nanoboxes with FeP encapsulated for hydrogen evolution. <b>2019</b> , 152, 16-23	27
1481	Monolayer triphosphates MP (M = Sn, Ge) with excellent basal catalytic activity for hydrogen evolution reaction. <b>2019</b> , 11, 12210-12219	56
1480	Hard-templated preparation of mesoporous cobalt phosphide as an oxygen evolution electrocatalyst. <b>2019</b> , 104, 106476	12
1479	CeO <sub>2</sub> /Co(OH) <sub>2</sub> hybrid electrocatalysts for efficient hydrogen and oxygen evolution reaction. <b>2019</b> , 800, 450-455	30
1478	Electrodeposited amorphous cobalt phosphosulfide on Ni foams for highly efficient overall water splitting. <b>2019</b> , 431, 182-188	31
1477	Role of Sulfur Vacancies and Undercoordinated Mo Regions in MoS Nanosheets toward the Evolution of Hydrogen. <b>2019</b> , 13, 6824-6834	229
1476	Nickel phosphide decorated with trace amount of platinum as an efficient electrocatalyst for the alkaline hydrogen evolution reaction. <b>2019</b> , 3, 2006-2014	11
1475	Recent progress on MOF-derived electrocatalysts for hydrogen evolution reaction. <b>2019</b> , 16, 146-168	47
1474	Surface-engineered cobalt oxide nanowires as multifunctional electrocatalysts for efficient Zn-Air batteries-driven overall water splitting. <b>2019</b> , 23, 1-7	26
1473	Towards the prominent cocatalytic effect of ultra-small CoP particles anchored on g-C <sub>3</sub> N <sub>4</sub> nanosheets for visible light driven photocatalytic H <sub>2</sub> production. <b>2019</b> , 256, 117819	64
1472	Self-supported Cu nanosheets derived from CuCl-CuO for highly efficient electrochemical degradation of NO <sub>3</sub> <sup>-</sup> . <b>2019</b> , 489, 321-329	32
1471	MoS <sub>2</sub> coating on different carbonaceous materials: Comparison of electrochemical properties and hydrogen evolution reaction performance. <b>2019</b> , 847, 113198	30
1470	Scalable synthesis of self-assembled bimetallic phosphide/N-doped graphene nanoflakes as an efficient electrocatalyst for overall water splitting. <b>2019</b> , 11, 12837-12845	38

1469	Robust hydrogen evolution reaction catalysis by ultrasmall amorphous ruthenium phosphide nanoparticles. <b>2019</b> , 55, 7623-7626	18
1468	Role of defects on the catalytic property of 2D black arsenic for hydrogen evolution reaction. <b>2019</b> , 12, 075502	6
1467	The oxygen evolution reaction enabled by transition metal phosphide and chalcogenide pre-catalysts with dynamic changes. <b>2019</b> , 55, 8744-8763	143
1466	Tungsten-doped NiCo phosphides with multiple catalytic sites as efficient electrocatalysts for overall water splitting. <b>2019</b> , 7, 16859-16866	83
1465	New vesicular carbon-based rhenium phosphides with all-pH range electrocatalytic hydrogen evolution activity. <b>2019</b> , 256, 117851	22
1464	Loading NiCo alloy nanoparticles onto nanocarbon for electrocatalytic conversion of arsenite into arsenate. <b>2019</b> , 104, 106477	6
1463	Engineering hierarchical NiFe-layered double hydroxides derived phosphosulfide for high-efficiency hydrogen evolving electrocatalysis. <b>2019</b> , 44, 16378-16386	11
1462	Ultrathin Rh nanosheets as a highly efficient bifunctional electrocatalyst for isopropanol-assisted overall water splitting. <b>2019</b> , 11, 9319-9326	64
1461	RGO induced one-dimensional bimetallic carbide nanorods: An efficient and pH-universal hydrogen evolution reaction electrocatalyst. <b>2019</b> , 62, 85-93	37
1460	Evaluating DNA Derived and Hydrothermally Aided Cobalt Selenide Catalysts for Electrocatalytic Water Oxidation. <b>2019</b> , 58, 6877-6884	14
1459	Bifunctional 2D Electrocatalysts of Transition Metal Hydroxide Nanosheet Arrays for Water Splitting and Urea Electrolysis. <b>2019</b> , 7, 10035-10043	96
1458	Ru Se@MoS hybrid as a highly efficient electrocatalyst toward hydrogen evolution reaction.. <b>2019</b> , 9, 13486-13493	3
1457	Do the Evaluation Parameters Reflect Intrinsic Activity of Electrocatalysts in Electrochemical Water Splitting?. <b>2019</b> , 4, 1260-1264	178
1456	Low-cost high-performance hydrogen evolution electrocatalysts based on Pt-CoP polyhedra with low Pt loading in both alkaline and neutral media. <b>2019</b> , 48, 8920-8930	12
1455	Three-dimensional macroporous WC inverse opal arrays for the efficient hydrogen evolution reaction. <b>2019</b> , 11, 11505-11512	23
1454	Effect of oxygen incorporation in amorphous molybdenum sulfide on electrochemical hydrogen evolution. <b>2019</b> , 487, 981-989	10
1453	Recent advances in transition metal-based electrocatalysts for alkaline hydrogen evolution. <b>2019</b> , 7, 14971-15005	281
1452	Mechanochemically Assisted Synthesis of Ruthenium Clusters Embedded in Mesoporous Carbon for an Efficient Hydrogen Evolution Reaction. <b>2019</b> , 6, 2719-2725	9

1451	Hierarchical zincnickel phosphides nanosheets on 3D nickel foam as self-support electrocatalysts for hydrogen evolution reaction. <b>2019</b> , 168, 80-87	6
1450	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
1449	A new interpretation of the $\sqrt{3} \times \sqrt{3} R19.1^\circ$ structure for P adsorbed on a Ni(111) surface. <b>2019</b> , 20, 379-387	
1448	Nanostructured hexagonal ReO with oxygen vacancies for efficient electrocatalytic hydrogen generation. <b>2019</b> , 30, 355701	7
1447	Design and Mechanistic Study of Highly Durable Carbon-Coated Cobalt Diphosphide Core-Shell Nanostructure Electrocatalysts for the Efficient and Stable Oxygen Evolution Reaction. <b>2019</b> , 11, 20752-20761 <sup>14</sup>	
1446	Functional macroporous iron-phosphorous films by electrodeposition on colloidal crystal templates. <b>2019</b> , 313, 211-222	5
1445	Promoting hydrogen-evolution activity and stability of perovskite oxides via effectively lattice doping of molybdenum. <b>2019</b> , 312, 128-136	27
1444	A bimetallic sulfide CuCoS with good synergistic effect was constructed to drive high performance photocatalytic hydrogen evolution. <b>2019</b> , 552, 17-26	30
1443	The Holy Grail in Platinum-Free Electrocatalytic Hydrogen Evolution: Molybdenum-Based Catalysts and Recent Advances. <b>2019</b> , 6, 3570-3589	27
1442	Respective influence of stoichiometry and NiOOH formation in hydrogen and oxygen evolution reactions of nickel selenides. <b>2019</b> , 487, 1152-1158	30
1441	Evaluation of the electrocatalytic properties of Tungsten electrode towards hydrogen evolution reaction in acidic solutions. <b>2019</b> , 44, 16487-16496	13
1440	Iron-Doped Ni <sub>5</sub> P <sub>4</sub> Ultrathin Nanoporous Nanosheets for Water Splitting and On-Demand Hydrogen Release via NaBH <sub>4</sub> Hydrolysis. <b>2019</b> , 2, 3091-3099	19
1439	Surface-engineered mesoporous Pt nanodendrites with Ni dopant for highly enhanced catalytic performance in hydrogen evolution reaction. <b>2019</b> , 7, 12800-12807	28
1438	Engineering the surface atomic structure of FeVO <sub>4</sub> nanocrystals for use as highly active and stable electrocatalysts for oxygen evolution. <b>2019</b> , 7, 10949-10953	16
1437	Phosphorus-Rich Colloidal Cobalt Diphosphide (CoP) Nanocrystals for Electrochemical and Photoelectrochemical Hydrogen Evolution. <b>2019</b> , 31, e1900813	45
1436	Optimization of the Hydrogen-Adsorption Free Energy of Ru-Based Catalysts towards High-Efficiency Hydrogen Evolution Reaction at all pH. <b>2019</b> , 25, 8579-8584	17
1435	Novel photocatalyst incorporating Ni-Co layered double hydroxides with P-doped CdS for enhancing photocatalytic activity towards hydrogen evolution. <b>2019</b> , 254, 145-155	128
1434	Continuous oxygen vacancy engineering of the Co <sub>3</sub> O <sub>4</sub> layer for an enhanced alkaline electrocatalytic hydrogen evolution reaction. <b>2019</b> , 7, 13506-13510	50

1433	Recent Progress in Bifunctional Electrocatalysts for Overall Water Splitting under Acidic Conditions. <b>2019</b> , 6, 3244-3253	42
1432	Three-Dimensional Dendritic Cu <sub>2</sub> O/P Electrode by One-Step Electrodeposition on a Hydrogen Bubble Template for Hydrogen Evolution Reaction. <b>2019</b> , 7, 10734-10741	47
1431	Three-dimensionally ordered macroporous FeP self-supported structure for high-efficiency hydrogen evolution reaction. <b>2019</b> , 44, 5854-5862	12
1430	Efficient Oxygen Evolution Catalysis Triggered by Nickel Phosphide Nanoparticles Compositing with Reduced Graphene Oxide with Controlled Architecture. <b>2019</b> , 7, 9566-9573	21
1429	Identifying Catalytic Active Sites of Trimolybdenum Phosphide (Mo <sub>3</sub> P) for Electrochemical Hydrogen Evolution. <b>2019</b> , 9, 1900516	25
1428	Single Atoms and Clusters Based Nanomaterials for Hydrogen Evolution, Oxygen Evolution Reactions, and Full Water Splitting. <b>2019</b> , 9, 1900624	294
1427	Nitrogen-doped CoP as robust electrocatalyst for high-efficiency pH-universal hydrogen evolution reaction. <b>2019</b> , 253, 21-27	92
1426	Facial fabrication of yolk-shell Pd-Ni-P alloy with mesoporous structure as an advanced catalyst for methanol electro-oxidation. <b>2019</b> , 484, 441-445	18
1425	Ultrasmall MoP encapsulated in nitrogen-doped carbon hybrid frameworks for highly efficient hydrogen evolution reaction in both acid and alkaline solutions. <b>2019</b> , 6, 1482-1489	18
1424	Highly Active Sb <sub>2</sub> S <sub>3</sub> -Attached MoWO <sub>3</sub> Composite Film for Enhanced Photoelectrocatalytic Water Splitting at Extremely Low Input Light Energy. <b>2019</b> , 7, 9172-9181	17
1423	N-doped TiO nanotube arrays with uniformly embedded Co P nanoparticles for high-efficiency hydrogen evolution reaction.. <b>2019</b> , 9, 11676-11682	4
1422	Transition Metal Phosphides for the Catalytic Hydrodeoxygenation of Waste Oils into Green Diesel. <b>2019</b> , 9, 293	41
1421	Molybdenum carbide nanoparticles supported on nitrogen-doped carbon as efficient electrocatalysts for hydrogen evolution reaction. <b>2019</b> , 842, 89-97	8
1420	Core Effect on the Performance of N/P Codoped Carbon Encapsulating Noble-Metal Phosphide Nanostructures for Hydrogen Evolution Reaction. <b>2019</b> , 2, 2645-2653	17
1419	Facile synthesis of Co-Fe-B-P nanochains as an efficient bifunctional electrocatalyst for overall water-splitting. <b>2019</b> , 11, 7506-7512	122
1418	Phosphorus-Rich Metal Phosphides: Direct and Tin Flux-Assisted Synthesis and Evaluation as Hydrogen Evolution Electrocatalysts. <b>2019</b> , 58, 5013-5024	21
1417	Synthesis and performance optimization of ultrathin two-dimensional CoFePt alloy materials via in situ topotactic conversion for the hydrogen evolution reaction. <b>2019</b> , 7, 9517-9522	11
1416	Nickel Nanocrystal Assemblies as Efficient Electrocatalysts for Hydrogen Evolution from pH-Neutral Aqueous Solution. <b>2019</b> , 6, 2100-2106	11



1415	Nitrogen treatment generates tunable nano hybridization of Ni <sub>5</sub> P <sub>4</sub> nanosheets with nickel hydr(oxy)oxides for efficient hydrogen production in alkaline, seawater and acidic media. <b>2019</b> , 251, 181-194	155
1414	Graphene/graphene nanoribbon aerogels decorated with S-doped MoSe <sub>2</sub> nanosheets as an efficient electrocatalyst for hydrogen evolution. <b>2019</b> , 6, 1209-1216	9
1413	An NH <sub>2</sub> -MIL-125 (Ti)/Pt/g-C <sub>3</sub> N <sub>4</sub> catalyst promoting visible-light photocatalytic H <sub>2</sub> production. <b>2019</b> , 3, 1233-1238	12
1412	Nanostructured metallic transition metal carbides, nitrides, phosphides, and borides for energy storage and conversion. <b>2019</b> , 25, 99-121	173
1411	High capacity conversion anodes in Li-ion batteries: A review. <b>2019</b> , 44, 10852-10905	62
1410	Preparation and characterization of active and cost-effective nickel/platinum electrocatalysts for hydrogen evolution electrocatalysis. <b>2019</b> , 44, 8079-8088	6
1409	Iron-substituted Co-Ni phosphides immobilized on Ni foam as efficient self-supported 3D hierarchical electrocatalysts for oxygen evolution reaction. <b>2019</b> , 44, 8156-8165	40
1408	Support and Interface Effects in Water-Splitting Electrocatalysts. <b>2019</b> , 31, e1808167	314
1407	Ni-based photocatalytic H <sub>2</sub> -production cocatalysts <sup>2</sup> . <b>2019</b> , 40, 240-288	173
1406	Cobalt oxide-based nanoarchitectures for electrochemical energy applications. <b>2019</b> , 103, 596-677	97
1405	Ni/Ni <sub>3</sub> C core-shell nanoparticles encapsulated in N-doped bamboo-like carbon nanotubes towards efficient overall water splitting. <b>2019</b> , 6, 1073-1080	24
1404	Phase diagram and bonding states of Ir-P binary compounds at high pressures. <b>2019</b> , 791, 1257-1262	3
1403	Efficient Visible-Light-Driven Hydrogen Generation on g-C <sub>3</sub> N <sub>4</sub> Coupled with Iron Phosphide. <b>2019</b> , 3, 540-544	6
1402	Well-Defined Phase-Controlled Cobalt Phosphide Nanoparticles Encapsulated in Nitrogen-Doped Graphitized Carbon Shell with Enhanced Electrocatalytic Activity for Hydrogen Evolution Reaction at All-pH. <b>2019</b> , 7, 8993-9001	53
1401	Hybrid implanted hybrid hollow nanocube electrocatalyst facilitates efficient hydrogen evolution activity. <b>2019</b> , 7, 11150-11159	36
1400	Insight into the Superior Electrocatalytic Performance of a Ternary Nickel Iron Poly-Phosphide Nanosheet Array: An X-ray Absorption Study. <b>2019</b> , 11, 14059-14065	13
1399	Tunable engineering hollow carbon nanomaterial served as an excellent catalyst for oxygen reduction reaction and hydrogen evolution reaction. <b>2019</b> , 544, 178-187	4
1398	Tailoring the Electronic Structure of Co <sub>2</sub> P by N Doping for Boosting Hydrogen Evolution Reaction at All pH Values. <b>2019</b> , 9, 3744-3752	231

1397	Ruthenium Nanoparticles for Catalytic Water Splitting. <b>2019</b> , 12, 2493-2514	50
1396	Engineering MPx (M = Fe, Co or Ni) interface electron transfer channels for boosting photocatalytic H <sub>2</sub> evolution over g-C <sub>3</sub> N <sub>4</sub> /MoS <sub>2</sub> layered heterojunctions. <b>2019</b> , 252, 250-259	112
1395	Manipulating the water dissociation kinetics of Ni <sub>3</sub> N nanosheets via in situ interfacial engineering. <b>2019</b> , 7, 10924-10929	60
1394	Hybrid CoO Nanowires Coated with Uniform Polypyrrole Nanolayers for High-Performance Energy Storage Devices. <b>2019</b> , 9,	6
1393	Copper-Nickel Nitride Nanosheets as Efficient Bifunctional Catalysts for Hydrazine-Assisted Electrolytic Hydrogen Production. <b>2019</b> , 9, 1900390	128
1392	Heterogeneous Ni-Fe-P integrated with nickel foam as an efficient and durable electrocatalyst for water oxidation. <b>2019</b> , 44, 11684-11694	12
1391	Co-Fe Mixed Metal Phosphide Nanocubes with Highly Interconnected-Pore Architecture as an Efficient Polysulfide Mediator for Lithium-Sulfur Batteries. <b>2019</b> , 13, 4731-4741	154
1390	Low-temperature plasma technology for electrocatalysis. <b>2019</b> , 30, 826-838	28
1389	Electrodeposition of a cobalt phosphide film for the enhanced photoelectrochemical water oxidation with Fe <sub>2</sub> O <sub>3</sub> photoanode. <b>2019</b> , 307, 92-99	15
1388	Engineering inner-porous cobalt phosphide nanowire based on controllable phosphating for efficient hydrogen evolution in both acidic and alkaline conditions. <b>2019</b> , 481, 1524-1531	7
1387	A novel particle-in-nanoplate architecture of iron nickel phosphide intertwined with carbon nanotubes for efficient water oxidation and high-performance sodium-ion batteries. <b>2019</b> , 791, 1220-1230	15
1386	In-situ growth of iron/nickel phosphides hybrid on nickel foam as bifunctional electrocatalyst for overall water splitting. <b>2019</b> , 424, 42-51	34
1385	Ternary metal sulfides for electrocatalytic energy conversion. <b>2019</b> , 7, 9386-9405	135
1384	Low-Cost Porous Ruthenium Layer Deposited on Nickel Foam as a Highly Active Universal-pH Electrocatalyst for the Hydrogen Evolution Reaction. <b>2019</b> , 12, 2780-2787	17
1383	One-pot synthesis of highly conductive nickel-rich phosphide/CNTs hybrid as a polar sulfur host for high-rate and long-cycle Li-S battery. <b>2019</b> , 12, 1193-1197	37
1382	P doped MoS nanoplates embedded in nitrogen doped carbon nanofibers as an efficient catalyst for hydrogen evolution reaction. <b>2019</b> , 547, 291-298	25
1381	High catalytic performance of nickel foam supported Co <sub>2</sub> P-Ni <sub>2</sub> P for overall water splitting and its structural evolutions during hydrogen/oxygen evolution reactions in alkaline solutions. <b>2019</b> , 373, 81-92	49
1380	Nitrogen-plasma treated hafnium oxyhydroxide as an efficient acid-stable electrocatalyst for hydrogen evolution and oxidation reactions. <b>2019</b> , 10, 1543	30

1379	Phosphate Doped Ultrathin FeP Nanosheets as Efficient Electrocatalysts for the Hydrogen Evolution Reaction in Acid Media. <b>2019</b> , 11, 2484-2489	13
1378	Controlled growth of small and uniformly dispersed Mo <sub>2</sub> C on carbon nanotubes as high performance electrocatalyst for the hydrogen evolution reaction. <b>2019</b> , 44, 11797-11807	17
1377	Vertically standing MoP nanosheet arrays on Mo substrate: An integrated binder-free electrode for highly efficient and stable hydrogen evolution. <b>2019</b> , 792, 732-741	13
1376	The enhancement of hydrogen storage capacity in Li, Na and Mg-decorated BC <sub>3</sub> graphene by CLICH and RICH algorithms. <b>2019</b> , 44, 7354-7370	27
1375	Ni/NiM <sub>2</sub> O <sub>4</sub> (M = Mn or Fe) supported on N-doped carbon nanotubes as trifunctional electrocatalysts for ORR, OER and HER. <b>2019</b> , 9, 1595-1601	50
1374	Rational Design of Nanoarray Architectures for Electrocatalytic Water Splitting. <b>2019</b> , 29, 1808367	186
1373	Morphology-Controlled Metal Sulfides and Phosphides for Electrochemical Water Splitting. <b>2019</b> , 31, e1806682	304
1372	Ultrafine $\beta$ -Phase Molybdenum Carbide Decorated with Platinum Nanoparticles for Efficient Hydrogen Production in Acidic and Alkaline Media. <b>2019</b> , 6, 1802135	35
1371	CoP-Doped MOF-Based Electrocatalyst for pH-Universal Hydrogen Evolution Reaction. <b>2019</b> , 131, 4727-4732	56
1370	The impact of microstructural features of carbon supports on the electrocatalytic hydrogen evolution reaction. <b>2019</b> , 9, 1497-1503	13
1369	CoO-nanoparticle-entrapped nitrogen and boron codoped mesoporous carbon as an efficient electrocatalyst for hydrogen evolution. <b>2019</b> , 48, 7261-7266	2
1368	An Efficient Electrocatalyst by Electroless Cobalt-Nickel-Phosphorus Alloy Plating on Three-Dimensional Graphene for Hydrogen Evolution Reaction. <b>2019</b> , 166, D69-D76	6
1367	Monolithic electrode integrated of ultrathin NiFeP on 3D strutted graphene for bifunctionally efficient overall water splitting. <b>2019</b> , 58, 870-876	106
1366	Dual-Carbon Enhanced FeP Nanorods Vertically Grown on Carbon Nanotubes with Pseudocapacitance-Boosted Electrochemical Kinetics for Superior Lithium Storage. <b>2019</b> , 5, 1900006	11
1365	Metal-organic framework derived NiMo polyhedron as an efficient hydrogen evolution reaction electrocatalyst. <b>2019</b> , 478, 916-923	32
1364	Facile synthesis, characterization and DFT studies of a nanostructured nickel-molybdenum-phosphorous planar electrode as an active electrocatalyst for the hydrogen evolution reaction. <b>2019</b> , 11, 9353-9361	22
1363	Spontaneous Generation of HO and Hydroxyl Radical through O Reduction on Copper Phosphide under Ambient Aqueous Condition. <b>2019</b> , 53, 2918-2925	51
1362	Rhodium Phosphide: A New Type of Hydrogen Oxidation Reaction Catalyst with Non-Linear Correlated Catalytic Response to pH. <b>2019</b> , 6, 1990-1995	10

1361	Coverage dependent CO adsorption manners on seven MoP surfaces with DFT based thermodynamics method. <b>2019</b> , 480, 172-176	6
1360	Self-supported 3D porous N-Doped nickel selenide electrode for hydrogen evolution reaction over a wide range of pH. <b>2019</b> , 304, 202-209	27
1359	Self-Supportive NiFe hydroxide with High Electrocatalytic Activity for Oxygen and Hydrogen Evolution Reaction. <b>2019</b> , 4, 2153-2159	4
1358	Coupling PtNi Ultrathin Nanowires with MXenes for Boosting Electrocatalytic Hydrogen Evolution in Both Acidic and Alkaline Solutions. <b>2019</b> , 15, e1805474	63
1357	Fibrous electrocatalytic materials based on carbon/copper/copper phosphides for effective hydrogen evolution. <b>2019</b> , 479, 70-76	8
1356	Synergistic Effect of Co-Ni Hybrid Phosphide Nanocages for Ultrahigh Capacity Fast Energy Storage. <b>2019</b> , 6, 1802005	80
1355	Predictive fabrication of Ni phosphide embedded in carbon nanofibers as active and stable electrocatalysts. <b>2019</b> , 7, 7451-7458	17
1354	Vertically aligned NiP <sub>2</sub> nanosheets with interlaced mesh network for highly efficient water splitting under alkaline and acid solutions. <b>2019</b> , 44, 6535-6543	25
1353	Direct electrosynthesis of sodium hydroxide and hydrochloric acid from brine streams. <b>2019</b> , 2, 106-113	36
1352	Cocatalysts for Selective Photoreduction of CO into Solar Fuels. <b>2019</b> , 119, 3962-4179	965
1351	Thiol-Functionalized Pores via Post-Synthesis Modification in a Metal-Organic Framework with Selective Removal of Hg(II) in Water. <b>2019</b> , 58, 3409-3415	62
1350	Chrysanthemum-Like CoP Nanostructures on Vertical Graphene Nanohills as Versatile Electrocatalysts for Water Splitting. <b>2019</b> , 7, 4625-4630	25
1349	Fabrication of dispersive Co(OH) <sub>2</sub> nanosheets on graphene nanoribbons for boosting their oxygen evolution performance. <b>2019</b> , 54, 7692-7701	10
1348	Development of a novel method of NiCoP alloy coating for electrocatalytic hydrogen evolution reaction in alkaline media. <b>2019</b> , 303, 67-77	30
1347	Promoting Electrocatalytic Oxygen Evolution over Transition-Metal Phosphide-Based Nanocomposites via Architectural and Electronic Engineering. <b>2019</b> , 11, 46825-46838	17
1346	Plasmonic Au nanoparticle-decorated Bi <sub>2</sub> Se <sub>3</sub> nanoflowers with outstanding electrocatalytic performance for hydrogen evolution. <b>2019</b> , 44, 30876-30884	25
1345	Facile self-template fabrication of hierarchical nickel-cobalt phosphide hollow nanoflowers with enhanced hydrogen generation performance. <b>2019</b> , 64, 1675-1684	23
1344	Design and Excellent HER Performance of a Novel 3D MoDoped Ni <sub>3</sub> S <sub>2</sub> /Ni Foam Composite. <b>2019</b> , 4, 12328-12332	4

1343	Understanding electro-catalysis by using density functional theory. <b>2019</b> , 21, 23782-23802	30
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1341	MOF-derived cobalt-nickel phosphide nanoboxes as electrocatalysts for the hydrogen evolution reaction. <b>2019</b> , 11, 21259-21265	48
1340	Electrochemical hydrogen production on a metal-free polymer. <b>2019</b> , 3, 3387-3398	19
1339	Activating and optimizing the activity of NiCoP nanosheets for electrocatalytic alkaline water splitting through the V doping effect enhanced by P vacancies. <b>2019</b> , 7, 24486-24492	119
1338	A Setaria-inflorescence-structured catalyst based on nickel-cobalt wrapped silver nanowire conductive networks for highly efficient hydrogen evolution. <b>2019</b> , 7, 26566-26573	7
1337	Carbon-Based Nanomaterials as Sustainable Noble-Metal-Free Electrocatalysts. <b>2019</b> , 7, 759	15
1336	A partial sulfidation approach that significantly enhance the activity of FeCo layered double hydroxide for oxygen evolution reaction. <b>2019</b> , 44, 31987-31994	9
1335	A non-precious metal hydrogen catalyst in a commercial polymer electrolyte membrane electrolyser. <b>2019</b> , 14, 1071-1074	87
1334	An iron-doped cobalt phosphide nano-electrocatalyst derived from a metal-organic framework for efficient water splitting. <b>2019</b> , 48, 16555-16561	34
1333	Au@CoP core/shell nanoparticles as a nano-electrocatalyst for enhancing the oxygen evolution reaction.. <b>2019</b> , 9, 40811-40818	2
1332	Highly efficient p-type Cu3P/n-type g-C3N4 photocatalyst through Z-scheme charge transfer route. <b>2019</b> , 240, 253-261	166
1331	SILAR deposited iron phosphate as a bifunctional electrocatalyst for efficient water splitting. <b>2019</b> , 534, 350-356	27
1330	Fe@Fe2P Core-Shell Nanorods Encapsulated in Nitrogen Doped Carbon Nanotubes as Robust and Stable Electrocatalyst Toward Hydrogen Evolution. <b>2019</b> , 6, 1413-1418	19
1329	Making and breaking of phosphorus-phosphorus bonds. <b>2019</b> , 91, 103-111	4
1328	One-Pot Synthesis of Co-Doped VSe2 Nanosheets for Enhanced Hydrogen Evolution Reaction. <b>2019</b> , 2, 644-653	41
1327	Microwave-assisted synthesis of cobalt phosphide using ionic liquid as Co and P dual-source for hydrogen evolution reaction. <b>2019</b> , 295, 1027-1033	12
1326	Solvothermal synthesis of mesoporous NiCoP for high performance electrochemical supercapacitors. <b>2019</b> , 224, 124-128	15

1325	Metallic FePSe <sub>3</sub> nanoparticles anchored on N-doped carbon framework for All-pH hydrogen evolution reaction. <b>2019</b> , 57, 222-229	87
1324	Electrodeposition of nano crystalline cobalt oxide on porous copper electrode for supercapacitor. <b>2019</b> , 30, 1214-1226	8
1323	An Interpenetrating Porous Organic Polymer as a Precursor for FeP/Fe P-Embedded Porous Carbon toward a pH-Universal ORR Catalyst. <b>2019</b> , 12, 915-923	33
1322	Novel one-step synthesis of nickel encapsulated carbon nanotubes as efficient electrocatalyst for hydrogen evolution reaction. <b>2019</b> , 44, 2685-2693	30
1321	Carbon Nanotube-Supported Cu <sub>3</sub> P as High-Efficiency and Low-Cost Cocatalysts for Exceptional Semiconductor-Free Photocatalytic H <sub>2</sub> Evolution. <b>2019</b> , 7, 3243-3250	68
1320	N-doped carbon shell coated CoP nanocrystals encapsulated in porous N-doped carbon substrate as efficient electrocatalyst of water splitting. <b>2019</b> , 144, 464-471	82
1319	Template-Driven Phase Selective Formation of Metallic 1T-MoS <sub>2</sub> Nanoflowers for Hydrogen Evolution Reaction. <b>2019</b> , 7, 2008-2017	30
1318	Strongly Coupled Nickel-Cobalt Nitrides/Carbon Hybrid Nanocages with Pt-Like Activity for Hydrogen Evolution Catalysis. <b>2019</b> , 31, e1805541	184
1317	Optimizing hydrogen evolution activity of nanoporous electrodes by dual-step surface engineering. <b>2019</b> , 244, 87-95	14
1316	Three-Dimensional Graphene@Carbon Nanotube Aerogel-Supported Layered MoS <sub>2</sub> /Co <sub>9</sub> S <sub>8</sub> Composite as an Efficient pH-Universal Electrocatalyst for Hydrogen Evolution. <b>2019</b> , 6, 748-756	14
1315	Electronic structure and d-band center control engineering over M-doped CoP (M = Ni, Mn, Fe) hollow polyhedron frames for boosting hydrogen production. <b>2019</b> , 56, 411-419	252
1314	Direct Electrodeposition of Phosphorus-Doped Nickel Superstructures from Choline Chloride/Ethylene Glycol Deep Eutectic Solvent for Enhanced Hydrogen Evolution Catalysis. <b>2019</b> , 7, 1529-1537	19
1313	Poor crystalline MoS <sub>2</sub> with highly exposed active sites for the improved hydrogen evolution reaction performance. <b>2019</b> , 777, 514-523	31
1312	Direct synthesis of parallel doped N-MoP/N-CNT as highly active hydrogen evolution reaction catalyst. <b>2019</b> , 62, 690-698	13
1311	A novel Lindqvist intercalation compound: Synthesis, crystal structure and hydrogen evolution reaction performance. <b>2019</b> , 99, 64-69	5
1310	Large-scale synthesis of porous nickel boride for robust hydrogen evolution reaction electrocatalyst. <b>2019</b> , 470, 591-595	34
1309	Polyvinylpyrrolidone-Assisted Hydrothermal Synthesis of CuCoO <sub>2</sub> Nanoplates with Enhanced Oxygen Evolution Reaction Performance. <b>2019</b> , 7, 1493-1501	23
1308	Interface-strengthened CoP nanosheet array with Co <sub>2</sub> P nanoparticles as efficient electrocatalysts for overall water splitting. <b>2019</b> , 37, 1-6	51

1307	Facile electrosynthesis of Fe (Ni/Co) hydroxyphosphate as a bifunctional electrocatalyst for efficient water splitting. <b>2019</b> , 70, 116-123	14
1306	Heterogeneous Co <sub>N</sub> /C Electrocatalysts with Controlled Cobalt Site Densities for the Hydrogen Evolution Reaction: Structure-Activity Correlations and Kinetic Insights. <b>2019</b> , 9, 83-97	82
1305	Activating MoS <sub>2</sub> Basal Plane with Ni <sub>2</sub> P Nanoparticles for Pt-Like Hydrogen Evolution Reaction in Acidic Media. <b>2019</b> , 29, 1809151	75
1304	In situ derived Ni <sub>2</sub> P/Ni encapsulated in carbon/g-C <sub>3</sub> N <sub>4</sub> hybrids from metal-organic frameworks/g-C <sub>3</sub> N <sub>4</sub> for efficient photocatalytic hydrogen evolution. <b>2019</b> , 246, 72-81	90
1303	Nanosheets of Nickel Iron Hydroxy Carbonate Hydrate with Pronounced OER Activity under Alkaline and Near-Neutral Conditions. <b>2019</b> , 58, 1895-1904	40
1302	Cobalt/Molybdenum Phosphide and Oxide Heterostructures Encapsulated in N-Doped Carbon Nanocomposite for Overall Water Splitting in Alkaline Media. <b>2019</b> , 11, 6890-6899	54
1301	Metal and phosphonium-based ionic liquid: A new Co and P dual-source for synthesis of cobalt phosphide toward hydrogen evolution reaction. <b>2019</b> , 44, 1720-1726	8
1300	Cobalt-Tannin-Framework-Derived Amorphous Co-P/Co-N-C on N, P Co-Doped Porous Carbon with Abundant Active Moieties for Efficient Oxygen Reactions and Water Splitting. <b>2019</b> , 12, 830-838	32
1299	Facile synthesis of ultrathin interconnected carbon nanosheets as a robust support for small and uniformly-dispersed iron phosphide for the hydrogen evolution reaction. <b>2019</b> , 144, 764-771	43
1298	Tuning of electrocatalytic properties of MoS <sub>2</sub> by chalcogenide ion implantation. <b>2019</b> , 14, 216-223	11
1297	Earth abundant materials beyond transition metal dichalcogenides: A focus on electrocatalyzing hydrogen evolution reaction. <b>2019</b> , 58, 244-276	176
1296	ZnxCd <sub>1-x</sub> Se nanoparticles decorated ordered mesoporous ZnO inverse opal with binder-free heterojunction interfaces for highly efficient photoelectrochemical water splitting. <b>2019</b> , 245, 469-476	24
1295	Supercritical CO <sub>2</sub> -Assisted synthesis of NiFe <sub>2</sub> O <sub>4</sub> /vertically-aligned carbon nanotube arrays hybrid as a bifunctional electrocatalyst for efficient overall water splitting. <b>2019</b> , 145, 201-208	54
1294	Metal-organic frameworks derived bundled N-doped carbon nanowires confined cobalt phosphide nanocrystals as a robust electrocatalyst for hydrogen production. <b>2019</b> , 299, 423-429	24
1293	Morphology of MoP catalyst under hydrogenation conditions: A DFT based thermodynamics study. <b>2019</b> , 464, 57-62	5
1292	Ultra-dispersed molybdenum phosphide and phosphosulfide nanoparticles on hierarchical carbonaceous scaffolds for hydrogen evolution electrocatalysis. <b>2019</b> , 245, 656-661	77
1291	Three-dimensional Core@Shell Co@CoMoO <sub>4</sub> nanowire arrays as efficient alkaline hydrogen evolution electro-catalysts. <b>2019</b> , 246, 41-49	61
1290	One-step synthesis of hierarchical AuNPs/Cd <sub>0.5</sub> Zn <sub>0.5</sub> nanoarchitectures and their application as an efficient photocatalyst for hydrogen production. <b>2019</b> , 72, 338-345	12

1289	Various strategies to tune the electrocatalytic performance of molybdenum phosphide supported on reduced graphene oxide for hydrogen evolution reaction. <b>2019</b> , 536, 638-645	19
1288	Decorating cobalt phosphide and rhodium on reduced graphene oxide for high-efficiency hydrogen evolution reaction. <b>2019</b> , 34, 72-79	19
1287	Metallic 1T-MoS <sub>2</sub> nanosheets in-situ entrenched on N,P,S-codoped hierarchical carbon microflower as an efficient and robust electro-catalyst for hydrogen evolution. <b>2019</b> , 243, 614-620	57
1286	Activated Cu/Cu <sub>2</sub> O foam with Ni nanoparticles for electrocatalytic activity enhancement of hydrogen evolution reaction (HER) in acidic media. <b>2019</b> , 70, 211-225	17
1285	Ultrathin molybdenum phosphide films as high-efficiency electrocatalysts for hydrogen evolution reaction. <b>2019</b> , 6, 016418	6
1284	Engineering ordered dendrite-like nickel selenide as electrocatalyst. <b>2019</b> , 295, 92-98	28
1283	Homologous CoP/NiCoP Heterostructure on N-Doped Carbon for Highly Efficient and pH-Universal Hydrogen Evolution Electrocatalysis. <b>2019</b> , 29, 1807976	165
1282	Defect engineering on electrocatalysts for gas-evolving reactions. <b>2018</b> , 48, 15-20	35
1281	Fluoride-Induced Dynamic Surface Self-Reconstruction Produces Unexpectedly Efficient Oxygen-Evolution Catalyst. <b>2019</b> , 19, 530-537	134
1280	Heterogeneous cobalt phosphides nanoparticles anchored on carbon cloth realizing the efficient hydrogen generation reaction. <b>2019</b> , 44, 531-539	11
1279	Bimetallic Ni <sub>2-x</sub> Co <sub>x</sub> P/N-doped carbon nanofibers: Solid-solution-alloy engineering toward efficient hydrogen evolution. <b>2019</b> , 244, 620-627	83
1278	Multimetal Borides Nanochains as Efficient Electrocatalysts for Overall Water Splitting. <b>2019</b> , 15, e1804212	83
1277	Metal phosphide nanoparticles embedded in carbon as efficient electrocatalyst for oxygen evolution reaction. <b>2019</b> , 297, 749-754	43
1276	In-situ fabrication of nitrogen-doped carbon nanosheets containing highly dispersed single iron atoms for oxygen reduction reaction. <b>2019</b> , 412, 125-133	73
1275	Mo <sub>2</sub> C based electrocatalyst with nitrogen doped three-dimensional mesoporous carbon as matrix, synthesis and HER activity study. <b>2019</b> , 293, 348-355	22
1274	Black phosphorus supported Ni <sub>2</sub> P co-catalyst on graphitic carbon nitride enabling simultaneous boosting charge separation and surface reaction. <b>2019</b> , 242, 422-430	81
1273	Promoting electrocatalytic overall water splitting with nanohybrid of transition metal nitride-oxynitride. <b>2019</b> , 241, 521-527	128
1272	Phase-Controlled Cobalt Phosphide Nanoparticles Coupled with N, P, S Co-Doped Hollow Carbon Polyhedrons as Efficient Catalysts for Both Alkaline and Acidic Hydrogen Evolution. <b>2019</b> , 7, 1800757	4



1271	Surface and Heterointerface Engineering of 2D MXenes and Their Nanocomposites: Insights into Electro- and Photocatalysis. <b>2019</b> , 5, 18-50	365
1270	N, P dual-doped hollow carbon spheres supported MoS <sub>2</sub> hybrid electrocatalyst for enhanced hydrogen evolution reaction. <b>2019</b> , 330, 259-267	28
1269	Three-dimensional Ni Co NiCo <sub>2</sub> O <sub>4</sub> /NF as an efficient electrode for hydrogen evolution reaction. <b>2019</b> , 44, 226-232	9
1268	Self-Supported Transition-Metal-Based Electrocatalysts for Hydrogen and Oxygen Evolution. <b>2020</b> , 32, e1806326	564
1267	Performance evaluation of water and air based PVT solar collector for hydrogen production application. <b>2020</b> , 45, 7498-7507	26
1266	Photocatalytic hydrogen production over mixed Cd-Zn sulfide catalysts promoted with nickel or nickel phosphide. <b>2020</b> , 355, 851-859	7
1265	Size-dependent catalytic activity of cobalt phosphides for hydrogen evolution reaction. <b>2020</b> , 43, 121-128	31
1264	A solvent-free strategy for synthesis of CoS nanoparticles entrapped, N, S-codoped mesoporous carbon as hydrogen evolution electrocatalyst. <b>2020</b> , 558, 155-162	7
1263	Hierarchical molybdenum phosphide coupled with carbon as a whole pH-range electrocatalyst for hydrogen evolution reaction. <b>2020</b> , 260, 118196	81
1262	Photochemical preparation of atomically dispersed nickel on cadmium sulfide for superior photocatalytic hydrogen evolution. <b>2020</b> , 261, 118233	39
1261	Multifunctional Transition Metal-Based Phosphides in Energy-Related Electrocatalysis. <b>2020</b> , 10, 1902104	174
1260	Synergistically Interactive Pyridinic-N-MoP Sites: Identified Active Centers for Enhanced Hydrogen Evolution in Alkaline Solution. <b>2020</b> , 59, 8982-8990	134
1259	Cobalt-Doped Tungsten Sulfides as Stable and Efficient Air Electrodes for Rechargeable Zinc-Air Batteries. <b>2020</b> , 7, 148-154	7
1258	Superhydrophilic Al-Doped NiP <sub>2</sub> Nanosheets as Efficient Electrocatalysts for Hydrogen Evolution Reaction. <b>2020</b> , 8, 1900936	10
1257	Compositional Control as the Key for Achieving Highly Efficient OER Electrocatalysis with Cobalt Phosphates Decorated Nanocarbon Florets. <b>2020</b> , 16, e1903334	29
1256	Performance of ZIF-67 Derived fold polyhedrons for enhanced photocatalytic hydrogen evolution. <b>2020</b> , 382, 123051	90
1255	NickelManganese bimetallic phosphides porous nanosheet arrays as highly active bifunctional hydrogen and oxygen evolution electrocatalysts for overall water splitting. <b>2020</b> , 329, 135121	29
1254	Fe <sub>x</sub> Ni <sub>y</sub> OOH/etched stainless steel mesh with different morphology for water electrolysis. <b>2020</b> , 26, 301-309	1

1253	Regulating electron density of NiFe-P nanosheets electrocatalysts by a trifle of Ru for high-efficient overall water splitting. <b>2020</b> , 263, 118324	81
1252	Co <sub>0.59</sub> Fe <sub>0.41</sub> P nanocubes derived from nanoscale metal-organic frameworks for removal of diethyl phthalate by activation of peroxymonosulfate. <b>2020</b> , 589, 117307	20
1251	Charge Transfer Engineering via Multiple Heteroatom Doping in Dual Carbon-Coupled Cobalt Phosphides for Highly Efficient Overall Water Splitting. <b>2020</b> , 268, 118404	47
1250	MOF-derived bimetallic Fe-Ni-P nanotubes with tunable compositions for dye-sensitized photocatalytic H <sub>2</sub> and O <sub>2</sub> production. <b>2020</b> , 384, 123354	34
1249	Magnetic field assisted synthesis of Co <sub>2</sub> P hollow nanoparticles with controllable shell thickness for hydrogen evolution reaction. <b>2020</b> , 330, 135191	6
1248	Fabrication of carbon nanotubes encapsulated cobalt phosphide on graphene: Cobalt promoted hydrogen evolution reaction performance. <b>2020</b> , 330, 135213	11
1247	Ultrathin nickel phosphide nanosheet aerogel electrocatalysts derived from Ni-alginate for hydrogen evolution reaction. <b>2020</b> , 817, 152727	5
1246	Generating highly active Ni(HPO)(OH)/MnO catalyst for electrocatalytic hydrogen evolution reaction by electrochemical activation. <b>2020</b> , 560, 714-721	10
1245	A highly active and durable electrocatalyst for large current density hydrogen evolution reaction. <b>2020</b> , 65, 123-130	31
1244	Synthesis of Metal Phosphide Nanoparticles Supported on Porous N-Doped Carbon Derived from Spirulina for Universal-pH Hydrogen Evolution. <b>2020</b> , 13, 351-359	12
1243	Topochemical Synthesis of Two-Dimensional Transition-Metal Phosphides Using Phosphorene Templates. <b>2020</b> , 59, 465-470	52
1242	Synergistically Interactive Pyridinic-N/MoP Sites: Identified Active Centers for Enhanced Hydrogen Evolution in Alkaline Solution. <b>2020</b> , 132, 9067-9075	24
1241	Topochemical Synthesis of Two-Dimensional Transition-Metal Phosphides Using Phosphorene Templates. <b>2020</b> , 132, 473-478	5
1240	Altering of host larval ( <i>Spodoptera exigua</i> ) calcineurin activity in response to ascovirus infection. <b>2020</b> , 76, 1048-1059	7
1239	Local epitaxial growth of Au-Rh core-shell star-shaped decahedra: A case for studying electronic and ensemble effects in hydrogen evolution reaction. <b>2020</b> , 263, 118255	23
1238	Recent Advances in Electrocatalytic Hydrogen Evolution Using Nanoparticles. <b>2020</b> , 120, 851-918	722
1237	. <b>2020</b> , 35, 261-272	8
1236	Phosphate stabilized PdCoP@Ni foam catalyst for self-pressurized H <sub>2</sub> production from the electrochemical reforming of ethanol at 150°C. <b>2020</b> , 382, 237-246	4

1235	Designing Atomic Active Centers for Hydrogen Evolution Electrocatalysts. <b>2020</b> , 59, 20794-20812	136
1234	Prussian blue analogues and their derived nanomaterials for electrocatalytic water splitting. <b>2020</b> , 407, 213156	81
1233	Scalable and energy-efficient synthesis of CoxP for overall water splitting in alkaline media by high energy ball milling. <b>2020</b> , 4, 1723-1729	9
1232	Salt template-assisted in situ construction of Ru nanoclusters and porous carbon: excellent catalysts toward hydrogen evolution, ammonia-borane hydrolysis, and 4-nitrophenol reduction. <b>2020</b> , 22, 835-842	89
1231	Neighboring effect induced by V and Cr doping in FeCoP nanoarrays for the hydrogen evolution reaction with Pt-like performance. <b>2020</b> , 8, 1184-1192	25
1230	Surface Phosphation of 3D NiCo <sub>2</sub> O <sub>4</sub> Nanowires Grown on Ni Foam as an Efficient Bifunctional Catalyst for Water Splitting. <b>2020</b> , 15, 2050024	3
1229	Hierarchical ultrathin carbon encapsulating transition metal doped MoP electrocatalysts for efficient and pH-universal hydrogen evolution reaction. <b>2020</b> , 70, 104445	61
1228	Boride-based electrocatalysts: Emerging candidates for water splitting. <b>2020</b> , 13, 293-314	69
1227	Rugae-like Ni <sub>2</sub> P-CoP nanoarrays as a bi-functional catalyst for hydrogen generation: NaBH <sub>4</sub> hydrolysis and water reduction. <b>2020</b> , 265, 118584	49
1226	A hierarchical hollow-on-hollow NiCoP electrocatalyst for efficient hydrogen evolution reaction. <b>2019</b> , 56, 90-93	14
1225	Impacts on carbon dioxide electroreduction of cadmium sulfides via continuous surface sulfur vacancy engineering. <b>2020</b> , 56, 563-566	9
1224	Fabrication and study of the synergistic effect of Janus Ni <sub>2</sub> P/Ni <sub>5</sub> P <sub>4</sub> embedded in N-doped carbon as efficient electrocatalysts for hydrogen evolution reaction. <b>2020</b> , 10, 1023-1029	4
1223	Karst landform-featured monolithic electrode for water electrolysis in neutral media. <b>2020</b> , 13, 174-182	59
1222	A 3D porous FeP/rGO modulated separator as a dual-function polysulfide barrier for high-performance lithium sulfur batteries. <b>2020</b> , 5, 530-540	44
1221	Sulfur doping enhanced desorption of intermediates on NiCoP for efficient alkaline hydrogen evolution. <b>2020</b> , 12, 1985-1993	31
1220	MoC based Mott-Schottky electrocatalyst for boosting the hydrogen evolution reaction performance. <b>2020</b> , 4, 407-416	16
1219	Exfoliated Mo <sub>2</sub> C nanosheets hybridized on CdS with fast electron transfer for efficient photocatalytic H <sub>2</sub> production under visible light irradiation. <b>2020</b> , 264, 118541	48
1218	Hierarchical hollow nanotubes of NiFeV-layered double hydroxides@CoVP heterostructures towards efficient, pH-universal electrocatalytical nitrogen reduction reaction to ammonia. <b>2020</b> , 265, 118559	167

1217	Coating nano-armor for robust superwetting micro/nanostructure. <b>2020</b> , 385, 123924	8
1216	Recent advances in cobalt-based electrocatalysts for hydrogen and oxygen evolution reactions. <b>2020</b> , 821, 153542	81
1215	Three-dimensional hybrid of iron-titanium mixed oxide/nitrogen-doped graphene on Ni foam as a superior electrocatalyst for oxygen evolution reaction. <b>2020</b> , 563, 241-251	9
1214	Atomic-Scale Intercalation of Graphene Layers into MoSe Nanoflower Sheets as a Highly Efficient Catalyst for Hydrogen Evolution Reaction. <b>2020</b> , 12, 2460-2468	21
1213	Plasmon-Induced Hot Carrier Separation across Dual Interface in Gold/Nickel Phosphide Heterojunction for Photocatalytic Water Splitting. <b>2020</b> , 30, 1908239	27
1212	Facile, Rapid, and Well-Controlled Preparation of Pt Nanoparticles Decorated on Single Surface of MoS <sub>2</sub> Nanosheets and Application in HER. <b>2020</b> , 6, 435-441	2
1211	Porous MoC nanoparticle clusters supported on walnut shell powders derived carbon matrix for hydrogen evolution reaction. <b>2020</b> , 563, 104-111	16
1210	Three-dimensional bimetal TMO supported carbon based electrocatalyst developed via dry synthesis for hydrogen and oxygen evolution. <b>2020</b> , 505, 144642	23
1209	Stable Fe <sub>2</sub> P <sub>2</sub> S <sub>6</sub> Nanocrystal Catalyst for High-Efficiency Water Electrolysis. <b>2020</b> , 4, 1900632	17
1208	Multi-walled carbon nanotubes reinforced nickel phosphide composite: As an efficient electrocatalyst for hydrogen evolution reaction by one-step powder sintering. <b>2020</b> , 45, 412-423	4
1207	Developments and Perspectives in 3d Transition-Metal-Based Electrocatalysts for Neutral and Near-Neutral Water Electrolysis. <b>2020</b> , 10, 1902666	113
1206	A multiphase nickel iron sulfide hybrid electrode for highly active oxygen evolution. <b>2020</b> , 63, 356-363	12
1205	Improved photocatalytic HER activity of Sb monolayer with doping and strain engineering. <b>2020</b> , 507, 145194	9
1204	Boosted hydrogen evolution from MoC <sub>1-x</sub> -MoP/C heterostructures. <b>2020</b> , 334, 135624	11
1203	Pt decorated POMOF-derived constructions for efficient electrocatalytic hydrogen evolution. <b>2020</b> , 12, 3902-3906	11
1202	Temperature and doping-tuned coordination environments around electroactive centers in Fe-doped Ni(OH) <sub>2</sub> for excellent water splitting. <b>2020</b> , 4, 1522-1531	15
1201	Electro-synthesized Co(OH) <sub>2</sub> @CoSe with CoDH active sites for overall water splitting electrocatalysis. <b>2020</b> , 2, 792-797	7
1200	Photocorrosion inhibition of CdS-based catalysts for photocatalytic overall water splitting. <b>2020</b> , 12, 1213-1223	124

1199	Strain-engineering enables reversible semiconductor-metal transition of skutterudite IrAs <sub>3</sub> . <b>2020</b> , 7, 1108-1114	1
1198	Quantitative evaluation of the antibacterial factors of ZnO nanorod arrays under dark conditions: Physical and chemical effects on Escherichia coli inactivation. <b>2020</b> , 712, 136574	14
1197	Fine rhodium phosphides nanoparticles embedded in N, P dual-doped carbon film: New efficient electrocatalysts for ambient nitrogen fixation. <b>2020</b> , 265, 118589	41
1196	Novel electrocatalysts for hydrogen evolution based on carbon fibers modified by cobalt phosphides. <b>2020</b> , 507, 144927	2
1195	Partial phosphorization of porous CoNiB for efficient hydrogen evolution electrocatalysis. <b>2020</b> , 45, 4545-4555	9
1194	Earth-abundant transition-metal-based bifunctional catalysts for overall electrochemical water splitting: A review. <b>2020</b> , 819, 153346	115
1193	Metal hydroxide hybridized tungsten carbide nanorod arrays for enhancing hydrogen evolution in alkaline media. <b>2020</b> , 509, 144912	8
1192	Self-supported Ni <sub>2</sub> P nanotubes coated with FeP nanoparticles electrocatalyst (FeP@Ni <sub>2</sub> P/NF) for oxygen evolution reaction. <b>2020</b> , 45, 565-573	5
1191	Hydrogen Evolution by Ni <sub>2</sub> P Catalysts Derived from Phosphine MOFs. <b>2020</b> , 3, 176-183	18
1190	Porous coordination polymer-derived ultrasmall CoP encapsulated in nitrogen-doped carbon for efficient hydrogen evolution in both acidic and basic media. <b>2020</b> , 45, 1729-1737	12
1189	CoP/C Nanocubes-Modified Separator Suppressing Polysulfide Dissolution for High-Rate and Stable Lithium-Sulfur Batteries. <b>2020</b> , 12, 2497-2504	44
1188	Amorphous MoS <sub>2</sub> coated Ni <sub>3</sub> S <sub>2</sub> nanosheets as bifunctional electrocatalysts for high-efficiency overall water splitting. <b>2020</b> , 332, 135454	23
1187	Kinetic-Oriented Construction of MoS <sub>2</sub> Synergistic Interface to Boost pH-Universal Hydrogen Evolution. <b>2020</b> , 30, 1908520	35
1186	V Incorporated NiCo(OH) <sub>2</sub> : A Robust and Efficient Electrocatalyst for Water Oxidation. <b>2020</b> , 59, 730-740	14
1185	Atomically Dispersed Mo Supported on Metallic Co <sub>9</sub> S <sub>8</sub> Nanoflakes as an Advanced Noble-Metal-Free Bifunctional Water Splitting Catalyst Working in Universal pH Conditions. <b>2020</b> , 10, 1903137	97
1184	Amorphous Catalysts and Electrochemical Water Splitting: An Untold Story of Harmony. <b>2020</b> , 16, e1905779	210
1183	Facile preparation of Ni, Co - Alloys supported on porous carbon spheres for supercapacitors and hydrogen evolution reaction application. <b>2020</b> , 45, 1466-1476	16
1182	N-doped carbon armored metal phosphides grown in-situ on nickel foam as chainmail catalysts toward high efficiency electrolytic water splitting. <b>2020</b> , 562, 42-51	19

1181	Layered Metal Hydroxides and Their Derivatives: Controllable Synthesis, Chemical Exfoliation, and Electrocatalytic Applications. <b>2020</b> , 10, 1902535	48
1180	Efficient and stable NiCoBeP nanosheet arrays on Ni foam for alkaline and neutral hydrogen evolution. <b>2020</b> , 45, 2504-2512	13
1179	Low-Iridium-Content IrNiTa Metallic Glass Films as Intrinsically Active Catalysts for Hydrogen Evolution Reaction. <b>2020</b> , 32, e1906384	44
1178	Plasma-assisted synthesis of hierarchical NiCoPy nanosheets as robust and stable electrocatalyst for hydrogen evolution reaction in both acidic and alkaline media. <b>2020</b> , 331, 135431	12
1177	Honeycomb-like 3D N-, P-codoped porous carbon anchored with ultrasml Fe <sub>2</sub> P nanocrystals for efficient Zn-air battery. <b>2020</b> , 158, 885-892	26
1176	Effect of radiation on interfacial properties and phase behavior of ionic liquid-based microemulsions. <b>2020</b> , 168, 108596	2
1175	Surface Activation and Reconstruction of Non-Oxide-Based Catalysts Through in Situ Electrochemical Tuning for Oxygen Evolution Reactions in Alkaline Media. <b>2020</b> , 10, 463-493	110
1174	Amorphous Metal-Organic Framework-Dominated Nanocomposites with Both Compositional and Structural Heterogeneity for Oxygen Evolution. <b>2020</b> , 59, 3630-3637	73
1173	Synergistic effect of ultrafine nano-Ru decorated cobalt carbonate hydroxides nanowires for accelerated alkaline hydrogen evolution reaction. <b>2020</b> , 331, 135367	27
1172	CoP Nanoframes as Bifunctional Electrocatalysts for Efficient Overall Water Splitting. <b>2020</b> , 10, 412-419	188
1171	Amorphous Metal-Organic Framework-Dominated Nanocomposites with Both Compositional and Structural Heterogeneity for Oxygen Evolution. <b>2020</b> , 132, 3659-3666	10
1170	Vertically aligned NiS <sub>2</sub> /CoS <sub>2</sub> /MoS <sub>2</sub> nanosheet array as an efficient and low-cost electrocatalyst for hydrogen evolution reaction in alkaline media. <b>2020</b> , 65, 359-366	23
1169	Plasma-Engineered MoP with nitrogen doping: Electron localization toward efficient alkaline hydrogen evolution. <b>2020</b> , 268, 118441	39
1168	3D Carbon Materials for Efficient Oxygen and Hydrogen Electrocatalysis. <b>2020</b> , 10, 1902494	56
1167	Vanadium Doped Nickel Phosphide Nanosheets Self-Assembled Microspheres as a High-Efficiency Oxygen Evolution Catalyst. <b>2020</b> , 12, 917-925	8
1166	Zinc oxide functionalized molybdenum disulfide heterostructures as efficient electrocatalysts for hydrogen evolution reaction. <b>2020</b> , 45, 619-628	17
1165	N-induced lattice contraction generally boosts the hydrogen evolution catalysis of P-rich metal phosphides. <b>2020</b> , 6, eaaw8113	116
1164	Mechanochemically synthesized Cu <sub>3</sub> P/C composites as a conversion electrode for Li-ion and Na-ion batteries in different electrolytes. <b>2020</b> , 6, 100031	2

1163	Defect Engineering of van der Waals Solids for Electrocatalytic Hydrogen Evolution. <b>2020</b> , 15, 3682-3695	2
1162	Phosphorus-doping and addition of V <sub>2</sub> O <sub>5</sub> into Pt/graphene resulting in highly-enhanced electro-photo synergistic catalysis for oxygen reduction and hydrogen evolution reactions. <b>2020</b> , 45, 30647-30658	6
1161	Electrocatalytic Hydrogen Evolution of Ultrathin Co-Mo <sub>5</sub> N <sub>6</sub> Heterojunction with Interfacial Electron Redistribution. <b>2020</b> , 10, 2002176	73
1160	Efficient overall water splitting using nickel boride-based electrocatalysts. <b>2020</b> , 45, 28616-28625	8
1159	Engineering sulfur vacancies in basal plane of MoS <sub>2</sub> for enhanced hydrogen evolution reaction. <b>2020</b> , 391, 91-97	25
1158	FeP-decorated N,P Codoped Carbon Synthesized via Direct Biological Recycling for Endurable Sulfur Encapsulation. <b>2020</b> , 6, 1827-1834	13
1157	Electrodeposition of iron phosphide film for hydrogen evolution reaction. <b>2020</b> , 363, 137167	11
1156	Preparation of Ag nanoparticles by spark ablation in gas as catalysts for electrocatalytic hydrogen production.. <b>2020</b> , 10, 38583-38587	7
1155	Accelerating Redox Kinetics of Lithium-Sulfur Batteries. <b>2020</b> , 2, 1020-1033	15
1154	High-performance light-driven heterogeneous CO catalysis with near-unity selectivity on metal phosphides. <b>2020</b> , 11, 5149	25
1153	Dynamic evolution of isolated RuFeP atomic interface sites for promoting the electrochemical hydrogen evolution reaction. <b>2020</b> , 8, 22607-22612	16
1152	A Novel Heterostructure Based on RuMo Nanoalloys and N-doped Carbon as an Efficient Electrocatalyst for the Hydrogen Evolution Reaction. <b>2020</b> , 32, e2005433	62
1151	Robust non-Pt noble metal-based nanomaterials for electrocatalytic hydrogen generation. <b>2020</b> , 7, 041304	14
1150	Vanadium nitride based CoFe prussian blue analogues for enhanced electrocatalytic oxygen evolution. <b>2020</b> , 45, 31410-31417	1
1149	Research progress and surface/interfacial regulation methods for electrophotocatalytic hydrogen production from water splitting. <b>2020</b> , 18, 100524	12
1148	Underwater superaerophobic Ni nanoparticle-decorated nickel-molybdenum nitride nanowire arrays for hydrogen evolution in neutral media. <b>2020</b> , 78, 105375	58
1147	Recent advances in nanostructured transition metal phosphides: synthesis and energy-related applications. <b>2020</b> , 13, 4564-4582	116
1146	Coralline-like CoP <sub>3</sub> @Cu as an efficient electrocatalyst for the hydrogen evolution reaction in acidic and alkaline solutions. <b>2020</b> , 44, 18601-18607	3

1145	Interface Engineering of Binder-Free Earth-Abundant Electrocatalysts for Efficient Advanced Energy Conversion. <b>2020</b> , 13, 4795-4811	15
1144	Tuning Cu Overvoltage for a Copper-Telluride System in Electrocatalytic Water Reduction and Feasible Feedstock Conversion: A New Approach. <b>2020</b> , 59, 11129-11141	12
1143	Novel electronic properties of monoclinic MP (M = Cr, Mo, W) compounds with or without topological nodal line. <b>2020</b> , 10, 11502	6
1142	Fabrication of CuOx nanowires@NiMnOx nanosheets core@shell-type electrocatalysts: crucial roles of defect modification and valence states for overall water electrolysis. <b>2020</b> , 8, 16463-16476	15
1141	Design of 3D Hollow Porous Heterogeneous Nickel-Cobalt Phosphides for Synergistically Enhancing Catalytic Performance for Electrooxidation of Methanol. <b>2020</b> , 12, 34971-34979	20
1140	Multiregion Janus-Featured Cobalt Phosphide-Cobalt Composite for Highly Reversible Room-Temperature Sodium-Sulfur Batteries. <b>2020</b> , 14, 10284-10293	44
1139	Electronic modulation by N incorporation boosts the electrocatalytic performance of urchin-like Ni5P4 hollow microspheres for hydrogen evolution. <b>2020</b> , 402, 126302	22
1138	Engineering Ultrathin MoS2 Nanosheets on CoxP/Nitrogen-Doped Carbon Nanocubes for Efficient Hydrogen Evolution. <b>2020</b> , 5, 8233-8240	2
1137	Enhanced bifunctional electrocatalytic activity of Ni-Co bimetallic chalcogenides for efficient water-splitting application. <b>2020</b> , 846, 156389	20
1136	An Artificial Electrode/Electrolyte Interface for CO Electroreduction by Cation Surfactant Self-Assembly. <b>2020</b> , 59, 19095-19101	30
1135	Facile Synthesis of Sub-Nanometric Copper Clusters by Double Confinement Enables Selective Reduction of Carbon Dioxide to Methane. <b>2020</b> , 59, 19054-19059	63
1134	Constructing multifunctional Nanoplatelet-on-Nanoarray Electrocatalyst with unprecedented activity towards novel selective organic oxidation reactions to boost hydrogen production. <b>2020</b> , 278, 119339	36
1133	Trends in Alkaline Hydrogen Evolution Activity on Cobalt Phosphide Electrocatalysts Doped with Transition Metals. <b>2020</b> , 1, 100136	20
1132	Charge Redistribution Caused by S,P Synergistically Active Ru Endows an Ultrahigh Hydrogen Evolution Activity of S-Doped RuP Embedded in N,P,S-Doped Carbon. <b>2020</b> , 7, 2001526	32
1131	An Artificial Electrode/Electrolyte Interface for CO2 Electroreduction by Cation Surfactant Self-Assembly. <b>2020</b> , 132, 19257-19263	7
1130	Interfacing metals and compounds for enhanced hydrogen evolution from water splitting. <b>2020</b> , 45, 548-554	1
1129	A review of the electrocatalysts on hydrogen evolution reaction with an emphasis on Fe, Co and Ni-based phosphides. <b>2020</b> , 55, 14081-14104	36
1128	Formation of Amorphous Co-Al-P Layer on CoAl Layered Double Hydroxide Nanoarray as Neutral Electrocatalysts for Hydrogen Evolution Reaction. <b>2020</b> , 8, 552795	0



1127	Polyoxometalate Derived Mo Based Hybrid HER Electrocatalysts with Carbon as Matrix and Their Application in Zn-H <sup>+</sup> Battery. <b>2020</b> , 1	1
1126	Increasing the active sites and intrinsic activity of transition metal chalcogenide electrocatalysts for enhanced water splitting. <b>2020</b> , 8, 25465-25498	36
1125	The individual role of active sites in bimetallic oxygen evolution reaction catalysts. <b>2020</b> , 49, 17505-17510	7
1124	Cobalt-Molybdenum Bimetal Phosphides Encapsulated in Carbon as Efficient and Durable Electrocatalyst for Hydrogen Evolution. <b>2020</b> , 5, 14312-14319	4
1123	Constructing Ti <sub>3</sub> C <sub>2</sub> MXene/ZnIn <sub>2</sub> S <sub>4</sub> heterostructure as a Schottky catalyst for photocatalytic environmental remediation. <b>2020</b> ,	7
1122	Ni W -W Interconnected Hybrid Prepared by Atmosphere- and Thermal-Induced Phase Separation for Efficient Electrocatalysis of Alkaline Hydrogen Evolution. <b>2020</b> , 16, e2005184	11
1121	Molecular-Level Synthesis of Cobalt Phosphide Nanocrystals Confined in Highly Nitrogen-Doped Mesoporous Carbon Electrocatalyst for Highly Efficient Dye-Sensitized Solar Cells. <b>2020</b> , 8, 17245-17261	14
1120	Synthesis of MgNiO <sub>2</sub> /CoNC-Based Ternary Metallic Dual-Active Interfacial Porous Hollow Nanocages as Efficient Oxygen Reduction Reaction and Oxygen Evolution Reaction Bi-Functional Electrocatalysts. <b>2020</b> , 7,	
1119	Deposit amorphous Ni-Co-B-RE (RE=Ce, Gd and Nd) on nickel foam as a high performance and durable electrode for hydrogen evolution reaction. <b>2020</b> , 878, 114552	6
1118	One-step electrodeposition of cauliflower-like Ni <sub>90</sub> Fe <sub>10</sub> particles as a highly-efficient electrocatalyst for the hydrogen evolution reaction. <b>2020</b> , 45, 24615-24625	5
1117	Hybridization of Bimetallic Molybdenum-Tungsten Carbide with Nitrogen-Doped Carbon: A Rational Design of Super Active Porous Composite Nanowires with Tailored Electronic Structure for Boosting Hydrogen Evolution Catalysis. <b>2020</b> , 30, 2003198	21
1116	Electrodeposition-fabricated catalysts for polymer electrolyte water electrolysis. <b>2020</b> , 37, 1275-1294	2
1115	Facile one-step in-situ encapsulation of non-noble metal Co <sub>2</sub> P nanoparticles embedded into B, N, P tri-doped carbon nanotubes for efficient hydrogen evolution reaction. <b>2020</b> , 45, 24312-24321	15
1114	Multi-dimensional materials with layered structures for supercapacitors: Advanced synthesis, supercapacitor performance and functional mechanism. <b>2020</b> , 78, 105193	21
1113	Recent advances of low-dimensional phosphorus-based nanomaterials for solar-driven photocatalytic reactions. <b>2020</b> , 424, 213516	37
1112	Loading Copper Atoms on Graphdiyne for Highly Efficient Hydrogen Production. <b>2020</b> , 21, 2145-2149	25
1111	Development strategies in transition metal carbide for hydrogen evolution reaction: A review. <b>2020</b> , 37, 1317-1330	7
1110	RuS <sub>2-x</sub> quantum dots/rGO as bifunctional hydrogen electrocatalysts for harvesting electrochemical neutralization energy. <b>2020</b> , 472, 228625	12

1109	Facile Synthesis of Sub-Nanometric Copper Clusters by Double Confinement Enables Selective Reduction of Carbon Dioxide to Methane. <b>2020</b> , 132, 19216-19221	8
1108	Heterogeneous CoSe <sub>2</sub> /TiO <sub>2</sub> nanoparticles immobilized into N-doped carbon fibers for efficient overall water splitting. <b>2020</b> , 356, 136822	9
1107	Nitrogen doped carbon quantum dots conjugated with AgNi alloy nanoparticles as potential electrocatalyst for efficient water splitting. <b>2020</b> , 847, 156492	8
1106	Metal organic framework derived trifunctional NiCoP electrode for continuous solar-driven energy-saving hydrogen generation. <b>2020</b> , 45, 27000-27011	0
1105	One-pot synthesis of pure phase molybdenum carbide (Mo <sub>2</sub> C and MoC) nanoparticles for hydrogen evolution reaction. <b>2020</b> , 45, 27114-27128	15
1104	Nanoporous V-Doped NiP Microsphere: A Highly Efficient Electrocatalyst for Hydrogen Evolution Reaction at All pH. <b>2020</b> , 12, 37092-37099	18
1103	0D/2D heterojunction constructed by high-dispersity Mo-doped Ni <sub>2</sub> P nanodots supported on g-C <sub>3</sub> N <sub>4</sub> nanosheets towards enhanced photocatalytic H <sub>2</sub> evolution activity. <b>2020</b> , 45, 22556-22566	23
1102	Electrocatalytic hydrogen evolution under neutral pH conditions: current understandings, recent advances, and future prospects. <b>2020</b> , 13, 3185-3206	85
1101	Phosphorus-Based Electrocatalysts: Black Phosphorus, Metal Phosphides, and Phosphates. <b>2020</b> , 7, 2000676	14
1100	Carbon quantum dots (CQDs) modified TiO <sub>2</sub> nanorods photoelectrode for enhanced photocathodic protection of Q235 carbon steel. <b>2020</b> , 176, 108919	18
1099	Co <sub>2</sub> P/CoP hybrid as a reversible electrocatalyst for hydrogen oxidation/evolution reactions in alkaline medium. <b>2020</b> , 390, 23-29	27
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1097	Recent advance and prospectives of electrocatalysts based on transition metal selenides for efficient water splitting. <b>2020</b> , 78, 105234	81
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1095	A ball-milling synthesis of N-graphyne with controllable nitrogen doping sites for efficient electrocatalytic oxygen evolution and supercapacitors. <b>2020</b> , 49, 10958-10969	25
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1093	Hydrogen Generation from Seawater Electrolysis over a Sandwich-like NiCoN Ni <sub>3</sub> P NiCoN Microsheet Array Catalyst. <b>2020</b> , 5, 2681-2689	71
1092	Metal-Organic-Framework-Derived Co P Nanoparticle/Multi-Doped Porous Carbon as a Trifunctional Electrocatalyst. <b>2020</b> , 32, e2003649	120

1091	Electron-deficient titanium single-atom electrocatalyst for stable and efficient hydrogen production. <b>2020</b> , 78, 105151	4
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1076	Integrated Z-Scheme Nanosystem Based on Metal Sulfide Nanorods for Efficient Photocatalytic Pure Water Splitting. <b>2020</b> , 13, 6528-6533	5
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1040	Low-Dimensional Metallic Nanomaterials for Advanced Electrocatalysis. <b>2020</b> , 30, 2006317	84
1039	A Mini Review on Doped Nickel-Based Electrocatalysts for Hydrogen Evolution Reaction. <b>2020</b> , 13, 4651	0
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1035	Chemical Leaching of Inactive Cr and Subsequent Electrochemical Resurfacing of Catalytically Active Sites in Stainless Steel for High-Rate Alkaline Hydrogen Evolution Reaction. <b>2020</b> , 3, 12596-12606	10
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1016	Formation of Mo <sub>2</sub> C/hollow tubular g-C <sub>3</sub> N <sub>4</sub> hybrids with favorable charge transfer channels for excellent visible-light-photocatalytic performance. <b>2020</b> , 527, 146757	28
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973	Distance Synergy of MoS <sub>2</sub> -Confined Rhodium Atoms for Highly Efficient Hydrogen Evolution. <b>2020</b> , 59, 10502-10507	53
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966	Recent Advances in Self-Supported Layered Double Hydroxides for Oxygen Evolution Reaction. <b>2020</b> , 2020, 3976278	33

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958	A general approach to the synthesis of transition metal phosphide nanoarrays on MXene nanosheets for pH-universal hydrogen evolution and alkaline overall water splitting. <b>2020</b> , 8, 14234-14242	39
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948	Multi-shelled cobalt-nickel oxide/phosphide hollow spheres for an efficient oxygen evolution reaction. <b>2020</b> , 49, 10918-10927	6

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944	Phosphorus Vacancies that Boost Electrocatalytic Hydrogen Evolution by Two Orders of Magnitude. <b>2020</b> , 132, 8258-8263	13
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936	Controllable photodeposition of nickel phosphide cocatalysts on cadmium sulfide nanosheets for enhanced photocatalytic hydrogen evolution performance. <b>2020</b> , 44, 4332-4339	12
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933	Dynamic evolution of a hydroxylated layer in ruthenium phosphide electrocatalysts for an alkaline hydrogen evolution reaction. <b>2020</b> , 8, 5655-5662	7
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930	Periodically ordered mesoporous iron phosphide for highly efficient electrochemical hydrogen evolution. <b>2020</b> , 569, 68-75	3

929	Hydrogen generation from ammonia electrolysis on bifunctional platinum nanocubes electrocatalysts. <b>2020</b> , 47, 234-240	37
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927	General Approach for the Synthesis of Nitrogen-Doped Carbon Encapsulated Mo and W Phosphide Nanostructures for Electrocatalytic Hydrogen Evolution. <b>2020</b> , 3, 2811-2820	10
926	In situ growth of free-standing perovskite hydroxide electrocatalysts for efficient overall water splitting. <b>2020</b> , 8, 5919-5926	9
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923	Metal sulfide/MOF-based composites as visible-light-driven photocatalysts for enhanced hydrogen production from water splitting. <b>2020</b> , 409, 213220	92
922	Ultrafine FeCoOOH Nanorods Activated with Iron for Exceptional Oxygen Evolution Reaction. <b>2020</b> , 36, 2223-2230	11
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916	Visible-light-driven photocatalytic H <sub>2</sub> evolution over CdZnS nanocrystal solid solutions: interplay of twin structures, sulfur vacancies and sacrificial agents. <b>2020</b> , 8, 3882-3891	63
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914	N, Ru Codoped Pellet Drum Bundle-Like SbS: An Efficient Hydrogen Evolution Reaction and Hydrogen Oxidation Reaction Electrocatalyst in Alkaline Medium. <b>2020</b> , 12, 7057-7070	12
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912	Metal-organic frameworks as a platform for clean energy applications. <b>2020</b> , 2, 100027	377

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909	Facile synthesis of one-dimensional MoWP hybrid nanowires and their enhanced electrochemical catalytic activities. <b>2020</b> , 741, 137107	4
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893	3D layered nano-flower MoS <sub>x</sub> anchored with CoP nanoparticles form double proton adsorption site for enhanced photocatalytic hydrogen evolution under visible light driven. <b>2020</b> , 45, 2578-2592	34
892	Strategies for Semiconductor/Electrocatalyst Coupling toward Solar-Driven Water Splitting. <b>2020</b> , 7, 1902102	61
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889	Photocatalytic hydrogen evolution over nickel cobalt bimetallic phosphate anchored graphitic carbon nitrides by regulation of the d-band electronic structure. <b>2020</b> , 10, 3654-3663	3
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883	A review and perspective on molybdenum-based electrocatalysts for hydrogen evolution reaction. <b>2020</b> , 39, 335-351	88
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881	Remarkably enhanced visible-light photocatalytic hydrogen evolution and antibiotic degradation over g-C <sub>3</sub> N <sub>4</sub> nanosheets decorated by using nickel phosphide and gold nanoparticles as cocatalysts. <b>2020</b> , 517, 146187	17
880	Interface and valence modulation on scalable phosphorene/phosphide lamellae for efficient water electrolysis. <b>2020</b> , 395, 124976	35
879	Phase-dependent hydrogen evolution activity of nickel phosphide nanosheet arrays in alkaline electrolytes. <b>2020</b> , 344, 136116	6
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876	Effects of bubbles on the electrochemical behavior of hydrogen-evolving Si microwire arrays oriented against gravity. <b>2020</b> , 13, 1808-1817	18

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874	Platinum Atoms and Nanoparticles Embedded Porous Carbons for Hydrogen Evolution Reaction. <b>2020</b> , 13,	2
873	Preparation of cobalt-based nanomaterials carried by nitrogen-doped carbon nanotubes as high performance electrocatalysts for hydrogen evolution reaction. <b>2020</b> , 35, 87-96	3
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871	Highly Sensitive Photoelectrochemical Biosensor Based on Quantum Dots Sensitizing BiTe Nanosheets and DNA-Amplifying Strategies. <b>2020</b> , 12, 22624-22629	31
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869	Recent advances on metal alkoxide-based electrocatalysts for water splitting. <b>2020</b> , 8, 10130-10149	25
868	Porous Monolithic Electrode of Ni <sub>2</sub> FeN on 3D Graphene for Efficient Oxygen Evolution. <b>2020</b> , 20, 5175-5181	4
867	A Single Molecular Stoichiometric P-Source for Phase-Selective Synthesis of Crystalline and Amorphous Iron Phosphide Nanocatalysts. <b>2020</b> , 6, 1208-1219	1
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852	In Situ Phosphatizing of Triphenylphosphine Encapsulated within Metal-Organic Frameworks to Design Atomic Co-PN Interfacial Structure for Promoting Catalytic Performance. <b>2020</b> , 142, 8431-8439	123
851	FeCoSe Nanoparticles Embedded in g-CN: A Highly Active and Stable bifunctional electrocatalyst for overall water splitting. <b>2020</b> , 10, 6328	13
850	Enhancement of HER kinetics with RhNiFe for high-rate water electrolysis. <b>2020</b> , 10, 3681-3693	12
849	Noble-metal-free Co P nanoparticles: modified perovskite oxide ultrathin nanosheet photocatalysts with significantly enhanced photocatalytic hydrogen evolution activity. <b>2020</b> , 31, 325401	2
848	Metal-Organic Framework-Based Engineered Materials-Fundamentals and Applications. <b>2020</b> , 25,	32
847	Catalytic activity and underlying atomic rearrangement in monolayer CoOOH towards HER and OER. <b>2020</b> , 45, 23900-23907	12
846	Prussian blue- and Prussian blue analogue-derived materials: progress and prospects for electrochemical energy conversion. <b>2020</b> , 16, 100404	34
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841	Porous Ni-Mo bimetallic hybrid electrocatalyst by intermolecular forces in precursors for enhanced hydrogen generation. <b>2021</b> , 405, 126962	10
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839	Phosphotungstic acid passivated enhanced photocatalytic performance of ZnS nanoparticles under solar light. <b>2021</b> , 118, 106406	3
838	Recent advances of metal phosphides for LiB chemistry. <b>2021</b> , 55, 533-548	47
837	Recent advances in application of transition metal phosphides for photocatalytic hydrogen production. <b>2021</b> , 405, 126547	46
836	Operating redox couple transport mechanism for enhancing photocatalytic H <sub>2</sub> generation of Pt and CrO <sub>x</sub> -decorated ZnCdS nanocrystals. <b>2021</b> , 283, 119601	22
835	Spinel CoFe <sub>2</sub> O <sub>4</sub> /carbon nanotube composites as efficient bifunctional electrocatalysts for oxygen reduction and oxygen evolution reaction. <b>2021</b> , 47, 1602-1608	5
834	Electrodeposition: Synthesis of advanced transition metal-based catalyst for hydrogen production via electrolysis of water. <b>2021</b> , 57, 547-566	28
833	Stable CO/H <sub>2</sub> ratio on MoP surfaces under working condition: A DFT based thermodynamics study. <b>2021</b> , 703, 121738	
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831	Development Trends on Nickel-Based Electrocatalysts for Direct Hydrazine Fuel Cells. <b>2021</b> , 13, 81-110	15
830	Anion-mediated transition metal electrocatalysts for efficient water electrolysis: Recent advances and future perspectives. <b>2021</b> , 427, 213552	28
829	Heterogeneous Bimetallic Phosphide Ni <sub>2</sub> P-Fe <sub>2</sub> P as an Efficient Bifunctional Catalyst for Water/Seawater Splitting. <b>2021</b> , 31, 2006484	134
828	Facile synthesis of defect-rich ultrathin NiCo-LDHs, NiMn-LDHs and NiCoMn-LDHs nanosheets on Ni foam for enhanced oxygen evolution reaction performance. <b>2021</b> , 852, 156949	23
827	Interface engineering of heterostructured electrocatalysts towards efficient alkaline hydrogen electrocatalysis. <b>2021</b> , 66, 85-96	40
826	Hydrogen Auto-transfer Synthesis of Quinoxalines from o -Nitroanilines and Biomass-based Diols Catalyzed by MOF-derived N,P Co-doped Cobalt Catalysts. <b>2021</b> , 13, 373-381	20
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824	⌈The Fe Effect⌋A review unveiling the critical roles of Fe in enhancing OER activity of Ni and Co based catalysts. <b>2021</b> , 80, 105514	138
823	Modulating electronic structure of honeycomb-like Ni <sub>2</sub> P/Ni <sub>12</sub> P <sub>5</sub> heterostructure with phosphorus vacancies for highly efficient lithium-oxygen batteries. <b>2021</b> , 413, 127404	15
822	Atomically dispersed NiRuB interface sites for high-efficiency pH-universal electrocatalysis of hydrogen evolution. <b>2021</b> , 80, 105467	44

821	Hierarchical MoP/NiFeP hybrid hollow spheres as highly efficient bifunctional electrocatalysts for overall water splitting. <b>2021</b> , 5, 375-385	6
820	Sprout-shaped Mo-doped CoP with maximized hydrophilicity and gas bubble release for high-performance water splitting catalyst. <b>2021</b> , 408, 127331	19
819	Recent advances in non-precious metal electrocatalysts for pH-universal hydrogen evolution reaction. <b>2021</b> , 6, 458-478	22
818	Bimetallic chalcogenide nanocrystallites as efficient electrocatalyst for overall water splitting. <b>2021</b> , 852, 156736	8
817	Surface amorphized nickel hydroxy sulphide for efficient hydrogen evolution reaction in alkaline medium. <b>2021</b> , 408, 127275	20
816	Recent progress on synthetic strategies and applications of transition metal phosphides in energy storage and conversion. <b>2021</b> , 47, 4404-4425	47
815	Double metal-organic frameworks derived FeCoNi phosphides nanosheets as high-performance electrocatalyst for alkaline electrochemical water splitting. <b>2021</b> , 367, 137536	13
814	DNA as template and P-source for synthesis of Co <sub>2</sub> P/Co <sub>2</sub> N core-shell nanostructure embedded in N-doped carbon nanofiber derived from electrospun precursor for oxygen evolution reaction. <b>2021</b> , 367, 137562	7
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812	Integrated selective nitrite reduction to ammonia with tetrahydroisoquinoline semi-dehydrogenation over a vacancy-rich Ni bifunctional electrode. <b>2021</b> , 9, 239-243	18
811	A review: Target-oriented transition metal phosphide design and synthesis for water splitting. <b>2021</b> , 46, 5131-5149	22
810	Recent development on metal phthalocyanines based materials for energy conversion and storage applications. <b>2021</b> , 431, 213678	22
809	Pr-doped NiCoP nanowire arrays for efficient hydrogen evolution in both acidic and alkaline media. <b>2021</b> , 862, 158047	6
808	Interface engineered NiMoN/Ni <sub>3</sub> N heterostructures for enhanced alkaline hydrogen evolution reaction. <b>2021</b> , 540, 148407	19
807	Nb <sub>4</sub> C <sub>3</sub> T <sub>x</sub> (MXene) as a new stable catalyst for the hydrogen evolution reaction. <b>2021</b> , 46, 1955-1966	13
806	Transition-Metal Carbides as Hydrogen Evolution Reduction Electrocatalysts: Synthetic Methods and Optimization Strategies. <b>2021</b> , 27, 5074-5090	6
805	Recent Progress of Transition Metal Phosphides for Photocatalytic Hydrogen Evolution. <b>2021</b> , 14, 539-557	25
804	Interface engineering: NiAl-LDH in-situ derived NiP <sub>2</sub> quantum dots and Cu <sub>3</sub> P nanoparticles ingeniously constructed p-n heterojunction for photocatalytic hydrogen evolution. <b>2021</b> , 420, 127682	27

803	Self-Assembly Approach Towards MoS <sub>2</sub> -Embedded Hierarchical Porous Carbons for Enhanced Electrocatalytic Hydrogen Evolution. <b>2021</b> , 27, 2155-2164	1
802	Tailoring the 3d-orbital electron filling degree of metal center to boost alkaline hydrogen evolution electrocatalysis. <b>2021</b> , 284, 119718	26
801	Structural engineering of Ti-Mn bimetallic phosphide nanotubes for efficient photoelectrochemical water splitting. <b>2021</b> , 46, 3605-3614	9
800	Bimetallic Fe-Co chalcogenophosphates as highly efficient bifunctional electrocatalysts for overall water splitting. <b>2021</b> , 46, 3354-3364	10
799	Anion Vacancy Engineering in Electrocatalytic Water Splitting. <b>2021</b> , 7, 102-109	4
798	Wide pH range electrocatalytic hydrogen evolution using molybdenum phosphide nanoparticles uniformly anchored on porous carbon cloth. <b>2021</b> , 47, 9347-9353	3
797	La-Mo binary metal oxides for oxygen evolution reaction. <b>2021</b> , 46, 6197-6205	2
796	Two Co(II)/Ni(II) isostructural Metal-Organic Frameworks with bnn topology for photocatalysis and electrocatalysis. <b>2021</b> , 312, 110813	4
795	Ni-P Nanoalloy as an Air-Stable and Versatile Hydrogenation Catalyst in Water: P-Alloying Strategy for Designing Smart Catalysts. <b>2021</b> , 27, 4439-4446	8
794	Integrated transition metal and compounds with carbon nanomaterials for electrochemical water splitting. <b>2021</b> , 9, 3786-3827	33
793	Embedding Co <sub>2</sub> P nanoparticles into N&P co-doped carbon fibers for hydrogen evolution reaction and supercapacitor. <b>2021</b> , 46, 1560-1568	10
792	Visible-light-enhanced catalytic hydrolysis of ammonia borane using RuP <sub>2</sub> quantum dots supported by graphitic carbon nitride. <b>2021</b> , 46, 3811-3820	9
791	Progress and Challenge of Amorphous Catalysts for Electrochemical Water Splitting. <b>2021</b> , 3, 136-147	54
790	Design of hollow carbon-based materials derived from metal-organic frameworks for electrocatalysis and electrochemical energy storage. <b>2021</b> , 9, 3880-3917	41
789	Electrochemically fabricated MoO <sub>3</sub> /MoO <sub>2</sub> @NiMo heterostructure catalyst with Pt-like activity for the pH-universal hydrogen evolution reaction. <b>2021</b> , 9, 3677-3684	12
788	Two-Dimensional Porous Molybdenum Phosphide/Nitride Heterojunction Nanosheets for pH-Universal Hydrogen Evolution Reaction. <b>2021</b> , 60, 6673-6681	65
787	An open-structured carbon fiber brush electrode for efficient hydrogen evolution by inducing oriented bubble transport. <b>2021</b> , 407, 127159	1
786	Carbon supported nickel phosphide as efficient electrocatalyst for hydrogen and oxygen evolution reactions. <b>2021</b> , 46, 622-632	14

785	Improved photocatalytic activity of Ni <sub>2</sub> P/NiCo-LDH composites via a CoP bond charge transfer channel to degrade tetracycline under visible light. <b>2021</b> , 852, 156963	16
784	Engineering nanointerface of molybdenum-based heterostructures to boost the electrocatalytic hydrogen evolution reaction. <b>2021</b> , 58, 370-376	7
783	Multicomponent CoS@MoS nanohybrids as a novel trifunctional electrocatalyst for efficient methanol electrooxidation and overall water splitting. <b>2021</b> , 586, 538-550	20
782	Vanadium doped cobalt phosphide nanorods array as a bifunctional electrode catalyst for efficient and stable overall water splitting. <b>2021</b> , 46, 599-608	12
781	Electrocatalytic water-splitting for the controllable and sustainable synthesis of deuterated chemicals. <b>2021</b> , 66, 562-569	11
780	Porous Co <sub>2</sub> P film coated on carbon fiber as highly performance electrocatalyst toward overall water splitting. <b>2021</b> , 46, 31-40	3
779	Boosting pH-Universal Hydrogen Evolution of Molybdenum Disulfide Particles by Interfacial Engineering <b>2021</b> , 39, 288-294	7
778	Remarkable Enhancement of Eu <sup>III</sup> /O <sub>2</sub> /TiO <sub>2</sub> Composite for Photodegradation of Indigo Carmine: A Design Method Based on Computational and Experimental Perspectives. <b>2021</b> , 151, 1111-1126	5
777	Ultra-small hollow ternary alloy nanoparticles for efficient hydrogen evolution reaction. <b>2021</b> , 8, nwa204	5
776	Promotion effects of halloysite nanotubes on catalytic activity of CoO nanoparticles toward reduction of 4-nitrophenol and organic dyes. <b>2021</b> , 403, 123870	36
775	Recent progresses of micro-nanostructured transition metal compound-based electrocatalysts for energy conversion technologies. <b>2021</b> , 64, 1-26	17
774	Recent advancements in MOF-based catalysts for applications in electrochemical and photoelectrochemical water splitting: A review. <b>2021</b> , 45, 1190-1226	60
773	Interfacial Charge Transport in 1D TiO <sub>2</sub> Based Photoelectrodes for Photoelectrochemical Water Splitting. <b>2021</b> , 17, e1903378	48
772	Recent trends and insights in nickel chalcogenide nanostructures for water-splitting reactions. <b>2021</b> , 25, 29-52	21
771	Photothermally boosted water splitting electrocatalysis by broadband solar harvesting nickel phosphide within a quasi-MOF. <b>2021</b> , 9, 16479-16488	6
770	Phase-dependent electrocatalytic activity of colloidal synthesized WP and WP <sub>2</sub> electrocatalysts for hydrogen evolution reaction. <b>2021</b> , 45, 15594-15606	2
769	Hierarchical MnCo <sub>2</sub> O <sub>4</sub> nanowire@NiFe layered double hydroxide nanosheet heterostructures on Ni foam for overall water splitting.	2
768	CHAPTER 9:Fuelling the Hydrogen Economy with 3D Graphene-based Macroscopic Assemblies. <b>2021</b> , 237-256	

767	Thermal analysis in materials science. <b>2021</b> , 129-166	1
766	Efficient acceptorless dehydrogenation of hydrogen-rich N-heterocycles photocatalyzed by Ni(OH) <sub>2</sub> @CdSe/CdS quantum dots. <b>2021</b> , 11, 3810-3817	2
765	Ultrathin amorphous iron-doped cobalt-molybdenum hydroxide nanosheets for advanced oxygen evolution reactions. <b>2021</b> , 13, 3153-3160	10
764	Ru-tweaking of non-precious materials: the tale of a strategy that ensures both cost and energy efficiency in electrocatalytic water splitting. <b>2021</b> , 9, 6710-6731	22
763	Facile synthesis, characterization, mechanism and enhanced visible-light photocatalytic activity of SiW <sub>12</sub> /Fe <sub>2</sub> O <sub>3</sub> nanocomposites. <b>2021</b> , 45, 10063-10069	0
762	Bimetallic Phosphides as High-Efficient Electrocatalysts for Hydrogen Generation. <b>2021</b> , 60, 1624-1630	12
761	Self-Limiting Growth of Single-Layer N-Doped Graphene Encapsulating Nickel Nanoparticles for Efficient Hydrogen Production. <b>2021</b> , 13, 4294-4304	5
760	A Novel Phosphide Derived From Metal-Organic Frameworks as Cost-Effective Electrocatalyst for Oxygen Evolution Reaction. <b>2022</b> , 19,	
759	Highly Enhanced Methanol Electrooxidation on Pt/NiNT-Decorated FeP**. <b>2021</b> , 8, 2442-2448	1
758	Recent Advances in Multimetal and Doped Transition-Metal Phosphides for the Hydrogen Evolution Reaction at Different pH values. <b>2021</b> , 13, 22077-22097	21
757	Cold plasma treatment of catalytic materials: A review.	11
756	Photo-electrocatalytic degradation of chlorinated organics via atomic hydrogen reduction and hydroxyl radical oxidation by Fe and P co-doped carbon aerogel cathode. <b>2021</b> , 298, 126808	3
755	Improving oxygen vacancies by cobalt doping in MoO <sub>2</sub> nanorods for efficient electrocatalytic hydrogen evolution reaction.	1
754	Active Site Identification and Interfacial Design of a MoP/N-Doped Carbon Catalyst for Efficient Hydrogen Evolution Reaction. <b>2021</b> , 4, 5486-5492	2
753	An Electrochemical Impedance Study of Alkaline Water Splitting Using Fe Doped NiO Nanosheets. <b>2021</b> , 1, 69-81	1
752	Enhanced catalytic hydrogen evolution reaction performance of highly dispersed Ni <sub>2</sub> P nanoparticles supported by P-doped porous carbon. <b>2021</b> , 616, 126308	1
751	Origins of the Instability of Nonprecious Hydrogen Evolution Reaction Catalysts at Open-Circuit Potential. <b>2021</b> , 6, 2268-2274	12
750	Interface engineering and heterometal doping Mo-NiS/Ni(OH) <sub>2</sub> for overall water splitting. <b>2021</b> , 14, 3466-3473	17

749	Regulating Intrinsic Electronic Structures of Transition-Metal-Based Catalysts and the Potential Applications for Electrocatalytic Water Splitting. <b>2021</b> , 3, 752-780	16
748	Recent Advances on Electrospun Nanomaterials for Zinc-Air Batteries. <b>2021</b> , 1, 2100010	33
747	Large-scale preparation of 2D VSe <sub>2</sub> through a defect-engineering approach for efficient hydrogen evolution reaction. <b>2021</b> , 411, 128494	12
746	Facile one-pot solvothermal synthesis of NiCoP and its electrochemical performance as anode for lithium ion battery. <b>2021</b> , 44, 1	0
745	Ligand-Promoted Cooperative Electrochemical Oxidation of Bio-Alcohol on Distorted Cobalt Hydroxides for Bio-Hydrogen Extraction. <b>2021</b> , 14, 2612-2620	3
744	Vertical-orbital band center as an activity descriptor for hydrogen evolution reaction on single-atom-anchored 2D catalysts. <b>2021</b> , 33,	2
743	Promoted electrocatalytic hydrogen evolution performance by constructing Ni <sub>12</sub> P <sub>5</sub> /Ni <sub>2</sub> P heterointerfaces. <b>2021</b> , 46, 17097-17105	5
742	Electrochemical Construction of Low-Crystalline CoOOH Nanosheets with Short-Range Ordered Grains to Improve Oxygen Evolution Activity. <b>2021</b> , 11, 6104-6112	26
741	Controllable Synthesis of Metallic Ni <sub>3</sub> P/Ni Spheres on Graphitic Carbon Nitride Nanosheets to Promote Photocatalytic Hydrogen Generation. <b>2021</b> , 64, 521-531	1
740	Electrochemical Catalysts for Green Hydrogen Energy. <b>2021</b> , 2, 2100019	2
739	Ni <sub>2</sub> P Nanoparticles Embedded in Mesoporous SiO <sub>2</sub> for Catalytic Hydrogenation of SO <sub>2</sub> to Elemental S. <b>2021</b> , 4, 5665-5676	6
738	Dual anions engineering on nickel cobalt-based catalyst for optimal hydrogen evolution electrocatalysis. <b>2021</b> , 589, 127-134	15
737	Facile Preparation of a Porous Nanosheet PX-Doped Fe Bi-Functional Catalyst with Excellent OER and HER Electrocatalytic Activity. <b>2021</b> , 6, 4979-4990	1
736	Unraveling the mechanism of hydrogen evolution reaction on cobalt compound electrocatalysts. <b>2021</b> , 550, 149355	3
735	Novel urchin-like CoNiP as advanced pH-universal electrocatalysts toward hydrogen evolution reaction. <b>2021</b> , 54, 365502	1
734	Tailoring nanostructured transition metal phosphides for high-performance hybrid supercapacitors. <b>2021</b> , 38, 101201	19
733	Advances in Lithium-Sulfur Batteries: From Academic Research to Commercial Viability. <b>2021</b> , 33, e2003666	77
732	NHF-Induced Morphology Control of CoP Nanostructures to Enhance the Hydrogen Evolution Reaction. <b>2021</b> , 60, 10781-10790	4

731	3D-Stretched Film Ni S Nanosheet/Macromolecule Anthraquinone Derivative Polymers for Electrocatalytic Overall Water Splitting. <b>2021</b> , 17, e2101003	3
730	Facile synthesis of SnO <sub>2</sub> nanostructures for enhanced electrochemical hydrogen evolution reaction. <b>2021</b> , 865, 158597	3
729	Advances in CoP electrocatalysts for water splitting. <b>2021</b> , 20, 100698	27
728	One-pot solvothermal synthesis of Co <sub>2</sub> P nanoparticles: An efficient HER and OER electrocatalysts. <b>2021</b> , 46, 21924-21938	20
727	Electronic structure engineering through Fe-doping CoP enables hydrogen evolution coupled with electro-Fenton. <b>2021</b> , 84, 105943	15
726	Co/WC@NC electrocatalysts derived from polyoxometalates (POM) for efficient hydrogen evolution. <b>2021</b> , 32,	3
725	Preparation of Ni <sub>2</sub> P Decorated Black Phosphorus Nanosheets Supported on Two-Dimensional Zirconium Phosphate and Its Catalysis for Hydrodesulfurization of Dibenzothiophene. <b>2021</b> , 6, 5899-5905	0
724	Recent advances in nanostructured electrocatalysts for hydrogen evolution reaction. <b>2021</b> , 40, 3375-3405	18
723	Cyclooligophosphanes and their coordination chemistry. <b>2021</b> , 437, 213749	7
722	Clean and Affordable Hydrogen Fuel from Alkaline Water Splitting: Past, Recent Progress, and Future Prospects. <b>2021</b> , 33, e2007100	144
721	In Situ Decorated Ni Metallic Layer with CoS-Layered Thin Films via a Layer-by-Layer Strategy Using Pulsed Laser Deposition for Enhanced Electrocatalytic OER. <b>2021</b> , 60, 8946-8957	4
720	Synthesis of hyperbranched Co-Ni-P nanocrystals and their splitting degree dependent HER performances. <b>2021</b> , 381, 138286	4
719	Elemental Engineering of High-Charge-Density Boron in Nickel as Multifunctional Electrocatalysts for Hydrogen Oxidation and Water Splitting. <b>2021</b> , 4, 5434-5442	8
718	Platinum single-atom catalyst coupled with transition metal/metal oxide heterostructure for accelerating alkaline hydrogen evolution reaction. <b>2021</b> , 12, 3783	93
717	Tailoring of cobalt phosphide anchored nitrogen and sulfur co-doped three dimensional graphene hybrid: Boosted electrocatalytic performance towards hydrogen evolution reaction. <b>2021</b> , 380, 138262	55
716	Recent Advances in Metal-Catalyzed Heterocyclic C-P Bond Formation. <b>2021</b> , 18, 377-387	1
715	Defective carbon-based materials: controllable synthesis and electrochemical applications. <b>2021</b> , 100059	3
714	Modulating interfacial charge distribution of single atoms confined in molybdenum phosphosulfide heterostructures for high efficiency hydrogen evolution. <b>2021</b> , 414, 128834	20

713	Industrially promising IrNi-FeNi <sub>3</sub> hybrid nanosheets for overall water splitting catalysis at large current density. <b>2021</b> , 286, 119881	54
712	Co <sub>2</sub> P@C derived from metal-organic coordinate interactions using polyaniline as soft template for electrocatalytic hydrogen production. <b>2021</b> , 299, 122184	2
711	Construction of a Unique Structure of Ru Sites in the RuP Structure for Propane Dehydrogenation. <b>2021</b> , 13, 33045-33055	3
710	NiCo layered double hydroxides derived Ni <sub>0.67</sub> Co <sub>0.33</sub> (PO <sub>3</sub> ) <sub>2</sub> as stable and efficient electrocatalysts for overall water splitting. <b>2021</b> , 869, 159311	4
709	Accelerate the alkaline hydrogen evolution reaction of the heterostructural Ni <sub>2</sub> P@Ni(OH) <sub>2</sub> /NF by dispersing a trifle of Ru on the surface. <b>2021</b> , 46, 26329-26339	3
708	High crystallinity design of Ir-based catalysts drives catalytic reversibility for water electrolysis and fuel cells. <b>2021</b> , 12, 4271	17
707	1T-MoS Coordinated Bimetal Atoms as Active Centers to Facilitate Hydrogen Generation. <b>2021</b> , 14,	2
706	Superior hydrogen generation from sodium borohydride hydrolysis catalyzed by the bimetallic CoRu/C nanocomposite. <b>2021</b> , 46, 25376-25384	12
705	Surface Chemistry of Metal Phosphide Nanocrystals. <b>2021</b> , 51, 541-564	4
704	Ternary ACd <sub>4</sub> P <sub>3</sub> (A = Na, K) Nanostructures via a Hydride Solution-Phase Route.	0
703	Metal Phosphides and Sulfides in Heterogeneous Catalysis: Electronic and Geometric Effects. <b>2021</b> , 11, 9102-9127	7
702	Noble-Metal-Free Multicomponent Nanointegration for Sustainable Energy Conversion. <b>2021</b> , 121, 10271-10366	6
701	Interface engineering of metal nanomaterials enhance the electrocatalytic water splitting and fuel cell performance. e202100066	0
700	In situ construction of MoC/VN heterostructured electrocatalysts with strong electron coupling for highly efficient hydrogen evolution reaction. <b>2021</b> , 416, 129130	11
699	Emerging Cocatalysts on g-C <sub>3</sub> N <sub>4</sub> for Photocatalytic Hydrogen Evolution. <b>2021</b> , 17, e2101070	52
698	Electrochemically Selective Ammonia Extraction from Nitrate by Coupling Electron- and Phase-Transfer Reactions at a Three-Phase Interface. <b>2021</b> , 55, 10684-10694	16
697	Tuning the Electrochemical Properties of Polymeric Cobalt Phthalocyanines for Efficient Water Splitting. <b>2021</b> , 31, 2103290	10
696	Titania-Supported Ni P/Ni Catalysts for Selective Solar-Driven CO Hydrogenation. <b>2021</b> , 33, e2103248	12



695	Advanced Oxygen Electrocatalyst for Air-Breathing Electrode in Zn-Air Batteries. <b>2021</b> , 13, 40172-40199	15
694	Highly Efficient Oxidative Cyanation of Aldehydes to Nitriles over Se,S,N-tri-Doped Hierarchically Porous Carbon Nanosheets. <b>2021</b> , 133, 21649-21655	
693	Modifying carbon nanotubes supported palladium nanoparticles via regulating the electronic metal-carbon interaction for phenol hydrogenation. <b>2021</b> , 131758	1
692	Carbon-Based Composites as Electrocatalysts for Oxygen Evolution Reaction in Alkaline Media. <b>2021</b> , 14,	6
691	Coordination chemistry of elemental phosphorus. <b>2021</b> , 441, 213927	14
690	MOF-derived CoP <sub>3</sub> /FeP on nitrogen-doped carbon nanoarray boosted high-performance hydrogen evolution. <b>2021</b> , 895, 115521	3
689	Experimental and theoretical realization of an advanced bifunctional 2D MnO <sub>2</sub> electrode for supercapacitor and oxygen evolution reaction via defect engineering. <b>2021</b> , 46, 28028-28042	6
688	Engineered Modular Design of a Nanoscale CoNP/Aunano Hybrid Assembly for High-Performance Overall Water Splitting. <b>2021</b> , 4, 8953-8968	4
687	Strategies for the enhanced water splitting activity over metal-organic frameworks-based electrocatalysts and photocatalysts. <b>2021</b> , 15, 100124	8
686	Highly Efficient Oxidative Cyanation of Aldehydes to Nitriles over Se,S,N-tri-Doped Hierarchically Porous Carbon Nanosheets. <b>2021</b> , 60, 21479-21485	7
685	Molecular Crowding Effect in Aqueous Electrolytes to Suppress Hydrogen Reduction Reaction and Enhance Electrochemical Nitrogen Reduction. <b>2021</b> , 11, 2101699	16
684	The Hydrogen-Storage Challenge: Nanoparticles for Metal-Catalyzed Ammonia Borane Dehydrogenation. <b>2021</b> , 17, e2102759	17
683	Recent progress and prospect of carbon-free single-site catalysts for the hydrogen and oxygen evolution reactions. 1	13
682	Multifunctional Metal Phosphides as Superior Host Materials for Advanced Lithium-Sulfur Batteries. <b>2021</b> , 27, 13494-13512	5
681	Highly Efficient Water Splitting Catalyst Composed of N,P-Doped Porous Carbon Decorated with Surface P-Enriched NiP Nanoparticles. <b>2021</b> ,	1
680	Amorphous nanomaterials in electrocatalytic water splitting. <b>2021</b> , 42, 1287-1296	30
679	Dynamically Monitoring the Photodeposition of Single Cocatalyst Nanoparticles on Semiconductors via Fluorescence Imaging. <b>2021</b> , 93, 11915-11919	2
678	Tertiary-Amine-Assisted Synthesis of Hierarchical Porous Nitrogen-Incorporated Cobalt-Iron (Oxy)hydroxide Nanosheets for Improved Oxygen Evolution Reaction. <b>2021</b> , 4, 8866-8874	2

677	A green blowing strategy toward massive synthesis of P, N, S-codoped carbon nanosheets incorporated with metal phosphides and the lithium storage application. <b>2021</b> , 21, 100734	3
676	MnCoP hollow nanocubes as novel electrode material for asymmetric supercapacitors. <b>2021</b> , 420, 129910	15
675	Electrodeposited amorphous cobalt-nickel-phosphide-derived films as catalysts for electrochemical overall water splitting. <b>2021</b> , 420, 129686	15
674	Self-supported N-Doped Carbon@NiXCo <sub>2</sub> -XP core-shell nanorod arrays on 3D Ni foam for boosted hydrogen evolution reaction. <b>2021</b> , 46, 36046-36046	4
673	CuO-Ni(OH) <sub>2</sub> nanosheets as effective electro-catalysts for urea oxidation. <b>2021</b> , 560, 150009	5
672	Co <sub>3</sub> O <sub>4</sub> @FeMoP on nickel foam as bifunctional electrocatalytic electrode for high-performance alkaline water splitting. <b>2021</b> , 46, 32846-32857	2
671	Hydrogenative coupling of nitriles with diamines to benzimidazoles using lignin-derived RhP catalyst. <b>2021</b> , 24, 103045	1
670	FeNiP three-dimensional oriented nanosheet array bifunctional catalysts with better full water splitting performance than the full noble metal catalysts. <b>2021</b> , 608, 2192-2192	1
669	Carbon-coated MoSe <sub>2</sub> /Mo <sub>2</sub> CT <sub>x</sub> (MXene) heterostructure for efficient hydrogen evolution. <b>2021</b> , 271, 115239	2
668	One-step synthesis of mesoporous Cobalt sulfides (CoS <sub>x</sub> ) on the metal substrate as an efficient bifunctional electrode for overall water splitting. <b>2021</b> , 389, 138786	8
667	Ultra-high capacity of physisorption of hydrogen molecule on AlC <sub>3</sub> monolayer: First-principles calculations. <b>2021</b> , 29, 100291	2
666	General and scalable preparation of Prussian blue analogues on arbitrary conductive substrates and their derived metal phosphides as highly efficient and ultra-long-life bifunctional electrocatalysts for overall water splitting. <b>2021</b> , 420, 129972	2
665	Iron and chromium co-doped cobalt phosphide porous nanosheets as robust bifunctional electrocatalyst for efficient water splitting. <b>2021</b> , 33,	0
664	Instant formation of excellent oxygen evolution catalyst film via controlled spray pyrolysis for electrocatalytic and photoelectrochemical water splitting. <b>2021</b> ,	0
663	Robust Carbon-Encapsulated Ni Nanoparticles as High-Performance Electrocatalysts for the Hydrogen Evolution Reaction in Highly Acidic Media. <b>2021</b> , 398, 139332	1
662	Confinement of transition metal phosphides in N, P-doped electrospun carbon fibers for enhanced electrocatalytic hydrogen evolution. <b>2021</b> , 875, 159934	3
661	Metal-Organic Frameworks-Derived Self-Supported Carbon-Based Composites for Electrocatalytic Water Splitting. <b>2021</b> , 27, 15866-15888	5
660	Semiconductor-based Photoanodes Modified with Metal-organic Frameworks and Molecular Catalysts as Cocatalysts for Enhanced Photoelectrochemical Water Oxidation Reaction.	0

659	Design and fabrication of hollow structured Cu <sub>2</sub> MoS <sub>4</sub> /ZnIn <sub>2</sub> S <sub>4</sub> nanocubes with significant enhanced photocatalytic hydrogen evolution performance. <b>2021</b> , 46, 37847-37847	3
658	On-demand hydrogen evolution upon magnetic composite-nanocatalyzed sodium borohydride hydrolysis. <b>2021</b> , 338, 116633	8
657	Three-dimensional heterogeneous copper cobalt phosphides Nanoflowers for enhancing catalytic performance for electro-oxidation of methanol. <b>2021</b> , 126, 244-251	1
656	Tuning Hydrogen Binding Energy by Interfacial Charge Transfer Enables pH-Universal Hydrogen Evolution Catalysis of Metal Phosphides. <b>2021</b> , 132699	4
655	Role of the Interfacial Effect between the Substrate and Co(OH) <sub>2</sub> Layer in Electrochemical Oxygen Evolution. <b>2021</b> , 4, 9487-9497	2
654	Ni <sub>3</sub> N nanoparticles on porous nitrogen-doped carbon nanorods for nitrate electroreduction. <b>2021</b> , 430, 132666	4
653	In-situ growth of CNTs encapsulating P-doped NiSe <sub>2</sub> nanoparticles on carbon framework as efficient bifunctional electrocatalyst for overall water splitting. <b>2021</b> , 60, 111-120	10
652	Material libraries for electrocatalytic overall water splitting. <b>2021</b> , 444, 214049	21
651	Selectively Se-doped Co <sub>3</sub> O <sub>4</sub> @CeO <sub>2</sub> nanoparticle-dotted nanoneedle arrays for high-efficiency overall water splitting. <b>2021</b> , 562, 150227	16
650	Porous N, P co-doped carbon-coated ultrafine Co <sub>2</sub> P nanoparticles derived from DNA: An electrocatalyst for highly efficient hydrogen evolution reaction. <b>2021</b> , 393, 139051	3
649	Spatial confinement and electron transfer moderating MoN bond strength for superior ammonia decomposition catalysis. <b>2021</b> , 294, 120254	4
648	Controlling atomic phosphorous-mounting surfaces of ultrafine W <sub>2</sub> C nanoislands monodispersed on the carbon frameworks for enhanced hydrogen evolution. <b>2021</b> , 42, 1798-1807	4
647	Regulating Water Reduction Kinetics on MoP Electrocatalysts Through Se Doping for Accelerated Alkaline Hydrogen Production. <b>2021</b> , 9, 737495	0
646	Rational design of three-dimensional branched NiCo-P@CoNiMo-P core/shell nanowire heterostructures for high-performance hybrid supercapacitor. <b>2021</b> , 61, 489-496	13
645	The cutting-edge phosphorus-rich metal phosphides for energy storage and conversion. <b>2021</b> , 40, 101245	10
644	Implanting Ru nanoclusters into N-doped graphene for efficient alkaline hydrogen evolution. <b>2021</b> , 183, 362-367	3
643	Epitaxially grown copper phosphide (Cu <sub>3</sub> P) nanosheets nanoarchitecture compared with film morphology for energy applications. <b>2021</b> , 26, 101369	1
642	A novel worm-like micelles@MOFs precursor for constructing hierarchically porous CoP/N-doped carbon networks towards efficient hydrogen evolution reaction. <b>2021</b> , 600, 872-881	4

641	Rational design of core-shell-structured CoPx@FeOOH for efficient seawater electrolysis. <b>2021</b> , 294, 120256	33
640	Recent progress in CoP-based materials for electrochemical water splitting. <b>2021</b> , 46, 34194-34215	9
639	Heterostructured CoO/Co <sub>3</sub> O <sub>4</sub> nanowire array on Titanium mesh as efficient electrocatalysts for hydrogen evolution reaction. <b>2021</b> , 881, 160603	10
638	Hollow and substrate-supported Prussian blue, its analogs, and their derivatives for green water splitting. <b>2021</b> , 42, 1843-1864	4
637	Atomically dispersed Ni <sup>II</sup> species and Ni nanoparticles constructing N-doped porous carbon fibers for accelerating hydrogen evolution. <b>2021</b> , 185, 96-104	3
636	Facile synthesis of hierarchical NiCoP nanosheets/NiCoP nanocubes homojunction electrocatalyst for highly efficient and stable hydrogen evolution reaction. <b>2021</b> , 565, 150537	4
635	Ion modification of transition cobalt oxide by soaking strategy for enhanced water splitting. <b>2021</b> , 423, 130218	7
634	Strategies on improving the electrocatalytic hydrogen evolution performances of metal phosphides. <b>2021</b> , 42, 1876-1902	8
633	Understanding the activity transport nexus in water and CO <sub>2</sub> electrolysis: State of the art, challenges and perspectives. <b>2021</b> , 424, 130501	6
632	Advanced catalyst for hydrogen evolution reaction by dealloying Al-based nanocrystalline alloys. <b>2021</b> , 880, 160548	5
631	Various metal (Fe, Mo, V, Co)-doped Ni <sub>2</sub> P nanowire arrays as overall water splitting electrocatalysts and their applications in unassisted solar hydrogen production with STH 14 %. <b>2021</b> , 297, 120434	12
630	Fe, P, N- and FeP, N-doped carbon hollow nanospheres: A comparison study toward oxygen reduction reaction electrocatalysts. <b>2021</b> , 602, 376-383	6
629	Cobalt doped iron phosphate thin film: An effective catalyst for electrochemical water splitting. <b>2021</b> , 885, 160914	7
628	P, N-codoped carbon nanofibers confined ultra-small bimetallic NiCoP for highly efficient overall water splitting. <b>2021</b> , 570, 151247	1
627	Improved performance of CNT-Pd modified Cu <sub>2</sub> O supported on Nickel foam for hydrogen evolution reaction in basic media. <b>2021</b> , 343, 117612	1
626	Temperature-responsive polymer-tethered Zr-porphyrin MOFs encapsulated carbon dot nanohybrids with boosted visible-light photodegradation for organic contaminants in water. <b>2021</b> , 426, 131794	9
625	Multifunctional electrocatalysts of nickel boride nanoparticles for superior hydrogen oxidation and water splitting. <b>2021</b> , 22, 100846	12
624	Impacts of boron doping on the atomic structure, stability, and photocatalytic activity of Cu <sub>3</sub> P nanocrystals. <b>2021</b> , 298, 120515	3

623	Recent advances in engineering cobalt carbonate hydroxide for enhanced alkaline water splitting. <b>2021</b> , 887, 161405	4
622	Preparation and application of 0D-2D nanomaterial hybrid heterostructures for energy applications. <b>2021</b> , 12, 100169	5
621	Nanostructured NaFeS <sub>2</sub> as a cost-effective and robust electrocatalyst for hydrogen and oxygen evolution with reduced overpotentials. <b>2021</b> , 426, 131315	5
620	Self-optimizing iron phosphorus oxide for stable hydrogen evolution at high current. <b>2021</b> , 298, 120559	2
619	The preparation of ionic liquid based iron phosphate/CNTs composite via microwave radiation for hydrogen evolution reaction and oxygen evolution reaction. <b>2021</b> , 14, 103440	2
618	Tailoring surface and interface electronic structure of NiFe LDH via V doping for enhanced oxygen evolution reaction. <b>2021</b> , 885, 160929	8
617	Multifunctional electrocatalyst of NiCo-NiCoP nanoparticles embedded into P-doped carbon nanotubes for Energy-Saving hydrogen production and upgraded conversion of formaldehyde. <b>2021</b> , 426, 129214	4
616	Iron, rhodium-codoped NiP nanosheets arrays supported on nickel foam as an efficient bifunctional electrocatalyst for overall water splitting. <b>2022</b> , 605, 888-896	41
615	One-step controllable fabrication of 3D structured self-standing Al <sub>3</sub> Ni <sub>2</sub> /Ni electrode through molten salt electrolysis for efficient water splitting. <b>2022</b> , 427, 131743	1
614	Nickel-cobalt derived nanowires/nanosheets as electrocatalyst for efficient H <sub>2</sub> generation via urea oxidation reaction. <b>2022</b> , 891, 161790	2
613	Growth of MoS <sub>2</sub> nanosheets on M@N-doped carbon particles (M=Co, Fe or CoFe Alloy) as an efficient electrocatalyst toward hydrogen evolution reaction. <b>2022</b> , 428, 132126	17
612	Advanced hydrogen evolution electrocatalysis enabled by ruthenium phosphide with tailored hydrogen binding strength via interfacial electronic interaction. <b>2022</b> , 429, 132557	3
611	N, P-doped carbon supported ruthenium doped Rhenium phosphide with porous nanostructure for hydrogen evolution reaction using sustainable energies. <b>2022</b> , 606, 1874-1881	6
610	One-step synthesis of heterostructured cobalt-iron selenide as bifunctional catalyst for overall water splitting. <b>2022</b> , 275, 125201	2
609	CoP-decorated N,P-doped necklace-like carbon for highly efficient oxygen reduction and Al-air batteries. <b>2022</b> , 428, 131326	1
608	Hole-rich CoP nanosheets with an optimized d-band center for enhancing pH-universal hydrogen evolution electrocatalysis. <b>2021</b> , 9, 8561-8567	26
607	Ultralow loading of ruthenium nanoparticles on nitrogen-doped porous carbon enables ultrahigh mass activity for the hydrogen evolution reaction in alkaline media. <b>2021</b> , 11, 3182-3188	4
606	NiCo LDH in situ derived NiCoP 3D nanoflowers coupled with a CuP p-n heterojunction for efficient hydrogen evolution. <b>2021</b> , 13, 13858-13872	8

605	Versatile construction of a hierarchical porous electrode and its application in electrochemical hydrogen production: a mini review. <b>2021</b> , 2, 1177-1189	4
604	Polytype wurtzite-nH ZnS (n = 2 and 8): facile synthesis and photocatalytic hydrogen production under sacrificial reagents. <b>2021</b> , 45, 13119-13126	0
603	Oxygen-evolution reactions (OER) on transition-metal-doped Fe <sub>3</sub> Co(PO <sub>4</sub> ) <sub>4</sub> iron-phosphate surfaces: a first-principles study. <b>2021</b> , 11, 4619-4626	1
602	Fabrication of 2D/2D COF/SnNb <sub>2</sub> O <sub>6</sub> nanosheets and their enhanced solar hydrogen production. <b>2021</b> , 8, 1686-1694	3
601	Rational catalyst design for oxygen evolution under acidic conditions: strategies toward enhanced electrocatalytic performance. <b>2021</b> , 9, 5890-5914	17
600	Electrochemical energy storage devices working in extreme conditions. <b>2021</b> , 14, 3323-3351	51
599	Synthesis of palygorskite supported spherical ZnS nanocomposites with enhanced photocatalytic activity. <b>2021</b> , 23, 4229-4236	2
598	Spray-dried assembly of 3D N,P-Co-doped graphene microspheres embedded with core-shell CoP/MoP@C nanoparticles for enhanced lithium-ion storage. <b>2021</b> , 50, 4555-4566	6
597	Nanoscale electrocatalyst design for alkaline hydrogen evolution reaction through activity descriptor identification. <b>2021</b> , 5, 4042-4058	1
596	Understanding Selectivity in CO <sub>2</sub> Hydrogenation to Methanol for MoP Nanoparticle Catalysts Using In Situ Techniques. <b>2021</b> , 11, 143	5
595	Metal oxide-based electrocatalysts for low-temperature electrochemical production and oxidation of hydrogen (HER and HOR). <b>2021</b> , 9-35	
594	A Co-MOF-derived CoS@NS-C electrocatalyst for efficient hydrogen evolution reaction.. <b>2021</b> , 11, 5947-5957	3
593	Fabrication of a porous NiFeP/Ni electrode for highly efficient hydrazine oxidation boosted H <sub>2</sub> evolution. <b>2021</b> , 3, 2280-2286	6
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587	Recent progress in pristine MOF-based catalysts for electrochemical hydrogen evolution, oxygen evolution and oxygen reduction. <b>2021</b> , 50, 5732-5753	14
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540	Nickel Iron Phosphide/Phosphate as an Oxygen Bifunctional Electrocatalyst for High-Power-Density Rechargeable Zn-Air Batteries. <b>2021</b> ,	2
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532	Hybridization of Mn/Ta bimetallic oxide and mesh-like porous bio-carbon for boosting copper reduction for D35/Y123-sensitized solar cells and hydrogen evolution. <b>2022</b> , 893, 162349	2
531	N-doped CNT as electron transport promoter by bridging CoP and carbon cloth toward enhanced alkaline hydrogen evolution. <b>2022</b> , 430, 132824	10
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516	Modification of NiCo-S with Phytate for Enhanced Electrocatalytic Hydrogen Evolution Activity.	0

515	In Situ/Operando Insights into the Stability and Degradation Mechanisms of Heterogeneous Electrocatalysts. <b>2021</b> , e2104205	2
514	Why Shouldn't Double-Layer Capacitance (Cdl) Be Always Trusted to Justify Faradaic Electrocatalytic Activity Differences?. <b>2021</b> , 115842	8
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511	Electrospun nano-Ir anchored mesoporous carbon nanofibers for hydrogen evolution reaction. <b>2022</b> , 554, 111403	0
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505	Engineering In-Plane Nickel Phosphide Heterointerfaces with Interfacial sp <sup>2</sup> H <sub>2</sub> P Hybridization for Highly Efficient and Durable Hydrogen Evolution at 2 A cm. <b>2021</b> , e2105642	9
504	Noble Metal (Pt, Rh, Pd, Ir) Doped Ru/CNT Ultra-Small Alloy for Acidic Hydrogen Evolution at High Current Density. <b>2021</b> , e2104559	3
503	Electrocatalytic Hydrogen Evolution Reaction Promoted by Co/N/C Catalysts with Co <sub>9</sub> N <sub>13</sub> Active Sites Derived from Precursors Forming N-doped Graphene Nanoribbons.	0
502	Triangle nanowall arrays of ultrathin MoS <sub>2</sub> nanosheets vertically grown on Co-Fe bimetallic disulfide as highly efficient electrocatalysts for hydrogen evolution reaction. <b>2021</b> , 403, 139683	0
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487	Experimental and Theoretical Insights into Transition-Metal (Mo, Fe) Codoping in a Bifunctional Nickel Phosphide Microsphere Catalyst for Enhanced Overall Water Splitting.	8
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483	Carbon Nanotube for Water Splitting and Fuel Cell. <b>2021</b> , 1-29	
482	2D Bismuth nanosheet arrays as efficient alkaline hydrogen evolution electrocatalysts. <b>2021</b> , 45, 22758-22766	2
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476	Restructuring electronic structure via W doped 1T MoS <sub>2</sub> for enhancing hydrogen evolution reaction. <b>2022</b> , 579, 152216	3
475	Synergetic design of N-doped defect-enriched porous carbon matrix with Co-Co <sub>0.85</sub> Se loading for water splitting. <b>2022</b> , 637, 128243	0
474	Amorphous MoS <sub>x</sub> electro-synthesized in alkaline electrolyte for superior hydrogen evolution. <b>2022</b> , 900, 163509	0
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468	Insights on the Corrosion and Degradation of MXenes as Electrocatalysts for Hydrogen Evolution Reaction.	0
467	Research progress on catalysts for hydrogen generation through sodium borohydride alcoholysis. <b>2022</b> , 47, 5929-5946	1
466	Nickel Quantum Dots Anchored in Biomass-Derived Nitrogen-Doped Carbon as Bifunctional Electrocatalysts for Overall Water Splitting. 2102014	2
465	Phosphides and nitrides for visible light photocatalysis. <b>2022</b> , 197-250	
464	Fabrication of Coral-Shaped MoS <sub>2</sub> @Ni(Mn)VO <sub>x</sub> Electrocatalyst for Efficient Alkaline Hydrogen Evolution. 2101007	0
463	Multicomponent transition metal phosphide for oxygen evolution. <b>2022</b> , 29, 503-512	3
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461	Worrisome Exaggeration of Activity of Electrocatalysts Destined for Steady-State Water Electrolysis by Polarization Curves from Transient Techniques. <b>2022</b> , 169, 014508	6
460	Tunable Ru-Ru 2 P heterostructures with charge redistribution for efficient pH-universal hydrogen evolution.	7
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446	Microwave One-pot Synthesis of CNTs-Supported Amorphous Ni-P Alloy Nanoparticles with Enhanced Hydrogenation Performance.	0
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427	Superior Performances of Electroless-Deposited NiP Films Decorated with an Ultralow Content of Pt for Water-Splitting Reactions.	1
426	Self-Supported Transition Metal-Based Nanoarrays for Efficient Energy Storage.. <b>2022</b> , e202100294	1

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