Recent advances in heterogeneous electrocatalysts for the hydrogen evolution reaction

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#	Paper	IF	Citations
944	Rational Design of Efficient Electrocatalysts for Hydrogen Evolution Reaction: Single Layers of WS2 Nanoplates Anchored to Hollow Nitrogen-Doped Carbon Nanofibers. **2015**, 7, 28116-21		82
943	Design and Synthesis of Highly Active AlNiP Foam Electrode for Hydrogen Evolution Reaction. **2015**, 5, 6503-6508		84
942	Electrochemical Synthesis of Photoelectrodes and Catalysts for Use in Solar Water Splitting. **2015**, 115, 12839-87		403
941	Recent advances in transition-metal dichalcogenide based nanomaterials for water splitting. **2015**, 7, 19764-88		263
940	Ultrathin PdTe nanowires anchoring reduced graphene oxide cathodes for efficient hydrogen evolution reaction. **2015**, 7, 18441-5		37
939	Microwave-Assisted Reactant-Protecting Strategy toward Efficient MoS2 Electrocatalysts in Hydrogen Evolution Reaction. **2015**, 7, 23741-9		88
938	Beneficial effect of Re doping on the electrochemical HER activity of MoS2 fullerenes. **2015**, 44, 16399-404		58
937	High-Performance Electrocatalysis for Hydrogen Evolution Reaction Using Se-Doped Pyrite-Phase Nickel Diphosphide Nanostructures. **2015**, 5, 6355-6361		217
936	The Artificial Leaf: Recent Progress and Remaining Challenges. **2016**, 20,		2
935	Influence of Carbon on Molybdenum Carbide Catalysts for the Hydrogen Evolution Reaction. **2016**, 8, 1961-1967		27
934	Hierarchical NiCo2 O4 Hollow Microcuboids as Bifunctional Electrocatalysts for Overall Water-Splitting. **2016**, 55, 6290-4		592
933	Cobalt-Doping in Molybdenum-Carbide Nanowires Toward Efficient Electrocatalytic Hydrogen Evolution. **2016**, 26, 5590-5598		311
932	Chalcogenide and Phosphide Solid-State Electrocatalysts for Hydrogen Generation. **2016**, 81, 1045-1055		53
931	Ni0.85Se as an efficient non-noble bifunctional electrocatalyst for full water splitting. **2016**, 41, 10688-10694		66
930	The activity of PAni-Chitosan composite film decorated with Pt nanoparticles for electrocatalytic hydrogen generation. **2016**, 41, 10522-10529		18
929	Robust and stable ruthenium alloy electrocatalysts for hydrogen evolution by seawater splitting. **2016**, 208, 180-187		53
928	Electrocatalysis on metal carbide materials. **2016**, 41, 19664-19673		30

927	An efficient WSe2/Co0.85Se/graphene hybrid catalyst for electrochemical hydrogen evolution reaction. **2016**, 6, 51725-51731		46
926	Active and Durable Hydrogen Evolution Reaction Catalyst Derived from Pd-Doped Metal-Organic Frameworks. **2016**, 8, 13378-83		82
925	Photoelectrochemical study of p-GaP(100)|ZnO|AuNP devices: strategies for enhanced electron transfer and aqueous catalysis. **2016**, 52, 9145-8		4
924	A p-Si/NiCoSex core/shell nanopillar array photocathode for enhanced photoelectrochemical hydrogen production. **2016**, 9, 3113-3119		142
923	A cobalt-based hybrid electrocatalyst derived from a carbon nanotube inserted metal–organic framework for efficient water-splitting. *Journal of Materials Chemistry A*, **2016**, 4, 16057-16063	13	116
922	Graphene sheets wrapped carbon nanofibers as a highly conductive three-dimensional framework for perpendicularly anchoring of MoS 2 : Advanced electrocatalysts for hydrogen evolution reaction. **2016**, 219, 604-613		37
921	Nanostructured Bifunctional Redox Electrocatalysts. **2016**, 12, 5656-5675		134
920	Electrospun carbon nanofiber@CoS2 core/sheath hybrid as an efficient all-pH hydrogen evolution electrocatalyst. **2016**, 3, 1280-1288		32
919	Concave octahedral Pd@PdPt electrocatalysts integrating core–shell, alloy and concave structures for high-efficiency oxygen reduction and hydrogen evolution reactions. *Journal of Materials Chemistry A*, **2016**, 4, 16690-16697	13	56
918	Towards a Bioinspired-Systems Approach for Solar Fuel Devices. **2016**, 81, 1024-1027		17
917	Recent developments of carbon-based electrocatalysts for hydrogen evolution reaction. **2016**, 28, 29-43		473
916	A RhNiP/rGO hybrid for efficient catalytic hydrogen generation from an alkaline solution of hydrazine. *Journal of Materials Chemistry A*, **2016**, 4, 14572-14576	13	31
915	Electrocatalysis of Electrochemical Hydrogen Evolution from Water in Acid Media Using N-Containing Conjugated Polymers. **2016**, 52, 163-169		4
914	CoSe2 nanoparticles embedded defective carbon nanotubes derived from MOFs as efficient electrocatalyst for hydrogen evolution reaction. **2016**, 28, 143-150		215
913	Aluminum Titania Nanoparticle Composites as Nonprecious Catalysts for Efficient Electrochemical Generation of H2. **2016**, 8, 23655-67		20
912	MoC Nanoparticles Dispersed on Hierarchical Carbon Microflowers for Efficient Electrocatalytic Hydrogen Evolution. **2016**, 10, 11337-11343		388
911	Facile synthesis of CoNi2S4 and CuCo2S4 with different morphologies as prominent catalysts for hydrogen evolution reaction. **2016**, 41, 19847-19854		57
910	Integrated Photoelectrochemical Solar Energy Conversion and Organic Redox Flow Battery Devices. **2016**, 128, 13298-13302		7

909	Integrated Photoelectrochemical Solar Energy Conversion and Organic Redox Flow Battery Devices. **2016**, 55, 13104-13108		80
908	Electrochemical Preparation of Ni-Mo Coated Coral-Like Cu Micro-Arrays for Electrocatalytic Hydrogen Evolution Reaction in Acidic Solution. **2016**, 163, H1026-H1032		5
907	Valence and oxide impurities in MoS and WS dramatically change their electrocatalytic activity towards proton reduction. **2016**, 8, 16752-16760		37
906	Synthesis of 1T-MoSe2 ultrathin nanosheets with an expanded interlayer spacing of 1.17 nm for efficient hydrogen evolution reaction. *Journal of Materials Chemistry A*, **2016**, 4, 14949-14953	13	138
905	Three-dimensional carbon foam/N-doped graphene@MoS2 hybrid nanostructures as effective electrocatalysts for the hydrogen evolution reaction. *Journal of Materials Chemistry A*, **2016**, 4, 12720-12725	13	75
904	Alternate to Molybdenum Disulfide: A 2D, Few-Layer Transition-Metal Thiophosphate and Its Hydrogen Evolution Reaction Activity over a Wide pH Range. **2016**, 3, 1392-1399		35
903	Mo Doping Induced More Active Sites in Urchin-Like W18O49 Nanostructure with Remarkably Enhanced Performance for Hydrogen Evolution Reaction. **2016**, 26, 5778-5786		129
902	Composition and Interface Engineering of Alloyed MoS2 x Se2(1- x) Nanotubes for Enhanced Hydrogen Evolution Reaction Activity. **2016**, 12, 4379-85		52
901	Nanostructured cobalt-modified molybdenum carbides electrocatalysts for hydrogen evolution reaction. **2016**, 41, 22899-22912		35
900	Efficient Electrocatalytic and Photoelectrochemical Hydrogen Generation Using MoS2 and Related Compounds. **2016**, 1, 699-726		358
899	Metal-Rich Transition Metal Diborides as Electrocatalysts for Hydrogen Evolution Reactions in a Wide Range of pH. **2016**, 163, H1069-H1075		19
898	CuCo Hybrid Oxides as Bifunctional Electrocatalyst for Efficient Water Splitting. **2016**, 26, 8555-8561		197
897	Efficient Photoelectrochemical Hydrogen Evolution on Silicon Photocathodes Interfaced with Nanostructured NiP Cocatalyst Films. **2016**, 8, 31025-31031		37
896	A highly active molybdenum multisulfide electrocatalyst for the hydrogen evolution reaction. **2016**, 6, 107158-107162		11
895	Enhanced electrocatalytic hydrogen evolution in graphene via defect engineering and heteroatoms co-doping. **2016**, 219, 781-789		27
894	Ultrasmall and phase-pure WC nanoparticles for efficient electrocatalytic and photoelectrochemical hydrogen evolution. **2016**, 7, 13216		265
893	Controllable orientation-dependent crystal growth of high-index faceted dendritic NiC0.2 nanosheets as high-performance bifunctional electrocatalysts for overall water splitting. *Journal of Materials Chemistry A*, **2016**, 4, 18499-18508	13	43
892	Metallic Cobalt Nanoparticles Encapsulated in Nitrogen-Enriched Graphene Shells: Its Bifunctional Electrocatalysis and Application in Zinc–Air Batteries. **2016**, 26, 4397-4404		298

891	Hierarchical NiCo2O4 Hollow Microcuboids as Bifunctional Electrocatalysts for Overall Water-Splitting. **2016**, 128, 6398-6402		112
890	Neuron-Inspired Interpenetrative Network Composed of Cobalt-Phosphorus-Derived Nanoparticles Embedded within Porous Carbon Nanotubes for Efficient Hydrogen Production. **2016**, 8, 17284-91		10
889	Nanostructured catalysts for electrochemical water splitting: current state and prospects. *Journal of Materials Chemistry A*, **2016**, 4, 11973-12000	13	590
888	Universal Strategy to Fabricate a Two-Dimensional Layered Mesoporous Mo2C Electrocatalyst Hybridized on Graphene Sheets with High Activity and Durability for Hydrogen Generation. **2016**, 8, 18107-18		61
887	Cathodic activation of titanium-supported gold nanoparticles: An efficient and stable electrocatalyst for the hydrogen evolution reaction. **2016**, 41, 6326-6341		29
886	Hierarchical nanoparticle-induced superhydrophilic and under-water superoleophobic Cu foam with ultrahigh water permeability for effective oil/water separation. *Journal of Materials Chemistry A*, **2016**, 4, 10566-10574	13	54
885	Fabrication of Cu(OH)2@NiFe-layered double hydroxide catalyst array for electrochemical water splitting. **2016**, 41, 14553-14561		47
884	MoxW1−x(SySe1−y)2 Alloy Nanoflakes for High-Performance Electrocatalytic Hydrogen Evolution. **2016**, 33, 576-582		23
883	Molybdenum disulfide quantum dots: synthesis and applications. **2016**, 6, 65670-65682		63
882	Cobalt-Doped FeSe2-RGO as Highly Active and Stable Electrocatalysts for Hydrogen Evolution Reactions. **2016**, 8, 18036-42		73
881	Ternary Platinum-Copper-Nickel Nanoparticles Anchored to Hierarchical Carbon Supports as Free-Standing Hydrogen Evolution Electrodes. **2016**, 8, 3464-72		67
880	Decoration of the inert basal plane of defect-rich MoS2 with Pd atoms for achieving Pt-similar HER activity. *Journal of Materials Chemistry A*, **2016**, 4, 4025-4031	13	97
879	Facet-controlled hollow Rh2S3 hexagonal nanoprisms as highly active and structurally robust catalysts toward hydrogen evolution reaction. **2016**, 9, 850-856		91
878	CoNiB nanocatalyst for efficient hydrogen evolution reaction in wide pH range. **2016**, 192, 126-133		175
877	A facile approach to fabricate free-standing hydrogen evolution electrodes: riveting tungsten carbide nanocrystals to graphite felt fabrics by carbon nanosheets. *Journal of Materials Chemistry A*, **2016**, 4, 5817-5822	13	34
876	Heteronanowires of MoC-MoC as efficient electrocatalysts for hydrogen evolution reaction. **2016**, 7, 3399-3405		412
875	Defect-Rich Metallic Titania (TiO1.23)An Efficient Hydrogen Evolution Catalyst for Electrochemical Water Splitting. **2016**, 6, 2222-2229		67
874	Beaded stream-like CoSe2 nanoneedle array for efficient hydrogen evolution electrocatalysis. *Journal of Materials Chemistry A*, **2016**, 4, 4553-4561	13	76

873	Colloidally-synthesized cobalt molybdenum nanoparticles as active and stable electrocatalysts for the hydrogen evolution reaction under alkaline conditions. *Journal of Materials Chemistry A*, **2016**, 4, 3077-3081	13	34
872	Enhanced Activity for Hydrogen Evolution Reaction over CoFe Catalysts by Alloying with Small Amount of Pt. **2017**, 9, 3596-3601		96
871	Facile Synthesis of Vanadium-Doped NiS Nanowire Arrays as Active Electrocatalyst for Hydrogen Evolution Reaction. **2017**, 9, 5959-5967		138
870	Electrochemical cycling and beyond: unrevealed activation of MoO for electrochemical hydrogen evolution reactions. **2017**, 53, 2245-2248		32
869	Multimetallic NiMo/Cu nanowires as nonprecious and efficient full water splitting catalyst. *Journal of Materials Chemistry A*, **2017**, 5, 4207-4214	13	60
868	Gas-solid phase growth of hierarchical nanoporous nanoplates for water splitting in acidic conditions. **2017**, 701, 122-126		2
867	Facile preparation of carbon sphere supported molybdenum compounds (P, C and S) as hydrogen evolution electrocatalysts in acid and alkaline electrolytes. **2017**, 32, 511-519		119
866	Earth-abundant catalysts for electrochemical and photoelectrochemical water splitting. **2017**, 1,		1885
865	Electrocatalysis for the oxygen evolution reaction: recent development and future perspectives. **2017**, 46, 337-365		3041
864	High-efficiency electrochemical hydrogen evolution based on the intermetallic Pt2Si compound prepared by magnetron-sputtering. **2017**, 7, 1553-1560		27
863	Emerging nanostructured electrode materials for water electrolysis and rechargeable beyond Li-ion batteries. **2017**, 2, 211-253		22
862	Efficient and Stable Silicon Photocathodes Coated with Vertically Standing Nano-MoS Films for Solar Hydrogen Production. **2017**, 9, 6123-6129		75
861	Self-assembly- and Preshaping-assisted Synthesis of Molybdenum Carbide Supported on Ultrathin Nitrogen-doped Graphitic Carbon Lamellas for the Hydrogen Evolution Reaction. **2017**, 9, 1588-1593		27
860	Cobalt-Doped Iron Sulfide as an Electrocatalyst for Hydrogen Evolution. **2017**, 164, F276-F282		42
859	MoS2Ni3S2 Heteronanorods as Efficient and Stable Bifunctional Electrocatalysts for Overall Water Splitting. **2017**, 7, 2357-2366		705
858	A molecule-like PtAu(SCH) nanocluster as an electrocatalyst for hydrogen production. **2017**, 8, 14723		196
857	Co-Mo-B Nanoparticles as a non-precious and efficient Bifunctional Electrocatalyst for Hydrogen and Oxygen Evolution. **2017**, 232, 64-71		79
856	Highly efficient hydrogen evolution from seawater by a low-cost and stable CoMoP@C electrocatalyst superior to Pt/C. **2017**, 10, 788-798		450

855	MoSe Embedded CNT-Reduced Graphene Oxide Composite Microsphere with Superior Sodium Ion Storage and Electrocatalytic Hydrogen Evolution Performances. **2017**, 9, 10673-10683		129
854	An efficient and pH-universal ruthenium-based catalyst for the hydrogen evolution reaction. **2017**, 12, 441-446		857
853	Boron-Dependency of Molybdenum Boride Electrocatalysts for the Hydrogen Evolution Reaction. **2017**, 129, 5667-5670		45
852	Boron-Dependency of Molybdenum Boride Electrocatalysts for the Hydrogen Evolution Reaction. **2017**, 56, 5575-5578		199
851	Graphene Decorated with Uniform Ultrathin (CoP) -(FeP) Nanorods: A Robust Non-Noble-Metal Catalyst for Hydrogen Evolution. **2017**, 13, 1700092		30
850	Well-defined CoxCeO2+x□MoS2 nanotube hybrids as novel electrocatalysts for promising hydrogen evolution reaction. *Journal of Materials Chemistry A*, **2017**, 5, 9523-9527	13	14
849	Niobium coating applied by HVOF as protection against hydrogen embrittlement of API 5CT P110 steel. **2017**, 322, 10-18		18
848	Materials Chemistry of Iron Phosphosulfide Nanoparticles: Synthesis, Solid State Chemistry, Surface Structure, and Electrocatalysis for the Hydrogen Evolution Reaction. **2017**, 7, 4026-4032		73
847	Recent advances in metal□itrogen□arbon catalysts for electrochemical water splitting. **2017**, 1, 2155-2173		92
846	Facile synthesis of ultrafine Ru nanocrystal supported N-doped graphene as an exceptional hydrogen evolution electrocatalyst in both alkaline and acidic media. **2017**, 1, 1028-1033		39
845	Molybdenum Carbide-Based Electrocatalysts for Hydrogen Evolution Reaction. **2017**, 23, 10947-10961		211
844	Formation of Uniform FeP Hollow Microspheres Assembled by Nanosheets for Efficient Hydrogen Evolution Reaction. **2017**, 4, 2052-2058		24
843	3D-hierarchical MoSe 2 nanoarchitecture as a highly efficient electrocatalyst for hydrogen evolution. **2017**, 4, 025092		67
842	Strongly coupled MoS2 nanoflake□arbon nanotube nanocomposite as an excellent electrocatalyst for hydrogen evolution reaction. *Journal of Materials Chemistry A*, **2017**, 5, 1558-1566	13	90
841	Self-Supported Biocarbon-Fiber Electrode Decorated with Molybdenum Carbide Nanoparticles for Highly Active Hydrogen-Evolution Reaction. **2017**, 9, 22604-22611		28
840	A Copper Complex as Catalyst in Proton Reduction. **2017**, 2017, 3376-3382		11
839	Single-Step Electrodeposited Molybdenum Incorporated Nickel Sulfide Thin Films from Low-Cost Precursors as Highly Efficient Hydrogen Evolution Electrocatalysts in Acid Medium. **2017**, 121, 11108-11116		28
838	Colloidal synthesis of iridium-iron nanoparticles for electrocatalytic oxygen evolution. **2017**, 1, 1199-1203		12

837	Earth-abundant amorphous catalysts for electrolysis of water. **2017**, 38, 991-1005		37
836	Electronic and Morphological Dual Modulation of Cobalt Carbonate Hydroxides by Mn Doping toward Highly Efficient and Stable Bifunctional Electrocatalysts for Overall Water Splitting. **2017**, 139, 8320-8328		546
835	A 2D free-standing film-inspired electrocatalyst for highly efficient hydrogen production. *Journal of Materials Chemistry A*, **2017**, 5, 12027-12033	13	23
834	Rational Design and Synthesis of Extremely Efficient Macroporous CoSe -CNT Composite Microspheres for Hydrogen Evolution Reaction. **2017**, 13, 1700068		95
833	Efficient H2 Evolution Coupled with Oxidative Refining of Alcohols via A Hierarchically Porous Nickel Bifunctional Electrocatalyst. **2017**, 7, 4564-4570		167
832	Bottom-up synthesis of fully sp2 hybridized three-dimensional microporous graphitic frameworks as metal-free catalysts. *Journal of Materials Chemistry A*, **2017**, 5, 12080-12085	13	33
831	Tuning the catalytic functionality of transition metal dichalcogenides grown by chemical vapour deposition. *Journal of Materials Chemistry A*, **2017**, 5, 14950-14968	13	31
830	Hierarchical Co9S8 hollow microspheres as multifunctional electrocatalysts for oxygen reduction, oxygen evolution and hydrogen evolution reactions. **2017**, 246, 380-390		55
829	Nickel phosphide nanoparticles decorated nitrogen and phosphorus co-doped porous carbon as efficient hybrid catalyst for hydrogen evolution. **2017**, 422, 828-837		31
828	Interlayer Nanoarchitectonics of Two-Dimensional Transition-Metal Dichalcogenides Nanosheets for Energy Storage and Conversion Applications. **2017**, 7, 1700571		209
827	Synthesis of Nickel Phosphide Electrocatalysts from Hybrid Metal Phosphonates. **2017**, 9, 14013-14022		44
826	Insight into the hydrogen evolution reaction of nickel dichalcogenide nanosheets: activities related to non-metal ligands. **2017**, 9, 5538-5544		71
825	Enhanced hydrogen evolution reaction on hybrids of cobalt phosphide and molybdenum phosphide. **2017**, 4, 161016		13
824	Phase-controlled synthesis of polymorphic tungsten diphosphide with hybridization of monoclinic and orthorhombic phases as a novel electrocatalyst for efficient hydrogen evolution. **2017**, 349, 138-143		24
823	Seawater splitting for high-efficiency hydrogen evolution by alloyed PtNi x electrocatalysts. **2017**, 413, 360-365		33
822	Layered Metal Thiophosphite Materials: Magnetic, Electrochemical, and Electronic Properties. **2017** , 9, 12563-12573		126
821	Electrospinning Hetero-Nanofibers of Fe C-Mo C/Nitrogen-Doped-Carbon as Efficient Electrocatalysts for Hydrogen Evolution. **2017**, 10, 2597-2604		82
820	Cu2+1O/graphene nanosheets supported on three dimensional copper foam for sensitive and efficient non-enzymatic detection of glucose. **2017**, 7, 19312-19317		15

819	Nitrogen-doped truncated carbon nanotubes inserted into nitrogen-doped graphene nanosheets with a sandwich structure: a highly efficient metal-free catalyst for the HER. *Journal of Materials Chemistry A*, **2017**, 5, 6405-6410	13	28
818	Weyl Semimetals as Hydrogen Evolution Catalysts. **2017**, 29, 1606202		107
817	Platinum-nickel hydroxide nanocomposites for electrocatalytic reduction of water. **2017**, 31, 456-461		88
816	Highly active MoS/carbon electrocatalysts for the hydrogen evolution reaction - insight into the effect of the internal resistance and roughness factor on the Tafel slope. **2017**, 19, 1988-1998		80
815	In situ electrochemically generated composite-type CoOx/WOx in self-activated cobalt tungstate nanostructures: implication for highly enhanced electrocatalytic oxygen evolution. **2017**, 224, 551-560		39
814	Multifunctional Carbon-Based Metal-Free Electrocatalysts for Simultaneous Oxygen Reduction, Oxygen Evolution, and Hydrogen Evolution. **2017**, 29, 1604942		510
813	One-pot synthesis of holey MoS2 nanostructures as efficient electrocatalysts for hydrogen evolution. **2017**, 396, 1719-1725		15
812	Silver Leakage from Ag/AgCl Reference Electrodes as a Potential Cause of Interference in the Electrocatalytic Hydrogen Evolution Reaction. **2017**, 9, 472-478		21
811	PtPd alloy embedded in nitrogen-rich graphene nanopores: High-performance bifunctional electrocatalysts for hydrogen evolution and oxygen reduction. **2017**, 114, 740-748		73
810	Reduced graphene oxide assembled Pd-based nanoalloys for hydrogen evolution reaction. **2017**, 42, 3916-3925		45
809	Quaternary pyrite-structured nickel/cobalt phosphosulfide nanowires on carbon cloth as efficient and robust electrodes for water electrolysis. **2017**, 10, 814-825		57
808	1.82 wt.% Pt/N, P co-doped carbon overwhelms 20 wt.% Pt/C as a high-efficiency electrocatalyst for hydrogen evolution reaction. **2017**, 10, 238-246		73
807	The direct hydrothermal deposition of cobalt-doped MoS2 onto fluorine-doped SnO2 substrates for catalysis of the electrochemical hydrogen evolution reaction. *Journal of Materials Chemistry A*, **2017**, 5, 1472-1480	13	33
806	Electrocatalytic Activity and Stability Enhancement through Preferential Deposition of Phosphide on Carbide. **2017**, 9, 1054-1061		9
805	Towards Versatile and Sustainable Hydrogen Production through Electrocatalytic Water Splitting: Electrolyte Engineering. **2017**, 10, 1318-1336		104
804	Label-free electrochemical analysis of biomacromolecules. **2017**, 9, 434-450		29
803	Encased Copper Boosts the Electrocatalytic Activity of N-Doped Carbon Nanotubes for Hydrogen Evolution. **2017**, 9, 36857-36864		60
802	Recent advances in ternary two-dimensional materials: synthesis, properties and applications. *Journal of Materials Chemistry A*, **2017**, 5, 22855-22876	13	97

801	Significantly enhanced electrocatalytic properties of three-dimensional graphene foam via Ar plasma pretreatment and N, S co-doping. **2017**, 42, 27004-27012		24
800	Powerful synergy: efficient PtAuSi nanocomposites as state-of-the-art catalysts for electrochemical hydrogen evolution. *Journal of Materials Chemistry A*, **2017**, 5, 21903-21908	13	13
799	Hierarchically interconnected nitrogen-doped carbon nanosheets for an efficient hydrogen evolution reaction. **2017**, 9, 16342-16348		27
798	Two-dimensional and three-dimensional hybrid assemblies based on graphene oxide and other layered structures: A carbon science perspective. **2017**, 125, 437-453		20
797	Arrays of ZnSe/MoSe2 Nanotubes with Electronic Modulation as Efficient Electrocatalysts for Hydrogen Evolution Reaction. **2017**, 4, 1700948		30
796	Ternary Ni-Fe-V sulfides bundles on nickel foam as free-standing hydrogen evolution electrodes in alkaline medium. **2017**, 256, 241-251		15
795	Metallic Cobalt@Nitrogen-Doped Carbon Nanocomposites: Carbon-Shell Regulation toward Efficient Bi-Functional Electrocatalysis. **2017**, 9, 37721-37730		48
794	In situ cathode polarization measurement in alkaline anion exchange membrane water electrolyzer equipped with a PdNiFeCo/C-Ceria hydrogen evolution electrocatalyst. **2017**, 42, 26563-26574		7
793	Tunable active edge sites in PtSe2 films towards hydrogen evolution reaction. **2017**, 42, 26-33		77
792	Precious metal-free approach to hydrogen electrocatalysis for energy conversion: From mechanism understanding to catalyst design. **2017**, 42, 69-89		109
791	Pyridinium functionalized coordination containers as highly efficient electrocatalysts for sustainable oxygen evolution. *Journal of Materials Chemistry A*, **2017**, 5, 23559-23565	13	9
790	Salt-templated synthesis of defect-rich MoN nanosheets for boosted hydrogen evolution reaction. *Journal of Materials Chemistry A*, **2017**, 5, 24193-24198	13	110
789	High Electrocatalytic Response of a Mechanically Enhanced NbC Nanocomposite Electrode Toward Hydrogen Evolution Reaction. **2017**, 9, 30872-30879		25
788	MoS Nanosheets Supported on Hollow Carbon Spheres as Efficient Catalysts for Electrochemical Hydrogen Evolution Reaction. **2017**, 2, 5087-5094		28
787	Facile fabrication of CuO microcube@FeCo3O4 nanosheet array as a high-performance electrocatalyst for the oxygen evolution reaction. *Journal of Materials Chemistry A*, **2017**, 5, 21740-21749	13	29
786	Defective MoS2 electrocatalyst for highly efficient hydrogen evolution through a simple ball-milling method. **2017**, 60, 849-856		17
785	NiSe2/FeSe2 nanodendrites: a highly efficient electrocatalyst for oxygen evolution reaction. **2017**, 7, 4604-4608		42
784	CO Reduction: From the Electrochemical to Photochemical Approach. **2017**, 4, 1700194		408

783	New and Efficient Electrocatalyst for Hydrogen Production from Water Splitting: Inexpensive, Robust Metallic Glassy Ribbons Based on Iron and Cobalt. **2017**, 9, 31340-31344		42
782	Core–shell and alloy integrating PdAu bimetallic nanoplates on reduced graphene oxide for efficient and stable hydrogen evolution catalysts. **2017**, 7, 43373-43379		7
781	Hydrogen evolution reaction at PdNPs decorated 1:1 clay minerals and application to the electrocatalytic determination of p -nitrophenol. **2017**, 801, 49-56		19
780	Facile and one-step synthesis of a free-standing 3D MoS2–GO/Mo binder-free electrode for efficient hydrogen evolution reaction. *Journal of Materials Chemistry A*, **2017**, 5, 18081-18087	13	29
779	Size effects of cocatalysts in photoelectrochemical and photocatalytic water splitting. **2017**, 5, 158-163		22
778	Microbial-Phosphorus-Enabled Synthesis of Phosphide Nanocomposites for Efficient Electrocatalysts. **2017**, 139, 11248-11253		53
777	A Metal-Free Covalent Organic Polymer for Electrocatalytic Hydrogen Evolution. **2017**, 7, 6120-6127		120
776	Universal, In Situ Transformation of Bulky Compounds into Nanoscale Catalysts by High-Temperature Pulse. **2017**, 17, 5817-5822		23
775	Graphite oxide and molybdenum disulfide composite for hydrogen evolution reaction. **2017**, 685, 451-456		22
774	Hierarchical (Ni,Co)Se 2 /Carbon Hollow Rhombic Dodecahedra Derived from Metal-Organic Frameworks for Efficient Water-Splitting Electrocatalysis. **2017**, 250, 167-173		51
773	Enhancement of hydrogen evolution activities of low-cost transition metal electrocatalysts in near-neutral strongly buffered aerobic media. **2017**, 83, 6-10		17
772	Room Temperature Dissolution of Bulk Elemental Ni and Se for Solution Deposition of a NiSe HER Electrocatalyst. **2017**, 56, 10143-10146		16
771	Imaging Dynamic Collision and Oxidation of Single Silver Nanoparticles at the Electrode/Solution Interface. **2017**, 139, 12274-12282		69
770	CuO nanowire@Co 3 O 4 ultrathin nanosheet core-shell arrays: An effective catalyst for oxygen evolution reaction. **2017**, 250, 77-83		44
769	Graphene/graphene nanoribbon aerogels as tunable three-dimensional framework for efficient hydrogen evolution reaction. **2017**, 250, 91-98		35
768	Structural and electrochemical studies of tungsten carbide/carbon composites for hydrogen evolution. **2017**, 42, 29781-29790		23
767	Understanding the high-electrocatalytic performance of two-dimensional MoS2 nanosheets and their composite materials. *Journal of Materials Chemistry A*, **2017**, 5, 24540-24563	13	137
766	Synergistic Activity of Co and Fe in Amorphous Cox-Fe-B Catalyst for Efficient Oxygen Evolution Reaction. **2017**, 9, 40333-40343		104

765	Cu@C nanoporous composites containing little copper oxides derived from dimethyl imidazole modified MOF199 as electrocatalysts for hydrogen evolution reaction. **2017**, 425, 663-673		15
764	Co9S8 activated N/S co-doped carbon tubes in situ grown on carbon nanofibers for efficient oxygen reduction. **2017**, 7, 34763-34769		9
763	Arrays of ZnO/MoS2 nanocables and MoS2 nanotubes with phase engineering for bifunctional photoelectrochemical and electrochemical water splitting. **2017**, 328, 474-483		60
762	Ag□Ni core□shell nanowires with superior electrocatalytic activity for alkaline hydrogen evolution reaction. *Journal of Materials Chemistry A*, **2017**, 5, 16646-16652	13	23
761	Controlled Synthesis of Unique Porous FeSe2 Nanomesh Arrays towards Efficient Hydrogen Evolution Reaction. **2017**, 247, 435-442		21
760	Integrated design and construction of WP/W nanorod array electrodes toward efficient hydrogen evolution reaction. **2017**, 327, 705-712		64
759	Ternary Transitional Metal Chalcogenide Nanosheet with Significantly Enhanced Electrocatalytic Hydrogen-Evolution Activity. **2017**, 147, 215-220		11
758	Highly active non-precious metal electrocatalyst for the hydrogen evolution reaction based on nitrogen-doped graphene supported MoO2/WN/Mo2N. **2017**, 692, 614-621		29
757	ZrB2-HfB2 solid solutions as electrode materials for hydrogen reaction in acidic and basic solutions. **2017**, 188, 239-243		9
756	Electrodeposition of Ni/Ni(OH)2 Catalytic Films for the Hydrogen Evolution Reaction Produced by using Cyclic Voltammetry. **2017**, 4, 241-245		12
755	Plasma-etched, S-doped graphene for effective hydrogen evolution reaction. **2017**, 42, 4184-4192		41
754	Three-dimensional N-doped, plasma-etched graphene: Highly active metal-free catalyst for hydrogen evolution reaction. **2017**, 529, 127-133		55
753	Cobalt disulfide nano-pine-tree array as a platinum alternative electrocatalyst for hydrogen evolution reaction. **2017**, 189, 97-100		13
752	Effects of Growth Temperature on Electrocatalytic Properties of Three-dimensional Sulfur-doped Graphene Foam. **2017**, 275, 012003		
751	Recent advances in unveiling active sites in molybdenum sulfide-based electrocatalysts for the hydrogen evolution reaction. **2017**, 4, 19		38
750	Heterostructured quantum dot architectures for efficient and stable photoelectrochemical hydrogen production. *Journal of Materials Chemistry A*, **2018**, 6, 6822-6829	13	34
749	Carbon-neutral energy cycles using alcohols. **2018**, 19, 142-152		19
748	Precision and correctness in the evaluation of electrocatalytic water splitting: revisiting activity parameters with a critical assessment. **2018**, 11, 744-771		628

747	Photodeposited metal-semiconductor nanocomposites and their applications. **2018**, 4, 83-94	18
746	Recent development on carbon based heterostructures for their applications in energy and environment: A review. **2018**, 64, 16-59	109
745	Phosphorus-doped carbon nanoparticles supported palladium electrocatalyst for the hydrogen evolution reaction (HER) in PEM water electrolysis. **2018**, 24, 3113-3121	17
744	Nanoscale engineering MoP/Fe2P/RGO toward efficient electrocatalyst for hydrogen evolution reaction. **2018**, 43, 13939-13945	21
743	Ultrasmall Ir nanoparticles for efficient acidic electrochemical water splitting. **2018**, 5, 1121-1125	28
742	Precious Versus Non-precious Electrocatalyst Centers. **2018**, 101-168	
741	Enhanced electrocatalytic performance for the hydrogen evolution reaction through surface enrichment of platinum nanoclusters alloying with ruthenium in situ embedded in carbon. **2018**, 11, 1232-1239	169
740	The Green ChemisTREE: 20 years after taking root with the 12 principles. **2018**, 20, 1929-1961	313
739	Single-Step Hydrothermal Synthesis of N, S-Dual-Doped Graphene Networks as Metal-Free Efficient Electrocatalysts for Oxygen Reduction Reaction. **2018**, 3, 3241-3250	9
738	Hydrogen Evolution Reaction at Anion Vacancy of Two-Dimensional Transition-Metal Dichalcogenides: Ab Initio Computational Screening. **2018**, 9, 2049-2055	62
737	Co oxide nanostructures for electrocatalytic water-oxidation: effects of dimensionality and related properties. **2018**, 10, 8806-8819	47
736	n-Type Cu2O/Fe2O3 Heterojunctions by Electrochemical Deposition: Tuning of Cu2O Thickness for Maximum Photoelectrochemical Performance. **2018**, 232, 1551-1566	5
735	Well-Dispersed Ruthenium in Mesoporous Crystal TiO as an Advanced Electrocatalyst for Hydrogen Evolution Reaction. **2018**, 140, 5719-5727	152
734	A self-template synthesis of defect-rich WS as a highly efficient electrocatalyst for the hydrogen evolution reaction. **2018**, 54, 2631-2634	62
733	CVD-grown three-dimensional sulfur-doped graphene as a binder-free electrocatalytic electrode for highly effective and stable hydrogen evolution reaction. **2018**, 53, 7767-7777	29
732	Recent developments of metallic nanoparticle-graphene nanocatalysts. **2018**, 94, 306-383	72
731	Synergistic effect of nano-Pt and Ni spine for HER in alkaline solution: hydrogen spillover from nano-Pt to Ni spine. **2018**, 8, 2986	37
730	Triphenyl Phosphite as the Phosphorus Source for the Scalable and Cost-Effective Production of Transition Metal Phosphides. **2018**, 30, 1799-1807	45

729	In Situ Grown Epitaxial Heterojunction Exhibits High-Performance Electrocatalytic Water Splitting. **2018**, 30, e1705516		273
728	Plasma-Assisted Synthesis and Surface Modification of Electrode Materials for Renewable Energy. **2018**, 30, e1705850		323
727	Synergistic Interlayer and Defect Engineering in VS Nanosheets toward Efficient Electrocatalytic Hydrogen Evolution Reaction. **2018**, 14, 1703098		133
726	Efficient and stable electrocatalyst for hydrogen evolution reaction prepared by hybrid technique in surface engineering: Electrochemical and magnetron sputtering methods. **2018**, 43, 757-771		6
725	Nitrogen-doped carbon active sites boost the ultra-stable hydrogen evolution reaction on defect-rich MoS2 nanosheets. **2018**, 43, 2026-2033		32
724	Electrochemically Synthesized Nanoporous Molybdenum Carbide as a Durable Electrocatalyst for Hydrogen Evolution Reaction. **2018**, 5, 1700601		35
723	Crystallographic Facet Dependence of the Hydrogen Evolution Reaction on CoPS: Theory and Experiments. **2018**, 8, 1143-1152		49
722	Electrocatalysis of hydrogen evolution reaction on tri-metallic Rh@Pd/Pt(poly) electrode. **2018**, 43, 2763-2771		18
721	In Situ Engineering of Double-Phase Interface in Mo/Mo2C Heteronanosheets for Boosted Hydrogen Evolution Reaction. **2018**, 3, 341-348		111
720	Bioinspired Electro-Organocatalytic Material Efficient for Hydrogen Production. **2018**, 24, 3305-3313		6
719	MOF-Templated N-Doped Carbon-Coated CoSe Nanorods Supported on Porous CNT Microspheres with Excellent Sodium-Ion Storage and Electrocatalytic Properties. **2018**, 10, 17203-17213		117
718	Environmental Catalysis. **2018**, 61-99		
717	Artificial photosynthesis by light absorption, charge separation, and multielectron catalysis. **2018**, 54, 6554-6572		33
716	Preparation of electrocatalysts using a thiol-amine solution processing method. **2018**, 47, 5137-5143		4
715	Plasmon-enhanced electrocatalytic hydrogen/oxygen evolution by Pt/Fe□Au nanorods. *Journal of Materials Chemistry A*, **2018**, 6, 7364-7369	13	31
714	Highly Water Dispersible Polymer Acid-Doped Polyanilines as Low-Cost, Nafion-Free Ionomers for Hydrogen Evolution Reaction. **2018**, 1, 1512-1521		12
713	Seawater splitting for hydrogen evolution by robust electrocatalysts from secondary□M (M = Cr, Fe, Co, Ni, Mo) incorporated Pt.. **2018**, 8, 9423-9429		19
712	High-temperature-treated multiwall carbon nanotubes for hydrogen evolution reaction. **2018**, 43, 6526-6531		15

711	Scalable synthesis of heterostructure molybdenum and nickel sulfides nanosheets for efficient hydrogen generation in alkaline electrolyte. **2018**, 316, 171-176	16
710	A review of transition-metal boride/phosphide-based materials for catalytic hydrogen generation from hydrolysis of boron-hydrides. **2018**, 5, 760-772	58
709	Progress and Perspective of Electrocatalytic CO Reduction for Renewable Carbonaceous Fuels and Chemicals. **2018**, 5, 1700275	423
708	Structure-Activity Relationships for Pt-Free Metal Phosphide Hydrogen Evolution Electrocatalysts. **2018**, 24, 7298-7311	54
707	Bimetallic Carbide as a Stable Hydrogen Evolution Catalyst in Harsh Acidic Water. **2018**, 3, 78-84	35
706	Novel strongly coupled tungsten-carbon-nitrogen complex for efficient hydrogen evolution reaction. **2018**, 43, 16-23	31
705	Scalable synthesis of two-dimensional nano-sheet materials with chlorophyll extracts: enhancing the hydrogen evolution reaction. **2018**, 20, 525-533	9
704	N-doped one-dimensional carbonaceous backbones supported MoSe2 nanosheets as superior electrodes for energy storage and conversion. **2018**, 334, 2190-2200	66
703	Crystal-plane engineering of NiCo2O4 electrocatalysts towards efficient overall water splitting. **2018**, 357, 238-246	97
702	Group 6 transition metal dichalcogenide nanomaterials: synthesis, applications and future perspectives. **2018**, 3, 90-204	203
701	Hydrogen oxidation reaction in alkaline media: From mechanism to recent electrocatalysts. **2018**, 44, 288-303	126
700	High-efficiency and stable alloyed nickel based electrodes for hydrogen evolution by seawater splitting. **2018**, 732, 248-256	34
699	Facile synthesis of electrocatalytically active NbS2 nanoflakes for an enhanced hydrogen evolution reaction (HER). **2018**, 2, 96-102	29
698	Facile one-step synthesis of phosphorus-doped CoS2 as efficient electrocatalyst for hydrogen evolution reaction. **2018**, 259, 955-961	65
697	From Enzymes to Functional Materials-Towards Activation of Small Molecules. **2018**, 24, 1471-1493	42
696	Methanol Oxidation on Bimetallic Electrode Surfaces. **2018**, 719-729	1
695	Modification of Carbon Nanotubes via Birch Reaction for Enhanced HER Catalyst by Constructing Pearl Necklace-Like NiCo P -CNT Composite. **2018**, 14, e1804388	12
694	Ultrafine Co6Mo6C nanocrystals on reduced graphene oxide as efficient and highly stable electrocatalyst for hydrogen generation. **2018**, 43, 20323-20331	7

693	Membrane-Modified Metal Triazole Complexes for the Electrocatalytic Reduction of Oxygen and Carbon Dioxide. **2018**, 6, 543		8
692	Recent progress in transition metal phosphides with enhanced electrocatalysis for hydrogen evolution. **2018**, 10, 21617-21624		227
691	Polyoxometalate-Derived Hexagonal Molybdenum Nitrides (MXenes) Supported by Boron, Nitrogen Codoped Carbon Nanotubes for Efficient Electrochemical Hydrogen Evolution from Seawater. **2018**, 29, 1805893		31
690	Effects of Metal-Doping on Hydrogen Evolution Reaction Catalyzed by MAu and MAu Nanoclusters (M = Pt, Pd). **2018**, 10, 44645-44653		57
689	One-pot synthesis of graphene- cobalt hydroxide composite nanosheets (Co/G NSs) for electrocatalytic water oxidation. **2018**, 8, 13772		7
688	2D layered transition metal dichalcogenides (MoS2): Synthesis, applications and theoretical aspects. **2018**, 13, 242-270		75
687	Insights on Tafel Constant in the Analysis of Hydrogen Evolution Reaction. **2018**, 122, 23943-23949		48
686	Encapsulating Iridium Nanoparticles Inside a 3D Cage-Like Organic Network as an Efficient and Durable Catalyst for the Hydrogen Evolution Reaction. **2018**, 30, e1805606		69
685	Novel Cobalt-Doped NiSe Chalcogenides (Co NiSe) as High Active and Stable Electrocatalysts for Hydrogen Evolution Reaction in Electrolysis Water Splitting. **2018**, 10, 40491-40499		58
684	Metallic 1T-MoS2 nanosheets and their composite materials: Preparation, properties and emerging applications. **2018**, 10, 264-279		39
683	Self-Assembly Precursor-Derived MoP Supported on N,P-Codoped Reduced Graphene Oxides as Efficient Catalysts for Hydrogen Evolution Reaction. **2018**, 57, 13859-13865		12
682	Ligand-Capped Ru Nanoparticles as Efficient Electrocatalyst for the Hydrogen Evolution Reaction. **2018**, 8, 11094-11102		53
681	Electrocatalytic hydrogen evolution using metal-free porphyrins. **2018**, 43, 18843-18849		14
680	Design of Carbon-Based Metal-Free Electrocatalysts. **2018**, 35-58		
679	Structural engineering of transition metal-based nanostructured electrocatalysts for efficient water splitting. **2018**, 12, 838-854		24
678	Alkaline Water Electrolysis by NiZn-Double Hydroxide-Derived Porous Nickel Selenide-Nitrogen-Doped Graphene Composite. **2018**,		6
677	Redox-Mediator-Assisted Electrocatalytic Hydrogen Evolution from Water by a Molybdenum Sulfide-Functionalized Metal□Organic Framework. **2018**, 8, 9848-9858		73
676	Synergistic modulation in MX2 (where M = Mo or W or V, and X = S or Se) for an enhanced hydrogen evolution reaction. *Journal of Materials Chemistry A*, **2018**, 6, 21847-21858	13	32

675	MoS2 nanostructure electrodeposited on Ni-P coating: an efficient and durable hybrid cathode catalyst in alkaline water electrolyses. **2018**, 397, 012135		1
674	Amorphous Molybdenum Sulfide on Three-Dimensional Hierarchical Hollow Microspheres Comprising Bamboo-like N-Doped Carbon Nanotubes as a Highly Active Hydrogen Evolution Reaction Catalyst. **2018**, 6, 12706-12715		19
673	Polyoxomolybdate-derived carbon-encapsulated multicomponent electrocatalysts for synergistically boosting hydrogen evolution. *Journal of Materials Chemistry A*, **2018**, 6, 17874-17881	13	23
672	Evaluating the Stability of CoP Electrocatalysts in the Hydrogen Evolution Reaction for Both Acidic and Alkaline Electrolytes. **2018**, 3, 1360-1365		179
671	Metal phosphonate coordination networks and frameworks as precursors of electrocatalysts for the hydrogen and oxygen evolution reactions. **2018**, 20, 1		14
670	Facile synthesis of Pd@Ru nanoplates with controlled thickness as efficient catalysts for hydrogen evolution reaction. **2018**, 20, 4230-4236		15
669	Highly efficient hydrogen evolution triggered by a multi-interfacial Ni/WC hybrid electrocatalyst. **2018**, 11, 2114-2123		142
668	An electron deficiency strategy for enhancing hydrogen evolution on CoP nano-electrocatalysts. **2018**, 50, 273-280		64
667	Carbon-Encapsulated WO Hybrids as Efficient Catalysts for Hydrogen Evolution. **2018**, 30, e1705979		104
666	An overview on Pd-based electrocatalysts for the hydrogen evolution reaction. **2018**, 5, 2060-2080		125
665	Multi-functional Ni3C cocatalyst/g-C3N4 nanoheterojunctions for robust photocatalytic H2 evolution under visible light. *Journal of Materials Chemistry A*, **2018**, 6, 13110-13122	13	190
664	Prediction of Enhanced Catalytic Activity for Hydrogen Evolution Reaction in Janus Transition Metal Dichalcogenides. **2018**, 18, 3943-3949		180
663	Self-supported transition metal phosphide based electrodes as high-efficient water splitting cathodes. **2018**, 12, 494-508		29
662	Pt nanocrystals grown on three-dimensional architectures made from graphene and MoS2 nanosheets: Highly efficient multifunctional electrocatalysts toward hydrogen evolution and methanol oxidation reactions. **2018**, 139, 369-377		58
661	Thermally reduced graphite oxide and molybdenum disulfide composite for enhanced hydrogen evolution reaction. **2018**, 706, 266-272		3
660	Transition-metal-doped NiSe2 nanosheets towards efficient hydrogen evolution reactions. **2018**, 11, 6051-6061		49
659	Well-aligned metal□rganic framework array-derived CoS2 nanosheets toward robust electrochemical water splitting. **2018**, 2, 1732-1738		21
658	Vine Shoots and Grape Stalks as Carbon Sources for Hydrogen Evolution Reaction Electrocatalyst Supports. **2018**, 8, 50		6

657	Carbon-based Electrocatalysts for Water-splitting. **2018**, 459-483	1
656	Electronic structure tuning during facile construction of two-phase tungsten based electrocatalyst for hydrogen evolution reaction. **2018**, 283, 834-841	13
655	Recent advances in hydrogen evolution reaction catalysts on carbon/carbon-based supports in acid media. **2018**, 398, 9-26	101
654	Hydrogen Evolution Reaction Property of Molybdenum Disulfide/Nickel Phosphide Hybrids in Alkaline Solution. **2018**, 8, 359	15
653	Porous magnetic iron- manganese oxide nanocubes derived from metal organic framework deposited on reduced graphene oxide nanoflake as a bi-functional electrocatalyst for hydrogen evolution and oxygen reduction reaction. **2018**, 283, 1359-1365	17
652	An inherent heat driven fuel exhaling hydrazine fuel cell. **2018**, 706, 553-557	5
651	Metal-doped molybdenum nitride films for enhanced hydrogen evolution in near-neutral strongly buffered aerobic media. **2018**, 283, 1525-1533	21
650	One-step electrodeposition synthesis of a nife□n electrode for hydrogen production in alkaline solution. **2018**, 227, 124-127	9
649	Diferrate [Fe (CO) (□CO){□P(aryl) }] as Self-Assembling Iron/Phosphor-Based Catalyst for the Hydrogen Evolution Reaction in Photocatalytic Proton Reduction-Spectroscopic Insights. **2018**, 24, 16052-16065	8
648	Shape-Dependent Electrocatalytic Activity of Iridium Oxide Decorated Erbium Pyrosilicate toward the Hydrogen Evolution Reaction over the Entire pH Range. **2018**, 8, 8830-8843	26
647	Overall Water-Splitting Electrocatalysts Based on 2D CoNi-Metal-Organic Frameworks and Its Derivative. **2018**, 5, 1800849	43
646	Doped-MoSe2 Nanoflakes/3d Metal Oxide□Hydr(Oxy)Oxides Hybrid Catalysts for pH-Universal Electrochemical Hydrogen Evolution Reaction. **2018**, 8, 1801764	50
645	A facile method for the fabrication of hierarchical nanosized metal catalysts. **2018**, 366, 1-7	4
644	Phase-Controlled Synthesis of Nickel Phosphide Nanocrystals and Their Electrocatalytic Performance for the Hydrogen Evolution Reaction. **2018**, 24, 11748-11754	34
643	Nickel-cobalt-oxide cathodes for hydrogen production by water electrolysis in acidic and alkaline media. **2018**, 43, 12917-12928	23
642	MOF-derived metal/carbon materials as oxygen evolution reaction catalysts. **2018**, 94, 57-74	35
641	Efficient n+p-Si photocathodes for solar H2 production catalyzed by Co-W-S and stabilized by Ti buffer layer. **2018**, 237, 158-165	21
640	Metal Organic Framework Derived Fe-Doped CoSe2 Incorporated in Nitrogen-Doped Carbon Hybrid for Efficient Hydrogen Evolution. **2018**, 6, 8672-8678	40

639	Enhanced electrocatalytic hydrogen generation from water cobalt-doped CuZnSnS nanoparticles.. **2018**, 8, 20341-20346		20
638	Direct synthesis of nitrogen-rich carbon sheets via polybenzoxazine as highly active electrocatalyst for water splitting. **2018**, 43, 13266-13275		24
637	Electrochemical Hydrogen Evolution Reaction Efficiently Catalyzed by Ru P Nanoparticles. **2018**, 11, 2724-2729		71
636	Nanocarbons and Their Composite Materials as Electrocatalyst for Metal□Air Battery and Water Splitting. **2019**, 455-496		
635	Amorphous 2D materials containing a conjugated-polymer network. **2019**, 2,		19
634	Boosting hydrogen evolution activity of vanadyl pyrophosphate nanosheets for electrocatalytic overall water splitting. **2019**, 55, 10511-10514		20
633	A wood-derived hierarchically porous monolithic carbon matrix embedded with Co nanoparticles as an advanced electrocatalyst for water splitting. **2019**, 3, 2753-2762		7
632	A unique amorphous cobalt-phosphide-boride bifunctional electrocatalyst for enhanced alkaline water-splitting. **2019**, 259, 118051		68
631	Potentiostatic deposition of CoNi2Se4 nanostructures on nickel foam as efficient battery-type electrodes for supercapacitors. **2019**, 850, 113371		11
630	Dual Doping Induced Interfacial Engineering of Fe2N/Fe3N Hybrids with Favorable d-Band towards Efficient Overall Water Splitting. **2019**, 11, 6051-6060		60
629	Anionic Effects on Metal Pair of Se-Doped Nickel Diphosphide for Hydrogen Evolution Reaction. **2019**, 7, 14247-14255		19
628	Synthesis and mechanism investigation of three-dimensional porous CoP3 nanoplate arrays as efficient hydrogen evolution reaction electrocatalyst. **2019**, 494, 179-186		10
627	Unconventional molybdenum carbide phases with high electrocatalytic activity for hydrogen evolution reaction. *Journal of Materials Chemistry A*, **2019**, 7, 18030-18038	13	29
626	In Situ Hybridizing MoS2 Microflowers on VS2 Microflakes in a One-Pot CVD Process for Electrolytic Hydrogen Evolution Reaction. **2019**, 2, 5799-5808		28
625	Controlled self-assembly synthesis of CuCo2O4/rGO for improving the morphology-dependent electrochemical oxygen evolution performance. **2019**, 493, 710-718		12
624	Bifunctional NiCo2Se4 and CoNi2Se4 nanostructures: Efficient electrodes for battery-type supercapacitors and electrocatalysts for the oxygen evolution reaction. **2019**, 79, 370-382		25
623	Insight into the superior activity of bridging sulfur-rich amorphous molybdenum sulfide for electrochemical hydrogen evolution reaction. **2019**, 258, 117995		28
622	Mn0.4In1.6S3 Nanoflower Solid Solutions for Visible-Light Photocatalytic Hydrogen Evolution. **2019**, 2, 5245-5253		6

621	Design and optimization of cobalt-encapsulating vertical graphene nano-hills for hydrogen evolution reaction. *Journal of Materials Chemistry A*, **2019**, 7, 17046-17052	13	7
620	Bipolar Electrochemistry as a Simple Synthetic Route toward Nanoscale Transition of Mo2B5 and W2B5 for Enhanced Hydrogen Evolution Reaction. **2019**,		3
619	Amorphous FeCoPC Film on a Carbon Fiber Paper Support as an Efficient Electrocatalyst for the Oxygen Evolution Reaction. **2019**, 6, 3976-3981		10
618	2D Cocrystallized MetalOrganic Nanosheet Array as an Efficient and Stable Bifunctional Electrocatalyst for Overall Water Splitting. **2019**, 7, 18085-18092		86
617	Cu(II) Ions Induced Structural Transformation of Cobalt Selenides for Remarkable Enhancement in Oxygen/Hydrogen Electrocatalysis. **2019**, 9, 10761-10772		66
616	The effects of fine and coarse particulate matter on lung function among the elderly. **2019**, 9, 14790		28
615	Pore Surface Engineering of Covalent Triazine Frameworks@MoS Electrocatalyst for the Hydrogen Evolution Reaction. **2019**, 12, 5032-5040		16
614	Construction of Ni@Pt/N-doped nanoporous carbon, derived from pyrolysis of nickel metal organic framework, and application for HER in alkaline and acidic solutions. **2019**, 327, 134895		14
613	Recent Trends in Synthesis and Investigation of Nickel Phosphide Compound/Hybrid-Based Electrocatalysts Towards Hydrogen Generation from Water Electrocatalysis. **2019**, 377, 29		17
612	Hollow Cobalt Phosphide with N-Doped Carbon Skeleton as Bifunctional Electrocatalyst for Overall Water Splitting. **2019**, 58, 14652-14659		27
611	Nesting CoMo Binary Alloy Nanoparticles onto Molybdenum Oxide Nanosheet Arrays for Superior Hydrogen Evolution Reaction. **2019**, 11, 9002-9010		38
610	Single-Atom Ru Doping Induced Phase Transition of MoS2 and S Vacancy for Hydrogen Evolution Reaction. **2019**, 3, 1900653		111
609	Triple-Shelled Co-VSe Hollow Nanocages as Superior Bifunctional Electrode Materials for Efficient Pt-Free Dye-Sensitized Solar Cells and Hydrogen Evolution Reactions. **2019**, 11, 43278-43286		14
608	Boosting hydrogen evolution activity and durability of PdNiP nanocatalyst via crystalline degree and surface chemical state modulations. **2019**, 44, 31053-31061		10
607	An Algorithm for the Extraction of Tafel Slopes. **2019**, 123, 30252-30264		5
606	Boosting HER Performance of Pt-Based Catalysts Immobilized on Functionalized Vulcan Carbon by Atomic Layer Deposition. **2019**, 6,		27
605	Porous Molybdenum Carbide Nanostructures Synthesized on Carbon Cloth by CVD for Efficient Hydrogen Production. **2019**, 25, 16106		9
604	3D hierarchical nanostructured NiCo alloy electrodes on porous nickel for hydrogen evolution reaction. **2019**, 44, 29946-29955		18

603	A Diuranyl(VI) Complex and Its Application in Electrocatalytic and Photocatalytic Hydrogen Evolution from Neutral Aqueous Medium. **2019**, 58, 14410-14419		7
602	Transforming Energy with Single-Atom Catalysts. **2019**, 3, 2897-2929		115
601	Graphene Nanoarchitectonics: Recent Advances in Graphene-Based Electrocatalysts for Hydrogen Evolution Reaction. **2019**, 31, e1903415		170
600	Online monitoring and assessment of energy efficiency for copper smelting process. **2019**, 26, 2149-2159		0
599	Modulating the surface segregation of PdCuRu nanocrystals for enhanced all-pH hydrogen evolution electrocatalysis. *Journal of Materials Chemistry A*, **2019**, 7, 20151-20157	13	27
598	Weakening hydrogen adsorption on nickel via interstitial nitrogen doping promotes bifunctional hydrogen electrocatalysis in alkaline solution. **2019**, 12, 3522-3529		92
597	Tuning the electronic structure of PtRu bimetallic nanoparticles for promoting the hydrogen oxidation reaction in alkaline media. **2019**, 6, 2900-2905		32
596	Electrocatalytic Hydrogen Evolution from a Cobaloxime-Based Metal-Organic Framework Thin Film. **2019**, 141, 15942-15950		82
595	Influence of MoS2 on Activity and Stability of Carbon Nitride in Photocatalytic Hydrogen Production. **2019**, 9, 695		10
594	A new 3D 8-fold interpenetrating 66-dia topological Co-MOF: Syntheses, crystal structure, magnetic properties and electrocatalytic hydrogen evolution reaction. **2019**, 279, 120929		17
593	A Scalable Laser-Assisted Method to Produce Active and Robust Graphene-Supported Nanoparticle Electrocatalysts. **2019**, 31, 8230-8238		16
592	Ni0-rich Ni/NiO nanocrystals for efficient water-to-hydrogen conversion via urea electro-oxidation. **2019**, 496, 143710		22
591	Group IV transition metal based phospho-chalcogenides@MoTe2 for electrochemical hydrogen evolution reaction over wide range of pH. **2019**, 44, 24628-24641		12
590	Mo modulation effect on the hydrogen binding energy of hexagonal-close-packed Ru for hydrogen evolution. *Journal of Materials Chemistry A*, **2019**, 7, 2780-2786	13	33
589	The hydrolysis of ammonia borane catalyzed by NiCoP/OPC-300 nanocatalysts: high selectivity and efficiency, and mechanism. **2019**, 21, 850-860		35
588	Porous Mn-Doped FeP/Co (PO) Nanosheets as Efficient Electrocatalysts for Overall Water Splitting in a Wide pH Range. **2019**, 12, 1334-1341		56
587	Palladium/Bismuth/Copper Hierarchical Nano-Architectures for Efficient Hydrogen Evolution and Stable Hydrogen Detection. **2019**, 11, 6248-6256		17
586	Advanced Electrocatalysts for Hydrogen Evolution Reaction Based on Core Shell MoS2/TiO2Nanostructures in Acidic and Alkaline Media. **2019**, 2, 2053-2062		46

585	Engineering hybrid CoMoS4/Ni3S2 nanostructures as efficient bifunctional electrocatalyst for overall water splitting. **2019**, 416, 95-103		51
584	Electrochemical hydrogen evolution reaction boosted by constructing Ru nanoparticles assembled as a shell over semimetal Te nanorod surfaces in acid electrolyte. **2019**, 55, 1490-1493		54
583	The synthesis and electrochemical applications of core□shell MOFs and their derivatives. *Journal of Materials Chemistry A*, **2019**, 7, 15519-15540	13	70
582	Fe40Co40Se20□Glassy Films Supported on Carbon Fiber Paper as Electrocatalysts in the Oxygen Evolution Reaction. **2019**, 166, F620-F626		9
581	Agent-assisted VSSe ternary alloy single crystals as an efficient stable electrocatalyst for the hydrogen evolution reaction. *Journal of Materials Chemistry A*, **2019**, 7, 15714-15721	13	14
580	On the reconstruction of NiMo electrocatalysts by operando spectroscopy. *Journal of Materials Chemistry A*, **2019**, 7, 15031-15035	13	11
579	In situ fabricated nickel vanadate/N-doped reduced graphene oxide hybrid as an advanced electrocatalyst in alkaline hydrogen evolution reaction. *Journal of Materials Chemistry A*, **2019**, 7, 15054-15061	13	18
578	In situ confined vertical growth of a 1D-CuCoS nanoarray on Ni foam covered by a 3D-PANI mesh layer to form a self-supporting hierarchical structure for high-efficiency oxygen evolution catalysis. **2019**, 11, 12326-12336		19
577	Role of defects on the catalytic property of 2D black arsenic for hydrogen evolution reaction. **2019**, 12, 075502		6
576	MoS2 nanosheets decorated Ni(OH)2 nanorod array for active overall water splitting. **2019**, 796, 86-92		35
575	Bifunctional 2D Electrocatalysts of Transition Metal Hydroxide Nanosheet Arrays for Water Splitting and Urea Electrolysis. **2019**, 7, 10035-10043		96
574	Three-dimensional macroporous WC inverse opal arrays for the efficient hydrogen evolution reaction. **2019**, 11, 11505-11512		23
573	Effect of oxygen incorporation in amorphous molybdenum sulfide on electrochemical hydrogen evolution. **2019**, 487, 981-989		10
572	Fabrication of nanoporous gold-islands via hydrogen bubble template: An efficient electrocatalyst for oxygen reduction and hydrogen evolution reactions. **2019**, 44, 15001-15008		14
571	Defect-rich 2D reticulated MoS2 monolayers: Facile hydrothermal preparation and marvellous photoelectric properties. **2019**, 101, 221-230		14
570	Free-standing N-enriched C foam@WS2 nanoflakes for efficient electrocatalytic hydrogen evolution. **2019**, 487, 972-980		10
569	Ultra-Small Molybdenum Carbide Nanoparticles in situ Entrapped in Mesoporous Carbon Spheres as Efficient Catalysts for Hydrogen Evolution. **2019**, 11, 2643-2648		12
568	Facile construction of N-doped Mo2C@CNT composites with 3D nanospherical structures as an efficient electrocatalyst for hydrogen evolution reaction. **2019**, 25, 4273-4283		11

567	Scalable Synthesis of Heterogeneous W□W2C Nanoparticle-Embedded CNT Networks for Boosted Hydrogen Evolution Reaction in Both Acidic and Alkaline Media. **2019**, 7, 10016-10024		47
566	Layered vanadium oxide nanofibers as impressive electrocatalyst for hydrogen evolution reaction in acidic medium. **2019**, 312, 89-99		17
565	Plasmon-driven catalysis of adsorbed p-nitroaniline (PNA) by surface-enhanced Raman scattering (SERS): Platinum versus silver. **2019**, 687, 17-24		0
564	Decorating WSe2 nanosheets with ultrafine Ru nanoparticles for boosting electrocatalytic hydrogen evolution in alkaline electrolytes. **2019**, 6, 1382-1387		15
563	Nanocrystalline nickel□cobalt electrocatalysts to generate hydrogen using alkaline solutions as storage fuel for the renewable energy. **2019**, 44, 11411-11420		10
562	Study of unique and highly crystalline MoS2/MoO2 nanostructures for electro chemical applications. **2019**, 7, 275-281		11
561	What would it take for renewably powered electrosynthesis to displace petrochemical processes?. **2019**, 364,		749
560	Enhancing the Performance of Ni-Mo Alkaline Hydrogen Evolution Electrocatalysts with Carbon Supports. **2019**, 2, 2524-2533		19
559	Silicene catalysts for CO hydrogenation: the number of layers controls selectivity. **2019**, 11, 7734-7743		19
558	Two-Dimensional Amorphous Cr2O3 Modified Metallic Electrodes for Hydrogen Evolution Reaction. **2019**, 13, 1900025		11
557	Synthesis and performance optimization of ultrathin two-dimensional CoFePt alloy materials via in situ topotactic conversion for the hydrogen evolution reaction. *Journal of Materials Chemistry A*, **2019**, 7, 9517-9522	13	11
556	Cobalt based metal-organic frameworks and their derivatives for electrochemical energy conversion and storage. **2019**, 370, 37-59		63
555	Mixed-Ligand-Architected 2D Co(II)-MOF Expressing a Novel Topology for an Efficient Photoanode for Water Oxidation Using Visible Light. **2019**, 11, 13295-13303		38
554	Nitrogen and phosphorous co-doped graphitic carbon encapsulated ultrafine OsP nanoparticles: a pH universal highly durable catalyst for hydrogen evolution reaction. **2019**, 55, 4399-4402		13
553	Efficient carbon-based catalyst derived from natural cattail fiber for hydrogen evolution reaction. **2019**, 274, 207-214		15
552	Active Site Identification and Evaluation Criteria of In Situ Grown CoTe and NiTe Nanoarrays for Hydrogen Evolution and Oxygen Evolution Reactions. **2019**, 3, 1900113		41
551	Effect of visible light irradiation on hydrogen production by CoNi2S4/CdWO4 controllable flower spherical photocatalyst. **2019**, 481, 692-701		11
550	Carbon Nanotube-Supported MoSe Holey Flake:MoC Ball Hybrids for Bifunctional pH-Universal Water Splitting. **2019**, 13, 3162-3176		89

549	Cobalt oxide-based nanoarchitectures for electrochemical energy applications. **2019**, 103, 596-677		97
548	A review of graphene-based 3D van der Waals hybrids and their energy applications. **2019**, 25, 27-37		38
547	The Hydrogen Electrode Reaction. **2019**, 75-141		
546	Entropy-Maximized Synthesis of Multimetallic Nanoparticle Catalysts via a Ultrasonication-Assisted Wet Chemistry Method under Ambient Conditions. **2019**, 6, 1900015		52
545	The Hydrogen Oxidation Reaction in Alkaline Medium: An Overview. **2019**, 2, 312-331		33
544	Investigation of the correlation between the phase structure and activity of NiMoO derived electrocatalysts for the hydrogen evolution reaction. *Journal of Materials Chemistry A*, **2019**, 7, 10338-10345	13	14
543	Ruthenium Nanoparticles for Catalytic Water Splitting. **2019**, 12, 2493-2514		50
542	Unveiling the Interfacial Effects for Enhanced Hydrogen Evolution Reaction on MoS /WTe Hybrid Structures. **2019**, 15, e1900078		27
541	One-step synthesis of Ni-Mo-S/MoOx composite self-supported on Ni foam for efficient electrocatalytic hydrogen evolution. **2019**, 246, 63-66		12
540	Robust and biocompatible catalysts for efficient hydrogen-driven microbial electrosynthesis. **2019**, 2,		46
539	High catalytic performance of nickel foam supported Co2P-Ni2P for overall water splitting and its structural evolutions during hydrogen/oxygen evolution reactions in alkaline solutions. **2019**, 373, 81-92		49
538	Temporally-Resolved Ultrafast Hydrogen Adsorption and Evolution on Single Platinum Nanoparticles. **2019**, 91, 4023-4030		19
537	Morphology-Controlled Metal Sulfides and Phosphides for Electrochemical Water Splitting. **2019**, 31, e1806682		304
536	Millisecond synthesis of CoS nanoparticles for highly efficient overall water splitting. **2019**, 12, 2259-2267		57
535	A catholically pre-treated low cost screen-printed carbon electrode surface for metal compounds electrocatalyst like hydrogen evolution activity. **2019**, 839, 59-66		3
534	Nanostructured Materials for Energy Related Applications. **2019**,		5
533	The influence of addition of iridium-oxide to nickel-molybdenum-oxide cathodes on the electrocatalytic activity towards hydrogen evolution in acidic medium and on the cathode deactivation resistance. **2019**, 302, 198-206		16
532	In situ synthesized low-PtCo@porous carbon catalyst for highly efficient hydrogen evolution. *Journal of Materials Chemistry A*, **2019**, 7, 6543-6551	13	33

531	Fabrication of Superior Single-Atom Catalysts toward Diverse Electrochemical Reactions. **2019**, 3, 1800497		68
530	Engineering Two-Dimensional Transition Metal Dichalcogenide Electrocatalysts for Water Splitting Hydrogen Generation. **2019**, 1845-1873		1
529	Coupling PtNi Ultrathin Nanowires with MXenes for Boosting Electrocatalytic Hydrogen Evolution in Both Acidic and Alkaline Solutions. **2019**, 15, e1805474		63
528	Highly-dispersed Ru nanoparticles sputtered on graphene for hydrogen production. **2019**, 44, 7320-7325		14
527	Tunable Ag Micromorphologies Show High Activities for Electrochemical H2 Evolution and CO2 Electrochemical Reduction. **2019**, 7, 6352-6359		11
526	Element-Specific Restructuring of Anion- and Cation-Substituted Cobalt Phosphide Nanoparticles under Electrochemical Water-Splitting Conditions. **2019**, 9, 2956-2961		70
525	Direct electrosynthesis of sodium hydroxide and hydrochloric acid from brine streams. **2019**, 2, 106-113		36
524	Noble-Metal-Free Nanoelectrocatalysts for Hydrogen Evolution Reaction. **2019**, 73-120		2
523	Fabrication of uniform Ru-doped NiFeO nanosheets as an efficient hydrogen evolution electrocatalyst. **2019**, 55, 14649-14652		24
522	Metallic 1T-VS2 nanosheets featuring V2+ self-doping and mesopores towards an efficient hydrogen evolution reaction. **2019**, 6, 3510-3517		19
521	. **2019**,		3
520	In Operando Stacking of Reduced Graphene Oxide for Active Hydrogen Evolution. **2019**, 11, 43460-43465		13
519	Glycerin-Grafted Starch as Corrosion Inhibitor of C-Mn Steel in 1 M HCl solution. **2019**, 9, 4684		9
518	Efficient Ceria-Supported Rhodium Nanoparticles as an Electrocatalyst for Hydrogen Evolution. **2019**, 166, H897-H903		7
517	Mesoporous graphitic carbon nitride synthesized using biotemplate as a high-performance electrode material for supercapacitor and electrocatalyst for hydrogen evolution reaction in acidic medium. **2019**, 26, 101032		10
516	Metallic ruthenium-based nanomaterials for electrocatalytic and photocatalytic hydrogen evolution. *Journal of Materials Chemistry A*, **2019**, 7, 24691-24714	13	44
515	N-doped carbon-wrapped Mo C heterophase sheets for high-efficiency electrochemical hydrogen production. **2019**, 358, 362-368		27
514	Ruthenium Nanoparticles Supported on Carbon Microfibers for Hydrogen Evolution Electrocatalysis. **2019**, 2019, 2071-2077		11

513	Gallium Oxide Nanofibers for Hydrogen Evolution and Oxygen Reduction. **2019**, 2, 64-74	16
512	Hierarchical MoS2 nanosheets integrated Ti3C2 MXenes for electrocatalytic hydrogen evolution. **2019**, 44, 965-976	76
511	Ultrahigh length-to-diameter ratio nickel phosphide nanowires as pH-wide electrocatalyst for efficient hydrogen evolution. **2019**, 298, 943-949	16
510	Virus-templated PtNi(OH)2 nanonetworks for enhanced electrocatalytic reduction of water. **2019**, 58, 167-174	32
509	Recent advances in emerging single atom confined two-dimensional materials for water splitting applications. **2019**, 11, 1-23	137
508	Poor crystalline MoS2 with highly exposed active sites for the improved hydrogen evolution reaction performance. **2019**, 777, 514-523	31
507	Direct synthesis of parallel doped N-MoP/N-CNT as highly active hydrogen evolution reaction catalyst. **2019**, 62, 690-698	13
506	Heterostructured MoC-MoP/N-doped carbon nanofibers as efficient electrocatalysts for hydrogen evolution reaction. **2019**, 299, 708-716	31
505	Synthesis of Ni-Doped Copper Cobalt Sulfide Nanoparticles and its Enhanced Properties as an Electrocatalyst for Hydrogen Evolution Reaction. **2019**, 54, 1800248	7
504	Ultra-dispersed molybdenum phosphide and phosphosulfide nanoparticles on hierarchical carbonaceous scaffolds for hydrogen evolution electrocatalysis. **2019**, 245, 656-661	77
503	Effect of nickel-doped FeS2 nanoparticles-reduced graphene oxide electrocatalysts for efficient hydrogen evolution. **2019**, 775, 1293-1300	23
502	Various strategies to tune the electrocatalytic performance of molybdenum phosphide supported on reduced graphene oxide for hydrogen evolution reaction. **2019**, 536, 638-645	19
501	Highly stable tungsten disulfide supported on a self-standing nickel phosphide foam as a hybrid electrocatalyst for efficient electrolytic hydrogen evolution. **2019**, 55, 193-202	43
500	Activated Cu/Cu2O foam with Ni nanoparticles for electrocatalytic activity enhancement of hydrogen evolution reaction (HER) in acidic media. **2019**, 70, 211-225	17
499	Facile synthesis of mesoporous TiC-C nanocomposite microsphere efficient for hydrogen evolution. **2019**, 775, 348-352	13
498	Synthesis of popcorn-shaped gallium-platinum (GaPt3) nanoparticles as highly efficient and stable electrocatalysts for hydrogen evolution reaction. **2019**, 297, 288-296	20
497	Alcohol Oxidation and Hydrogen Evolution. **2019**, 27, 253-301	10
496	Highly active and stable electrocatalysts of FeS2Reduced graphene oxide for hydrogen evolution. **2019**, 54, 1422-1433	21

495	Structural Design and Electronic Modulation of Transition-Metal-Carbide Electrocatalysts toward Efficient Hydrogen Evolution. **2019**, 31, e1802880	267
494	Synthesis of CoAl-LDH nanosheets and N-doped graphene nanocomposite via Successive Ionic Layer Deposition method and study of their electrocatalytic properties for hydrogen evolution in alkaline media. **2019**, 270, 156-161	17
493	Palladium-nickel on tin oxide-carbon composite supports for electrocatalytic hydrogen evolution. **2020**, 357, 302-310	2
492	Cu and Pd nanoparticles supported on a graphitic carbon material as bifunctional HER/ORR electrocatalysts. **2020**, 357, 279-290	11
491	Mesoporous graphitic carbon nitride-supported binary MPt (M: Co, Ni, Cu) nanoalloys as electrocatalysts for borohydride oxidation and hydrogen evolution reaction. **2020**, 357, 291-301	20
490	Exfoliated colloidal MoS2 nanosheet with predominantly 1T phase for electrocatalytic hydrogen production. **2020**, 45, 18645-18656	5
489	Boron-Doped Carbon nanoparticles supported palladium as an efficient hydrogen evolution electrode in PEM water electrolysis. **2020**, 146, 2281-2290	13
488	Oxygen deficient V2O3: A stable and efficient electrocatalyst for HER and high performance EDLCs. **2020**, 46, 703-714	8
487	Direct growth of high-content 1T phase MoS2 film by pulsed laser deposition for hydrogen evolution reaction. **2020**, 504, 144320	12
486	Electrochemically Facile Hydrogen Evolution Using Ruthenium Encapsulated Two Dimensional Covalent Organic Framework (2D COF). **2020**, 6, 99-106	10
485	Tuning catalytic performance by controlling reconstruction process in operando condition. **2020**, 260, 118103	57
484	Metal-organic framework-derived nanocomposites for electrocatalytic hydrogen evolution reaction. **2020**, 108, 100618	93
483	Hatted 1T/2H-Phase MoS on Ni S Nanorods for Efficient Overall Water Splitting in Alkaline Media. **2020**, 26, 2034-2040	12
482	Large scale synthesis of Mo2C nanoparticle incorporated carbon nanosheet (Mo2C□) for enhanced hydrogen evolution reaction. **2020**, 45, 18623-18634	12
481	Metal Boride-Based Catalysts for Electrochemical Water-Splitting: A Review. **2020**, 30, 1906481	138
480	Interface engineering in transition metal carbides for electrocatalytic hydrogen generation and nitrogen fixation. **2020**, 7, 32-53	39
479	ZnO-Templated Selenized and Phosphorized Cobalt-Nickel Oxide Microcubes as Rapid Alkaline Water Oxidation Electrocatalysts. **2020**, 26, 1306-1313	
478	Synthesis of Metal Phosphide Nanoparticles Supported on Porous N-Doped Carbon Derived from Spirulina for Universal-pH Hydrogen Evolution. **2020**, 13, 351-359	12

477	Local epitaxial growth of Au-Rh core-shell star-shaped decahedra: A case for studying electronic and ensemble effects in hydrogen evolution reaction. **2020**, 263, 118255	23
476	. **2020**, 35, 261-272	8
475	Mesoporous Ni-rich NiPt thin films: Electrodeposition, characterization and performance toward hydrogen evolution reaction in acidic media. **2020**, 265, 118597	32
474	Dealloying Generation of Oxygen Vacancies in the Amorphous Nanoporous NiMoO for Superior Electrocatalytic Hydrogen Generation. **2020**, 3, 1319-1327	13
473	Electrocatalytic hydrogen evolution reaction studies of NiW1MoxO4 (x = 0.0, 0.5 and 1.0) nanoparticles in both acid and alkaline electrolytes. **2020**, 31, 2378-2387	9
472	Light and complex 3D MoS/graphene heterostructures as efficient catalysts for the hydrogen evolution reaction. **2020**, 12, 2715-2725	25
471	Recent advances in ruthenium-based electrocatalysts for the hydrogen evolution reaction. **2020**, 5, 43-56	101
470	Two-dimensional materials and metal-organic frameworks for the CO2 reduction reaction. **2020**, 5, 100038	29
469	MoC based MottSchottky electrocatalyst for boosting the hydrogen evolution reaction performance. **2020**, 4, 407-416	16
468	A platinum nanowire electrocatalyst on single-walled carbon nanotubes to drive hydrogen evolution. **2020**, 265, 118582	22
467	General Strategy to Optimize Gas Evolution Reaction via Assembled Striped-Pattern Superlattices. **2020**, 142, 1857-1863	42
466	Single-Site, Single-Metal-Atom, Heterogeneous Electrocatalyst: MetalOrganic-Framework Supported Molybdenum Sulfide for Redox Mediator-Assisted Hydrogen Evolution Reaction. **2020**, 7, 509-516	9
465	Nonprecious metal's graphene-supported electrocatalysts for hydrogen evolution reaction: Fundamentals to applications. **2020**, 2, 99-121	59
464	Preparation of MoS2/graphene nanostructures and their supercapacitor and hydrogen evolution reaction (HER) performances. **2020**, 53, 065501	5
463	Electrocatalytic activity for the hydrogen evolution of the electrodeposited CoNiMo, CoNi and CoMo alloy coatings. **2020**, 45, 508-520	25
462	Fundamental properties of delafossite CuFeO2 as photocatalyst for solar energy conversion. **2020**, 819, 153032	32
461	Developments and Perspectives in 3d Transition-Metal-Based Electrocatalysts for Neutral and Near-Neutral Water Electrolysis. **2020**, 10, 1902666	113
460	Vapor ammonization strategy towards surface-reconstructed and N-modified three-dimensional Cu foam electrocatalyst for efficient alkaline hydrogen production. **2020**, 45, 2808-2817	3

459	Pt decorated POMOF-derived constructions for efficient electrocatalytic hydrogen evolution. **2020**, 12, 3902-3906	11
458	Theoretical investigation on the hydrogen evolution reaction mechanism at MoS2 heterostructures: the essential role of the 1T/2H phase interface. **2020**, 10, 458-465	13
457	An ecofriendly route to synthesize C-Mo2C and C/N-Mo2C utilizing waste polyethene for efficient hydrogen evolution reaction (HER) activity and high performance capacitors. **2020**, 4, 655-669	14
456	Novel electrocatalysts for hydrogen evolution based on carbon fibers modified by cobalt phosphides. **2020**, 507, 144927	2
455	Self-standing Substrates. **2020**,	1
454	Rose-like MoS2 nanostructures with a large interlayer spacing of ~9.9 □and exfoliated WS2 nanosheets supported on carbon nanotubes for hydrogen evolution reaction. **2020**, 158, 216-225	23
453	Low-Iridium-Content IrNiTa Metallic Glass Films as Intrinsically Active Catalysts for Hydrogen Evolution Reaction. **2020**, 32, e1906384	44
452	Investigating affordable cobalt based metallosurfactant as an efficient electrocatalyst for hydrogen evolution reaction. **2020**, 562, 598-607	14
451	3D Carbon Materials for Efficient Oxygen and Hydrogen Electrocatalysis. **2020**, 10, 1902494	56
450	Facile electrochemical preparation of nonprecious Co-Cu alloy catalysts for hydrogen production in proton exchange membrane water electrolysis. **2020**, 44, 2833-2844	12
449	Modification of the ultrasonication derived-g-C3N4 nanosheets/quantum dots by MoS2 nanostructures to improve electrocatalytic hydrogen evolution reaction. **2020**, 45, 33512-33520	5
448	Electrodeposition of iron phosphide film for hydrogen evolution reaction. **2020**, 363, 137167	11
447	Microkinetic model for pH- and potential-dependent oxygen evolution during water splitting on Fe-doped □NiOOH. **2020**, 13, 4962-4976	23
446	Fused Porphyrin Thin Films as Heterogeneous Visible-Light Active Photocatalysts with Well-Defined Active Metal Sites for Hydrogen Generation. **2020**, 3, 9848-9855	9
445	TaS, TaSe, and Their Heterogeneous Films as Catalysts for the Hydrogen Evolution Reaction. **2020**, 10, 3313-3325	33
444	Binder- free iridium based electrocatalysts: Facile preparation, high activity and outstanding stability for hydrogen evolution reaction in acidic medium. **2020**, 580, 11-20	5
443	Stabilizing Hydrogen Adsorption through Theory-Guided Chalcogen Substitution in Chevrel-Phase MoX (X=S, Se, Te) Electrocatalysts. **2020**, 12, 35995-36003	12
442	Bacterial nanocellulose as a green and flexible electrode matrix for efficient hydrogen evolution reaction in alkaline conditions. **2020**, 27, 8135-8146	6

441	Low temperature electrochemical production of hydrogen: Challenge in anode and cathode materials. **2020**, 135-169	
440	Recent Advancements and Future Prospects of Noble Metal-Based Heterogeneous Nanocatalysts for Oxygen Reduction and Hydrogen Evolution Reactions. **2020**, 10, 7708	15
439	Amorphous CoOx-Decorated Crystalline RuO2 Nanosheets as Bifunctional Catalysts for Boosting Overall Water Splitting at Large Current Density. **2020**, 8, 17520-17526	40
438	Se Doping Regulates the Activity of NiTe2 for Electrocatalytic Hydrogen Evolution Reaction. **2020**, 124, 26793-26800	6
437	Beyond Adsorption Descriptors in Hydrogen Electrocatalysis. **2020**, 10, 14747-14762	30
436	Facile fabrication of hierarchical Rh2Ir alloy nanodendrites with excellent HER performance in a broad pH range. **2020**, 44, 21021-21025	5
435	Bifunctional MnO2 and Co3O4 Catalyst for Oxygen Electrocatalysis in Alkaline Solution. **2020**, 7, 4822-4836	8
434	Transition Metal Chalcogenides for the Electrocatalysis of Water. **2020**,	2
433	Electrodeposition of Ni/Co composite coatings on the carbon felt: Structural features and electrochemical performance. **2020**, 849, 156625	8
432	Why Do We Use the Materials and Operating Conditions We Use for Heterogeneous (Photo)Electrochemical Water Splitting?. **2020**, 10, 11177-11234	36
431	Mixed zinc cobalt oxide coatings for photocatalytic applications. **2020**, 126, 1	2
430	The induced effect of chemical and photo-assisted deposition of molybdenum sulfide on carbon towards the hydrogen evolution reaction. **2020**, 874, 114459	
429	Interface Engineering with Ultralow Ruthenium Loading for Efficient Water Splitting. **2020**, 12, 36177-36185	11
428	Visible light driven photosplitting of water using one dimensional Mg doped ZnO nanorod arrays. **2020**, 45, 22576-22588	8
427	Growth of Multiorientated Polycrystalline MoS Using Plasma-Enhanced Chemical Vapor Deposition for Efficient Hydrogen Evolution Reactions. **2020**, 10,	2
426	Paradigm change in hydrogen electrocatalysis: The volcano's apex is located at weak bonding of the reaction intermediate. **2020**, 45, 27221-27229	24
425	Electrocatalytic Activity of Bimetallic NiMoP Nanocrystals for Hydrogen Evolution Reaction. **2020**, 3, 8199-8207	11
424	Electron-deficient titanium single-atom electrocatalyst for stable and efficient hydrogen production. **2020**, 78, 105151	4

423	Boosting hydrogen and oxygen evolution reactions on electrodeposited nickel electrodes via simultaneous mesoporosity, magnetohydrodynamics and high gradient magnetic force. *Journal of Materials Chemistry A*, **2020**, 8, 24782-24799	13	3
422	One-Step Synthesis of Modified Ti3C2 MXene-Supported Amorphous Molybdenum Sulfide Electrocatalysts by a Facile Gamma Radiation Strategy for Efficient Hydrogen Evolution Reaction. **2020**, 3, 10882-10891		6
421	Oxygen-Doped VS4 Microspheres with Abundant Sulfur Vacancies as a Superior Electrocatalyst for the Hydrogen Evolution Reaction. **2020**, 8, 15055-15064		6
420	Palladium/Stannic Oxide Interfacial Chemistry Promotes Hydrogen Oxidation Reactions in Alkaline Medium. **2020**, 7, 4562-4571		5
419	Nano/Microscale Integrated Mushroom-Shaped Hydrophilic with Optimized Gas Bubble Release for High-Performance Water Splitting Catalysis. **2020**, 3, 9769-9784		4
418	Construction of hollow structure cobalt iron selenide polyhedrons for efficient hydrogen evolution reaction. **2020**, 44, 12045-12055		7
417	Metal oxide-based materials as an emerging family of hydrogen evolution electrocatalysts. **2020**, 13, 3361-3392		151
416	In situ electrochemical H2 production for efficient and stable power-to-gas electromethanogenesis. **2020**, 22, 6194-6203		14
415	Hierarchical Nitrogen-doped Mo2C Nanoparticle-in-microflower Electrocatalyst: in Situ Synthesis and Efficient Hydrogen-evolving Performance in Alkaline and Acidic Media. **2020**, 12, 6040-6049		5
414	Designing of Ag2S Nanowires from a Single-Source Molecular Precursor [(PPh3)2AgS2P(OiPr)2] for Hydrogen Evolution Reaction. **2020**, 5, 10593-10598		0
413	Zeolitic imidazolate frameworks derived nitrogen doped porous carbon for electrochemical reduction of CO2. **2020**, 450, 012114		1
412	Efficient Machine-Learning-Aided Screening of Hydrogen Adsorption on Bimetallic Nanoclusters. **2020**, 22, 768-781		4
411	Electrochemical characterisation of multifunctional electrocatalytic mesoporous Ni-Pt thin films in alkaline and acidic media. **2020**, 359, 136952		3
410	Electrodeposition of Ni-doped MoS2 Thin Films. **2020**, 167, 082512		2
409	Water structure near the surface of Weyl semimetals as catalysts in photocatalytic proton reduction. **2020**, 7, 034101		2
408	Engineering the surface wettability of a ceramic carbon electrode for improved hydrogen evolution performance of a molybdenum sulfide electrocatalyst. **2020**, 4, 4018-4029		2
407	Advancement of Platinum (Pt)-Free (Non-Pt Precious Metals) and/or Metal-Free (Non-Precious-Metals) Electrocatalysts in Energy Applications: A Review and Perspectives. **2020**, 34, 6634-6695		53
406	Vanadium-doping in interlayer-expanded MoS2 nanosheets for the efficient electrocatalytic hydrogen evolution reaction. **2020**, 7, 2497-2505		9

405	Wettability transition of Ni3B4-doped MoS2 for hydrogen evolution reaction by magnetron sputtering. **2020**, 510, 145368		5
404	Cuprous oxide (Cu2O)/graphitic carbon nitride (g-C3N4) nanocomposites for electrocatalytic hydrogen evolution reaction. **2020**, 107, 107899		24
403	Self-supported mesoporous bitungsten carbide nanoplates electrode for efficient hydrogen evolution reaction. **2020**, 45, 14821-14830		2
402	Recent Advances in the Understanding of Nickel-Based Catalysts for the Oxidation of Hydrogen-Containing Fuels in Alkaline Media. **2020**, 10, 7043-7068		46
401	Scalable solid-state synthesis of MoS2□NiS2/graphene nanohybrids as bifunctional electrocatalysts for enhanced overall water splitting. **2020**, 1, 794-803		9
400	Catalytic activity of electrodeposited ternary Co□NiRh thin films for water splitting process. **2020**, 45, 34805-34817		10
399	Enhancing Hydrogen Evolution Reaction by Synergistically Coupling NiMo Alloy with Ni(OH)2 Nanosheet on Carbon Cloth. **2020**, 5, 6774-6779		7
398	Interfacial engineering of Ni/V2O3 for hydrogen evolution reaction. **2020**, 13, 2407-2412		24
397	Transition-metal-based electrocatalysts for hydrazine-assisted hydrogen production. **2020**, 7, 100083		7
396	Ultrafine Mo-Doped Co2P Nanorods Anchored on Reduced Graphene Oxide as Efficient Electrocatalyst for the Hydrogen Evolution Reaction. **2020**, 37, 058201		1
395	Solar energy conversion and utilization: Towards the emerging photo-electrochemical devices based on perovskite photovoltaics. **2020**, 393, 124766		42
394	Cobalt Metal□Cobalt Carbide Composite Microspheres for Water Reduction Electrocatalysis. **2020**, 3, 3909-3918		11
393	High-performance hydrogen evolution at a MoSe2□Mo2C seamless heterojunction enabled by efficient charge transfer. *Journal of Materials Chemistry A*, **2020**, 8, 6692-6698	13	22
392	Recent progress in electrode fabrication for electrocatalytic hydrogen evolution reaction: A mini review. **2020**, 393, 124726		62
391	Promoting Formation of Oxygen Vacancies in Two-Dimensional Cobalt-Doped Ceria Nanosheets for Efficient Hydrogen Evolution. **2020**, 142, 6461-6466		82
390	Self-limited conversion of MoO2 into ultramicro MoS2 nanosheets on graphene/CNTs matrix for hydrogen evolution with excellent stability. **2020**, 4, 2869-2874		5
389	Spectroscopic Techniques as Critical Evaluation Tools for Electrochemical Carbon dioxide Reduction: A Mini Review. **2020**, 8, 137		9
388	Ternary NiFeTiOOH Catalyst for the Oxygen Evolution Reaction: Study of the Effect of the Addition of Ti at Different Loadings. **2020**, 10, 4879-4887		15

387	In-situ growth of Ni nanoparticle-encapsulated N-doped carbon nanotubes on carbon nanorods for efficient hydrogen evolution electrocatalysis. **2020**, 13, 975-982		25
386	Neutral heteroleptic nickel complexes incorporating maleonitriledithiolate and bis(diphenylphosphanyl)amine as robust molecular electrocatalysts for hydrogen evolution. **2020**, 507, 119587		4
385	Pt-decorated fluorine-free Ti3C2TX for hydrogen evolution reaction. **2020**, 31, 11345-11351		1
384	Two-Dimensional Layered Materials: High-Efficient Electrocatalysts for Hydrogen Evolution Reaction. **2020**, 3, 6270-6296		27
383	Engineering Mo-O-C interface in MoS2@rGO via charge transfer boosts hydrogen evolution. **2020**, 399, 126018		28
382	Does power ultrasound (26 kHz) affect the hydrogen evolution reaction (HER) on Pt polycrystalline electrode in a mild acidic electrolyte?. **2020**, 69, 105238		8
381	Trace Iridium Engineering on Nickel Hydroxide Nanosheets as High-active Catalyst for Overall Water Splitting. **2020**, 12, 5720-5726		10
380	Light-driven catalysis with engineered enzymes and biomimetic systems. **2020**, 67, 463-483		15
379	Nickel-based nanocoatings on 3D Ni foam for zero-gap alkaline water electrolysis. **2020**, 50, 959-971		6
378	Transition metal mixed oxide-embedded graphene oxide bilayers as an efficient electrocatalyst for optimizing hydrogen evolution reaction in alkaline media. **2020**, 44, 13889-13901		3
377	Exploring the hydrogen evolution capabilities of earth-abundant ternary metal borides for neutral and alkaline water-splitting. **2020**, 354, 136738		18
376	Hierarchical Co$_{1/3}$Mo$_{2/3}$S$_2$ nanoflowers as efficient electrocatalyst for hydrogen evolution reaction in neutral media. **2020**, 844, 156108		7
375	Electrospun CNF Supported Ceramics as Electrochemical Catalysts for Water Splitting and Fuel Cell: A Review. **2020**, 12,		18
374	Synergistic Effect of Molybdenum and Tungsten in Highly Mixed Carbide Nanoparticles as Effective Catalysts in the Hydrogen Evolution Reaction under Alkaline and Acidic Conditions. **2020**, 7, 983-988		5
373	Low Pt-Content Ternary PtNiCu Nanoparticles with Hollow Interiors and Accessible Surfaces as Enhanced Multifunctional Electrocatalysts. **2020**, 12, 9600-9608		27
372	Green Synthesis of M0 Nanoparticles (M=Pd, Pt, and Ru) for Electrocatalytic Hydrogen Evolution. **2020**, 60, 630-637		1
371	General Colloidal Synthesis of Transition-Metal Disulfide Nanomaterials as Electrocatalysts for Hydrogen Evolution Reaction. **2020**, 12, 13148-13155		9
370	Intermolecular electron modulation by P/O bridging in an IrO2-CoPi catalyst to enhance the hydrogen evolution reaction. *Journal of Materials Chemistry A*, **2020**, 8, 8273-8280	13	13

369	A highly mismatched NiO2-to-Pd hetero-structure as an efficient nanocatalyst for the hydrogen evolution reaction. **2020**, 4, 2541-2550		10
368	Dynamic evolution of a hydroxylated layer in ruthenium phosphide electrocatalysts for an alkaline hydrogen evolution reaction. *Journal of Materials Chemistry A*, **2020**, 8, 5655-5662	13	7
367	Electrolysis of low-grade and saline surface water. **2020**, 5, 367-377		212
366	An Asymmetric Iron-Based Redox-Active System for Electrochemical Separation of Ions in Aqueous Media. **2020**, 30, 1910363		22
365	Self-assembly Mesoporous FeP Film with High Porosity for Efficient Hydrogen Evolution Reaction. **2020**, 12, 2589-2594		8
364	Electrocatalyst engineering and structure-activity relationship in hydrogen evolution reaction: From nanostructures to single atoms. **2020**, 63, 921-948		48
363	MOF-derived electrocatalysts for oxygen reduction, oxygen evolution and hydrogen evolution reactions. **2020**, 49, 1414-1448		587
362	Accelerating Atomic Catalyst Discovery by Theoretical Calculations-Machine Learning Strategy. **2020**, 10, 1903949		41
361	Probing into the effect of heterojunctions between Cu/Mo2C/Mo2N on HER performance. **2020**, 10, 2213-2220		8
360	The ultrafine monolayer 1 T/2H-MoS2: Preparation, characterization and amazing photocatalytic characteristics. **2020**, 589, 124431		8
359	Delafossite CuGaO2 as promising visible-light-driven photocatalyst: synthesize, properties, and performances. **2020**, 53, 135102		6
358	Recent Advances in Non-Precious Transition Metal/Nitrogen-doped Carbon for Oxygen Reduction Electrocatalysts in PEMFCs. **2020**, 10, 141		26
357	Basicity and Electrolyte Composition Dependent Stability of Ni-Fe-S and Ni-Mo Electrodes during Water Splitting. **2020**, 21, 518-524		4
356	Magnetism modulation of Co3S4 towards the efficient hydrogen evolution reaction. **2020**, 5, 565-572		4
355	Fundamental aspects and recent advances in transition metal nitrides as electrocatalysts for hydrogen evolution reaction: A review. **2020**, 24, 100805		102
354	Co@CoAl-Layered Double Hydroxide/Nitrogen-Doped Graphene Composite Catalyst for Al–H2O-Based Batteries: Simultaneous Hydrogen Production and Electricity Generation. **2020**, 7, 2582-2591		4
353	Metal-Organic Framework-Based Catalysts with Single Metal Sites. **2020**, 120, 12089-12174		291
352	Biomass-derived self-supported porous carbon membrane embedded with Co nanoparticles as an advanced electrocatalyst for efficient and robust hydrogen evolution reaction. **2020**, 155, 447-455		10

351	TiO2/ZrO2 Nanoparticle Composites for Electrochemical Hydrogen Evolution. **2020**, 3, 3634-3645	12
350	Facile synthesis of nanoparticle-stacked tungsten-doped nickel iron layered double hydroxide nanosheets for boosting oxygen evolution reaction. *Journal of Materials Chemistry A*, **2020**, 8, 8096-8103	30
349	Self-Supported CoP Nanoparticle-Embedded Wood-Derived Porous Carbon Membrane for Efficient H2 Evolution in Both Acidic and Basic Solutions. **2020**, 12, 3929-3936	3
348	[Mo2O2S8]2□small molecule dimer as a basis for hydrogen evolution reaction (HER) catalyst materials. **2020**, 2, 1	3
347	Selective electrochemical production of hydrogen peroxide at zigzag edges of exfoliated molybdenum telluride nanoflakes. **2020**, 7, 1360-1366	27
346	Tuning the reactivity of cobalt-based H2 production electrocatalysts via the incorporation of the peripheral basic functionalities. **2020**, 416, 213335	21
345	Strongly coupled carbon encapsulated Ni-WO2 hybrids as efficient catalysts for water-to-hydrogen conversion via urea electro-oxidation. **2020**, 458, 228014	29
344	Nanostructured NiSeS on Porous-Carbon Skeletons as Highly Efficient Electrocatalyst for Hydrogen Evolution in Acidic Medium. **2020**, 59, 6018-6025	7
343	Crystallographic facet selective HER catalysis: exemplified in FeP and NiP single crystals. **2020**, 11, 5007-5016	30
342	Platelet carbon nanofibers as support of Pt-CoO electrocatalyst for superior hydrogen evolution. **2021**, 52, 33-40	9
341	Design of efficient electrocatalysts for hydrogen evolution reaction based on 2D MXenes. **2021**, 55, 244-255	46
340	Grain Boundaries Boost Oxygen Evolution Reaction in NiFe Electrocatalysts.. **2021**, 5, e2000755	7
339	An account of the strategies to enhance the water splitting efficiency of noble-metal-free electrocatalysts. **2021**, 59, 160-190	18
338	Toward expanding the realm of high entropy materials to platinum group metals: A review. **2021**, 851, 156838	24
337	Catalytic activity for hydrogen evolution reaction in square phase Janus MoSSe monolayer: A first-principles study. **2021**, 126, 114485	1
336	Molybdenum carbide nanoparticles assembling in diverse heteroatoms doped carbon matrix as efficient hydrogen evolution electrocatalysts in acidic and alkaline medium. **2021**, 171, 385-394	16
335	Recent advances in non-precious metal electrocatalysts for pH-universal hydrogen evolution reaction. **2021**, 6, 458-478	22
334	Recent progress on synthetic strategies and applications of transition metal phosphides in energy storage and conversion. **2021**, 47, 4404-4425	47

333	Facilitated Water Adsorption and Dissociation on Ni/Ni 3 S 2 Nanoparticles Embedded in Porous S-doped Carbon Nanosheet Arrays for Enhanced Hydrogen Evolution. **2021**, 8, 2001665	6
332	Tuning the surface using palladium based metallosurfactant for hydrogen evolution reaction. **2021**, 582, 894-905	3
331	Synthesis of raspberry-like antimony-platinum (SbPt) nanoparticles as highly active electrocatalysts for hydrogen evolution reaction. **2021**, 584, 729-737	5
330	Alloying Nickel with Molybdenum Significantly Accelerates Alkaline Hydrogen Electrocatalysis. **2021**, 133, 5835-5841	5
329	Excellent hydrogen generation from ultrathin nanosheets of cobalt cyclotetraphosphate. **2021**, 265, 114983	3
328	Alloying Nickel with Molybdenum Significantly Accelerates Alkaline Hydrogen Electrocatalysis. **2021**, 60, 5771-5777	41
327	In-situ formation of an efficient trimetallic (Cu?Zn?Ag) electrocatalyst for water oxidation. **2021**, 45, 2931-2944	1
326	Needle-like CoP/rGO growth on nickel foam as an efficient electrocatalyst for hydrogen evolution reaction. **2021**, 46, 9690-9698	15
325	Nanomaterials as electrocatalyst for hydrogen and oxygen evolution reaction: Exploitation of challenges and current progressions. **2021**, 193, 114871	8
324	MXenes: Novel electrocatalysts for hydrogen production and nitrogen reduction. **2021**, 370, 2-13	9
323	Dilute molybdenum atoms embedded in hierarchical nanoporous copper accelerate the hydrogen evolution reaction. **2021**, 191, 56-61	8
322	Probing the origin of group VB transition metal monocarbides for high-efficiency hydrogen evolution reaction: A DFT study. **2021**, 539, 148312	7
321	Ultra-small hollow ternary alloy nanoparticles for efficient hydrogen evolution reaction. **2021**, 8, nwaa204	5
320	A novel Co-based MOF/Pd composite: synergy of charge-transfer towards the electrocatalytic oxygen evolution reaction. **2021**, 23, 2982-2991	3
319	Metal–organic framework (MOF) derived flower-shaped CoSe2 nanoplates as a superior bifunctional electrocatalyst for both oxygen and hydrogen evolution reactions. **2021**, 5, 4992-5000	4
318	Bifunctional PGM-free metal organic framework-based electrocatalysts for alkaline electrolyzers: trends in the activity with different metal centers. **2021**, 13, 4576-4584	6
317	A monodispersed CuPt alloy: synthesis and its superior catalytic performance in the hydrogen evolution reaction over a full pH range.. **2021**, 11, 12470-12475	0
316	DNA-based low resistance palladium nano-spheres for effective hydrogen evolution reaction. **2021**, 11, 5868-5880	0

315	Core–Shell Functional Materials for Electrocatalysis. **2021**, 303-342		
314	A morphology controlled surface sulfurized CoMn2O4 microspike electrocatalyst for water splitting with excellent OER rate for binder-free electrocatalytic oxygen evolution. *Journal of Materials Chemistry A*, **2021**, 9, 12255-12264	13	33
313	Concomitant induction to few-layer and 1T-rich two-dimensional MoS by rigid segment-containing polysulfide as a sulfur source and in situ intercalator. **2021**, 57, 2277-2280		3
312	Heterostructure NiS-MoS with interfacial electron redistribution used for enhancing hydrogen evolution.. **2021**, 11, 19630-19638		4
311	Active Site Engineering on Two-Dimensional-Layered Transition Metal Dichalcogenides for Electrochemical Energy Applications: A Mini-Review. **2021**, 11, 151		4
310	PMO12@ZIF-8/ZnO-derived hierarchical porous molybdenum carbide as efficient electrocatalysts for hydrogen evolution. **2021**, 45, 9456-9461		3
309	Construction of MoO2@MoS2 heterostructures in situ on carbon cloth for the hydrogen evolution reaction.		0
308	Highly Efficient Electrocatalytic Water Splitting. **2021**, 1335-1367		
307	Shape-selective rhodium nano-huddles on DNA for high efficiency hydrogen evolution reaction in acidic medium. **2021**, 9, 1709-1720		6
306	Investigation on nanostructured Cu-based electrocatalysts for improvising water splitting: a review. **2021**, 8, 234-272		45
305	Nanostructured multifunctional electrocatalysts for efficient energy conversion systems: Recent perspectives. **2021**, 10, 137-157		10
304	Recent advances in transition-metal-sulfide-based bifunctional electrocatalysts for overall water splitting. *Journal of Materials Chemistry A*, **2021**, 9, 5320-5363	13	80
303	Dark-Field Imaging of Cation Exchange Synthesis of CuS@AuS@Au Nanoplates toward the Plasmonic Enhanced Hydrogen Evolution Reaction. **2021**, 13, 6515-6521		3
302	Carbon Nanotube Supported Amorphous MoS2 via Microwave Heating Synthesis for Enhanced Performance of Hydrogen Evolution Reaction. **2021**, 2021, 1-8		4
301	Electronic Structure of a Diiron Complex: A Multitechnique Experimental Study of [(dppf)Fe(CO)]. **2021**, 60, 2856-2865		1
300	Recent advances on electrocatalytic and photocatalytic seawater splitting for hydrogen evolution. **2021**, 46, 9087-9100		26
299	Microbial Electrolysis Cells for Decentralised Wastewater Treatment: The Next Steps. **2021**, 13, 445		3
298	Fine-tuning interlayer spacing in MoS2 for enriching 1T phase via alkylated ammonium ions for electrocatalytic hydrogen evolution reaction. **2021**, 46, 8377-8390		5

297	Surface-Modified Covalent Organic Polymer for Metal-Free Electrocatalytic Hydrogen Evolution Reaction. **2021**, 3, 1376-1384	2
296	Growth of MoSe2 electrocatalyst from metallic molybdenum nanoparticles for efficient hydrogen evolution. **2021**, 26, 101976	2
295	In situ integrated 2D reduced graphene oxide nanosheets with MoSSe for hydrogen evolution reaction and supercapacitor application. **2021**, 3, 100054	8
294	Elimination of Interlayer Potential Barriers of Chromium Sulfide by Self-Intercalation for Enhanced Hydrogen Evolution Reaction. **2021**, 13, 13055-13062	6
293	InGaN-based nanowires development for energy harvesting and conversion applications. **2021**, 129, 121103	3
292	High Spatial Resolution Electrochemical Microscopic Observation of Enhanced Charging under Bias at Active Sites of N-rGO. **2021**, 4, 3502-3507	4
291	Metal-organic framework-derived Ni doped Co3S4 hierarchical nanosheets as a monolithic electrocatalyst for highly efficient hydrogen evolution reaction in alkaline solution. **2021**,	0
290	Significantly enhanced electrocatalytic activity of copper for hydrogen evolution reaction through femtosecond laser blackening. **2021**, 46, 10783-10788	6
289	Cobalt-Based Electrocatalysts for Water Splitting: An Overview. **2021**, 25, 114-147	2
288	Designing a novel cactus-like nickel cobalt phosphide based electrocatalyst for hydrogen evolution. **2021**, 543, 148726	8
287	Recent advances in vacancy engineering of metal-organic frameworks and their derivatives for electrocatalysis. **2021**, 1, 66-87	87
286	Tuning Ni-MoO Catalyst-Ionomer and Electrolyte Interaction for Water Electrolyzers with Anion Exchange Membranes. **2021**, 4, 3327-3340	8
285	Electrocatalytic activity of layered MAX phases for the hydrogen evolution reaction. **2021**, 125, 106977	8
284	Insights into the principles, design methodology and applications of electrocatalysts towards hydrogen evolution reaction. **2021**, 7, 8577-8577	1
283	Weakening Intermediate Bindings on CuPd/Pd Core/shell Nanoparticles to Achieve Pt-Like Bifunctional Activity for Hydrogen Evolution and Oxygen Reduction Reactions. **2021**, 31, 2100883	14
282	3D Printed Nickel-Molybdenum-Based Electrocatalysts for Hydrogen Evolution at Low Overpotentials in a Flow-Through Configuration. **2021**, 13, 20260-20268	4
281	Morphological and Elemental Investigations on CoFeBO Thin Films Deposited by Pulsed Laser Deposition for Alkaline Water Oxidation: Charge Exchange Efficiency as the Prevailing Factor in Comparison with the Adsorption Process. 1	0
280	Facile synthesis of MoS2 nanosheets-deposited TiO2 nanotubes array electrode for enhanced electrocatalytic hydrogen evolution reaction. **2021**, 127, 108534	1

279	Electrochemical behavior of the flower shaped CoMn2O4 spinel structure assembled for effective HER from water splitting. **2021**, 379, 138168	7
278	A comparative differential electrochemical mass spectrometry (DEMS) study towards the CO2 reduction on Pd, Cu, and Sn -based electrocatalyst. **2021**, 47, 101504	3
277	Synthesis of biomass porous carbon materials from bean sprouts for hydrogen evolution reaction electrocatalysis and supercapacitor electrode. **2021**, 46, 18887-18897	11
276	Enhanced Hydrogen Evolution Activity of Phosphorus-Rich Tungsten Phosphide by Cobalt Doping: A Comprehensive Study of the Active Sites and Electronic Structure. **2021**, 8, 1658-1664	2
275	Electron injection induced phase transition of 2H to 1T MoS2 by cobalt and nickel substitutional doping. **2021**, 411, 128567	10
274	Interfacial electron transfer for carbon dioxide valorization in hybrid inorganic-microbial systems. **2021**, 292, 116885	7
273	Meritorious spatially on hierarchically Co3O4/MoS2 phase nanocomposite synergistically a high-efficient electrocatalyst for hydrogen evolution reaction performance: Recent advances & future perspectives. **2021**, 46, 22707-22718	7
272	Encapsulation of Pt nanocatalyst with N-containing carbon layer for improving catalytic activity and stability in the hydrogen evolution reaction. **2021**, 46, 21454-21461	6
271	Surface electron accumulation and enhanced hydrogen evolution reaction in MoSe2 basal planes. **2021**, 84, 105922	10
270	Recent advances in nanostructured electrocatalysts for hydrogen evolution reaction. **2021**, 40, 3375-3405	18
269	Pentadentate Copper(II)-amidate complex as a precatalyst for electrocatalytic proton reduction. **2021**, 46, 21542-21548	0
268	Synthesis of iron pyrite with efficient bifunctional electrocatalytic activity towards overall water splitting in alkaline medium. **2021**, 44, 1	2
267	A universal CoO/CoSe2 heterostructure electrocatalyst towards hydrogen evolution reaction via in-situ partial surface-oxidation-selenization method. **2021**, 267, 124644	2
266	Highly efficient hydrogen evolution reaction performance and long-term stability of spherical Ni100−xFex alloy grown directly on a carbon paper electrode. **2021**, 869, 159265	4
265	Introducing a self-improving catalyst for hydrogen evolution and efficient catalyst for oxygen evolution reaction. **2021**, 334, 116511	1
264	Progress and challenges pertaining to the earthly-abundant electrocatalytic materials for oxygen evolution reaction. **2021**, 28, e00252	4
263	Two Types of Single-Atom FeN4 and FeN5 Electrocatalytic Active Centers on N-Doped Carbon Driving High Performance of the SA-Fe-NC Oxygen Reduction Reaction Catalyst. **2021**, 33, 5542-5554	10
262	A fascinating pH independent catalyst for hydrogen evolution reaction: Crystalline bimetallic hcp-Co Rh1- alloy nanofibers driven by thermally induced phase transition from a single phase of CoRh2O4. **2021**, 553, 149568	2

261	General Design Concept for Single-Atom Catalysts toward Heterogeneous Catalysis. **2021**, 33, e2004287	60
260	Single-source-precursor synthesis of porous W-containing SiC-based nanocomposites as hydrogen evolution reaction electrocatalysts. 1	5
259	A comparative study of different carbon materials as metal-free catalysts for oxygen reduction and hydrogen evolution reactions in alkaline media. **2021**, 117, 108464	2
258	Edge-Rich Reduced Graphene Oxide Embedded in Silica-Based Laminated Ceramic Composites for Efficient and Robust Electrocatalytic Hydrogen Evolution.. **2021**, 5, e2100621	0
257	Highly Dispersed Ru Nanoparticles on Boron-Doped Ti C T (MXene) Nanosheets for Synergistic Enhancement of Electrocatalytic Hydrogen Evolution. **2021**, 17, e2102218	12
256	Cleaner way for overall water splitting reaction by using palladium and cobalt based nanocomposites prepared from mixed metallosurfactants. **2021**, 556, 149769	1
255	Recent developments in the use of single-atom catalysts for water splitting. **2021**, 42, 1269-1286	14
254	Operando toolbox for heterogeneous interface in electrocatalysis. **2021**, 1, 509-522	2
253	Hydrogen evolution catalysis by terminal molybdenum-oxo complexes. **2021**, 24, 102924	3
252	Layered transition metal selenophosphites for visible light photoelectrochemical production of hydrogen. **2021**, 129, 107077	3
251	Nitrogen Functionalization of CVD Grown Three-Dimensional Graphene Foam for Hydrogen Evolution Reactions in Alkaline Media. **2021**, 14,	6
250	PVA decorated Pt nanoparticles as an efficient electrocatalyst for hydrogen evolution reaction. **2021**, 27, 4885	
249	Emerging two-dimensional nanocatalysts for electrocatalytic hydrogen production. **2021**,	4
248	Facile control of surface reconstruction with Co2+ or Co3+-rich (oxy)hydroxide surface on ZnCo phosphate for large-current-density hydrogen evolution in alkali. **2021**, 20, 100448	5
247	Atmosphere plasma treatment and Co heteroatoms doping on basal plane of colloidal 2D VSe2 nanosheets for enhanced hydrogen evolution. **2021**, 46, 32425-32434	1
246	Synthesis and comparative evaluation of optical and electrochemical properties of Ni+2 and Pr+3 ions co-doped mesoporous TiO2 nanoparticles with undoped Titania. 1	
245	CoS2 nanowires supported graphdiyne for highly efficient hydrogen evolution reaction. **2021**, 60, 272-278	10
244	System Theoretical Study on the Effect of Variable Nonmetallic Doping on Improving Catalytic Activity of 2D-TiCO for Hydrogen Evolution Reaction. **2021**, 11,	1

243	Electrocatalytic Hydrogen Evolution Reaction Related to Nanochannel Materials. **2021**, 2, 2100076	10
242	Manganese Oxoborate-Based Nanostructures as Novel Oxygen Evolution Catalysts in Neutral Media.	1
241	Sandwich structured Ni3S2-MoS2-Ni3S2@Ni foam electrode as a stable bifunctional electrocatalyst for highly sustained overall seawater splitting. **2021**, 390, 138833	9
240	Multicomponent nonprecious hydrogen evolution catalysts for high performance and durable proton exchange membrane water electrolyzer. **2021**, 506, 230200	5
239	Porous N, P co-doped carbon-coated ultrafine Co2P nanoparticles derived from DNA: An electrocatalyst for highly efficient hydrogen evolution reaction. **2021**, 393, 139051	3
238	Optimization of hydrogen evolution reaction catalytic activity of Ti2CO2 via surface engineering with an isolated fluorine effect: An ab-initio density functional theory study. **2021**, 562, 150149	0
237	Self-supporting transition metal chalcogenides on metal substrates for catalytic water splitting. **2021**, 421, 129645	14
236	Stabilization of Orthorhombic CoSe2 by 2D-rGO/MWCNT Heterostructures for Efficient Hydrogen Evolution Reaction and Flexible Energy Storage Device Applications.	4
235	Electro-reduced graphene oxide nanosheets coupled with RuAu bimetallic nanoparticles for efficient hydrogen evolution electrocatalysis. **2021**, 421, 129987	12
234	Synthesis and comparative evaluation of optical and electrochemical properties of efficacious heterostructured-nanocatalysts of ZnSe with commercial and reduced titania. **2021**, 879, 160449	6
233	Graphitic carbon nitride composites as electro catalysts: Applications in energy conversion/storage and sensing system. **2021**, 320, 128693	1
232	In-situ electrosynthesis Cu-PtBTC MOF-derived nanocomposite modified glassy carbon electrode for highly performance electrocatalysis of hydrogen evolution reaction. **2021**, 900, 115716	1
231	Single noble metal atoms doped 2D materials for catalysis. **2021**, 297, 120389	17
230	Porosity and thickness effect of Pd□CuSi metallic glasses on electrocatalytic hydrogen production and storage. **2021**, 210, 110099	0
229	Nanostructured NiCoS@NiCoO-reduced graphene oxide as an efficient hydrogen evolution electrocatalyst in alkaline electrolyte. **2021**, 601, 570-580	6
228	Two-dimensional hetero-nanostructured electrocatalyst of Ni/NiFe-layered double oxide for highly efficient hydrogen evolution reaction in alkaline medium. **2021**, 426, 131827	6
227	Electrochemical template synthesis of copper hollow microtubes with dendritic surface and advanced HER performance. **2021**, 305, 130808	1
226	Implanted cobalt ions in two zinc-based frameworks: Improved electrocatalyst for hydrogen evolution reaction. **2022**, 427, 130952	3

225	Hierarchical nanostructure with ultrafine MoO3 particles-decorated Co(OH)2 nanosheet array on Ag nanowires for promoted hydrogen evolution reaction. **2022**, 429, 132477		6
224	Kinetics of furfural electrochemical hydrogenation and hydrogenolysis in acidic media on copper.		2
223	HERs in an acidic medium over MoS2 nanosheets: from fundamentals to synthesis and the recent progress. **2021**, 5, 1952-1987		7
222	Platinum-complexed phosphorous-doped carbon nitride for electrocatalytic hydrogen evolution. *Journal of Materials Chemistry A*,	13	3
221	Local electrochemical activity of transition metal dichalcogenides and their heterojunctions on 3D-printed nanocarbon surfaces. **2021**, 13, 5324-5332		6
220	Electrochemically dealloyed nanoporous FeNiCoPC metallic glass for efficient and stable electrocatalytic hydrogen and oxygen generation.. **2021**, 11, 7369-7380		3
219	Electrochemical hydrogen evolution reaction efficiently catalyzed by Ru□N coupling in defect-rich Ru/g-C3N4 nanosheets. *Journal of Materials Chemistry A*, **2021**, 9, 15019-15026	13	9
218	A fast and general approach to produce a carbon coated Janus metal/oxide hybrid for catalytic water splitting. *Journal of Materials Chemistry A*, **2021**, 9, 7606-7616	13	6
217	A Review on Advanced FeNi-Based Catalysts for Water Splitting Reaction. **2020**, 34, 13491-13522		64
216	Colloidal synthesis of porous red phosphorus nanoparticles as a metal-free electrocatalyst for the hydrogen evolution reaction. **2020**, 56, 2937-2940		10
215	Cu□Co bimetallic nanospheres embedded in graphene as excellent anode catalysts for electrocatalytic oxygen evolution reaction. **2019**, 14, 466-469		2
214	Nickel telluride vertically aligned thin film by radio-frequency magnetron sputtering for hydrogen evolution reaction. **2020**, 8, 121104		2
213	High Durability and Electrocatalytic Activity Toward Hydrogen Evolution Reaction with Ultralow Rhodium Loading on Titania. **2020**, 167, 156501		2
212	Silicon based photoelectrodes for photoelectrochemical water splitting. **2019**, 27, A51-A80		41
211	Current progressions in transition metal based hydroxides as bi-functional catalysts towards electrocatalytic total water splitting.		2
210	Effect of heat treatment on the morphology of carbon fibers doped with Cop nanoparticles. **2021**, 1-13		0
209	Efficient Mn-Ni-Co nanocomposite□based electrocatalyst for oxygen evolution reaction in alkaline media.		0
208	Preparation of p-n heterojunction with NiWO4 and Co-based bimetallic oxide and its photocatalytic hydrogen evolution performance. **2021**, 56, 20098		0

207	Scalable Synthesis of Sm2O3/Fe2O3 Hierarchical Oxygen Vacancy-Based Gyroid-Inspired Morphology: With Enhanced Electrocatalytic Activity for Oxygen Evolution Performance.	4
206	Solar-Driven Water Splitting at 13.8% Solar-to-Hydrogen Efficiency by an Earth-Abundant Electrolyzer. **2021**, 9, 14070-14078	2
205	Boosted hydrogen evolution in alkaline media enabled by a facile oxidation-involving surface modification. **2021**, 398, 139337	0
204	Polymer-Derived Carbon/Inorganic Nanohybrids for Electrochemical Energy Storage and Conversion. **2017**, 419-480	
203	Engineering Two-Dimensional Transition Metal Dichalcogenide Electrocatalysts for Water Splitting Hydrogen Generation. **2018**, 1-29	
202	Chapter 9:High Electrocatalytic Performance of Two-dimensional Layered MoS2-based Materials for the Hydrogen Evolution Reaction. **2019**, 283-310	0
201	Self-supported Electrocatalysts. **2020**, 177-209	
200	Metal-nitrogen intimacy of the nitrogen-doped ruthenium oxide for facilitating electrochemical hydrogen production. **2021**, 120873	4
199	PtRh alloy catalysts for hydrogen generation developed by direct current/pulse current method. 1	1
198	Enhanced oxygen evolution reaction on polyethyleneimine functionalized graphene oxide in alkaline medium. **2021**, 516, 111960	1
197	Biogenic synthesized silver nanoparticles decorated polypyrrole nanotubes as promising photocatalyst for methyl violet dye degradation. **2020**, 28, 2311-2317	4
196	Advanced hydrogen evolution electrocatalysts promising sustainable hydrogen and chlor-alkali co-production.	13
195	Functionalized nanomaterials for electronics and electrical and energy industries. **2020**, 269-296	2
194	Highly Efficient Electrocatalytic Water Splitting. **2020**, 1-33	
193	Bifunctional nanocatalysts for water splitting and its challenges. **2020**, 59-95	
192	Chapter 11:Supported Vanadium Catalysts: Heterogeneous Molecular Complexes, Electrocatalysis and Biomass Transformation. **2020**, 241-284	
191	Hydroxyapatite-based biphasic catalysts with plasticity properties and its potential in carbon dioxide fixation. **2021**, 433, 133512	1
190	Charge Transport Dynamics in Microwave Synthesized One-Dimensional Molybdenum Chalcogenides.	

189	Microwave hydrothermal synthesis of hierarchical Ce-doped MoSe2@CNTs as an efficient non-precious catalyst for hydrogen evolution in both acidic and alkaline media. **2021**, 146, 111625	1
188	Solution-Processed Graphene Thin-Film Enables Binder-Free, Efficient Loading of Nanocatalysts for Electrochemical Water Splitting. 2101576	1
187	Nanostructured Ruthenium Oxide for Electrocatalysis of Hydrogen Evolution Reaction in Aqueous Alkaline Solutions. **2020**, 15, 730-734	
186	Accelerated optimization of pure metal and ligand compositions for light-driven hydrogen production.	1
185	Functional role of single-atom catalysts in electrocatalytic hydrogen evolution: Current developments and future challenges. **2022**, 452, 214289	5
184	Controllable synthesis of Mo2C with different morphology and application to electrocatalytic hydrogen evolution reaction. **2021**,	
183	Confined growth of NiFe LDH with hierarchical structures on copper nanowires for long-term stable rechargeable Zn-air batteries. **2021**, 577, 151911	0
182	Electrocatalytic Hydrogen Evolution Reaction Promoted by Co/N/C Catalysts with CoNx Active Sites Derived from Precursors Forming N-doped Graphene Nanoribbons.	0
181	Non-precious hydrogen evolution reaction catalysts: Stepping forward to practical polymer electrolyte membrane-based zero-gap water electrolyzers. **2021**, 433, 133681	1
180	Synthesis of MoS2/CoSe2-x hybrids as electrocatalysts for hydrogen evolution reaction. 1	
179	Single-atom catalysis for Zinc-air/O2 Batteries, Water Electrolyzers and Fuel Cells applications. **2021**,	11
178	Electrocatalytic Activity of Pristine and Electrochemically Activated SnSe 2 Nanoplates for the Hydrogen Evolution Reaction.	
177	Recent advances in electrocatalysis with phthalocyanines. **2021**, 50, 12985-13011	19
176	Phase controlled synthesis of transition metal carbide nanocrystals by ultrafast flash Joule heating.. **2022**, 13, 262	2
175	A newly synthesized bipyridine-containing manganese(II) complex immobilized on graphene oxide as active electrocatalyst for hydrogen gas production from alkaline solutions: Experimental and theoretical studies.	0
174	Synthesis and nano-engineering of MXenes for energy conversion and storage applications: Recent advances and perspectives. **2022**, 454, 214339	10
173	Evaluating Electrocatalytic Activity of Metal-Substituted Hafnium Diboride (Hf 1- x TM xB 2; TM = Ni and Co) Toward Water Splitting.	
172	Empower C1: Combination of Electrochemistry and Biology to Convert C1 Compounds. **2021**, 1	

171	Rare-earth molybdates ceramic nanomaterials. **2022**, 259-290	
170	Catalyst development for viability of electrochemical hydrogen purifier and compressor (EHPC) technology. **2022**,	0
169	Electrocatalytic Oxygen Evolution Reaction. **2022**, 35-85	
168	Recent advances in nanostructured nonoxide materialsBorides, borates, chalcogenides, phosphides, phosphates, nitrides, carbides, alloys, and metal-organic frameworks. **2022**, 329-368	1
167	Future prospects of oxide-free materials for energy-related applications. **2022**, 451-466	
166	MoS nanosheets vertically grown on CoSe hollow nanotube arrays as an efficient catalyst for the hydrogen evolution reaction.. **2022**,	3
165	Electrodeposited Transition Metal Dichalcogenides for Use in Hydrogen Evolution Electrocatalysts. **2022**, 169, 026510	0
164	Advanced Spatiotemporal Voltammetric Techniques for Kinetic Analysis and Active Site Determination in the Electrochemical Reduction of CO.. **2022**,	5
163	CeO decorated bimetallic phosphide nanowire arrays for enhanced oxygen evolution reaction electrocatalysis interface engineering.. **2022**,	5
162	Toward an e-chemistree: Materials for electrification of the chemical industry. 1	3
161	Mixed metal oxides as efficient electrocatalysts for water oxidation. **2022**, 47, 5250-5259	1
160	Highly Dispersed Pt Clusters on F-Doped Tin(IV) Oxide Aerogel Matrix: An Ultra-Robust Hybrid Catalyst for Enhanced Hydrogen Evolution. **2022**, 16, 1625-1638	7
159	NiMo/NiCo2O4 as synergy catalyst supported on nickel foam for efficient overall water splitting. **2022**, 518, 112086	2
158	Surface engineering of MOF-derived FeCo/NC core-shell nanostructures to enhance alkaline water-splitting. **2022**, 47, 5036-5043	2
157	Enhanced Photocatalytic Activity of Hierarchical Bi2WO6 Microballs by Modification with Noble Metals. **2022**, 12, 130	1
156	Vapor-assisted engineering heterostructure of 1D Mo3N2 nanorod decorated with nitrogen-doped carbon for rapid pH-Universal hydrogen evolution reaction. **2022**, 47, 5064-5073	1
155	Ni3S2 nanosheets decorated on NiCo2O4 flakes-arrays directional growth of Ni foam for enhanced electrochemical hydrogen generation. **2022**, 908, 116110	0
154	Localized Electrosynthesis and Subsequent Electrochemical Mapping of Catalytically Active Metal□Organic Frameworks. 2112517	1

153	FeV3O8/MoS2 nanostructure heterojunctions as a highly effective electrocatalyst for hydrogen evolution.	2
152	Synthesis of tin nanoparticles on Ketjen Black in ionic liquid and water for the hydrogen evolution reaction. **2022**, 136, 107243	1
151	Part II: NiMoO Nanostructures Synthesized by the Solution Combustion Method: A Parametric Study on the Influence of Material Synthesis and Electrode-Fabrication Parameters on the Electrocatalytic Activity in the Hydrogen Evolution Reaction.. **2022**, 27,	0
150	NiSe Nanoparticles Encapsulated in N-Doped Carbon Matrix Derived from a One-Dimensional Ni-MOF: An Efficient and Sustained Electrocatalyst for Hydrogen Evolution Reaction.. **2022**, 61, 2835-2845	2
149	Superior Performances of Electroless-Deposited NiP Films Decorated with an Ultralow Content of Pt for Water-Splitting Reactions.	1
148	Evaluating electrocatalytic activity of metal-substituted hafnium diboride (Hf1-TMB2; TM = Ni and Co) toward water splitting. **2022**, 905, 164148	1
147	Simultaneous integration of low-level rhenium (Re) doping and nitrogen-functionalized 3D carbon backbone into nickel-iron hydroxide (NiFeOH) to amplify alkaline water electrolysis at high current densities. **2022**, 435, 135184	2
146	Simultaneous Integration of Low-Level Rhenium (Re) Doping and Nitrogen-Functionalized 3d Carbon Backbone into Nickel-Iron Hydroxide (Nifeoh) to Amplify Alkaline Water Electrolysis at High Current Densities.	
145	Pentagonal PdX (X = S, Se) nanosheets with X vacancies as high-performance electrocatalysts for the hydrogen evolution reaction.. **2022**,	
144	Phosphorus-bridged ternary metal alloy encapsulated in few-layered nitrogen-doped graphene for highly efficient electrocatalytic hydrogen evolution. *Journal of Materials Chemistry A*, **2022**, 10, 7111-7121	3
143	Highly efficient catalysts of ruthenium clusters on Fe3O4/MWCNTs for the hydrogen evolution reaction.	1
142	Tailoring defects in 2D materials for electrocatalysis. **2022**, 303-337	
141	A tetra Co(II/III) complex with an open cubane CoO core and square-pyramidal Co(II) and octahedral Co(III) centres: bifunctional electrocatalytic activity towards water splitting at neutral pH.. **2022**,	3
140	Layer by Layer Deposition of 1T?-MoS 2 for the Hydrogen Evolution Reaction. **2022**, 7,	
139	Construction of Fe-doped NiS-NiS Heterostructured Microspheres Via Etching Prussian Blue Analogues for Efficient Water-Urea Splitting.. **2022**, 18, e2106841	4
138	Surface Modification towards Integral Bulk Catalysts of Transition Metal Borides for Hydrogen Evolution Reaction. **2022**, 12, 222	
137	Recent Progress in Two-Dimensional Materials for Electrocatalytic CO2 Reduction. **2022**, 12, 228	0
136	Platinum Nanoparticle-Electrodeposited Ti3C2Tx MXene as a Binder-Free Electrocatalyst for Improved Hydrogen Evolution. **2022**, 5, 3092-3099	2

135	Polydopamine-derived carbon layer anchoring NiCo-P nanowire arrays for high-performance binder-free supercapacitor and electrocatalytic hydrogen evolution.	0
134	Non-noble metal-based amorphous high-entropy oxides as efficient and reliable electrocatalysts for oxygen evolution reaction. 1	10
133	Robust Porous WC-Based Self-Supported Ceramic Electrodes for High Current Density Hydrogen Evolution Reaction.. **2022**, e2106029	2
132	Compositional Engineering of Co(II)MOF/Carbon-Based Overall Water Splitting Electrocatalysts: From Synergistic Effects to Structure–Activity Relationships.	5
131	Wet Treatment of Ni-Containing Electroplating Wastewater Doped with Fe and Co as a Hydrogen Evolution Catalyst. **2022**, 36, 4107-4117	
130	Two-dimensional Covalent Organic Frameworks: Intrinsic Synergy Promoting Photocatalytic Hydrogen Evolution. 1	0
129	High throughput preparation of Ni–Mo alloy thin films as efficient bifunctional electrocatalysts for water splitting. **2022**,	3
128	Direct acidic graphene oxide enabled fabrication of three-dimensional molybdenum trisulfide and reduced graphene oxide nanohybrid aerogels with simultaneous energy storage and electrocatalytic capability. **2022**, 50, 104296	1
127	A review on the electrocatalytic dissociation of water over stainless steel: Hydrogen and oxygen evolution reactions. **2022**, 161, 112323	0
126	Enhancing electrocatalytic N 2 reduction via tailoring the electric double layers. **2022**, 68,	1
125	On the thermodynamics of hydrogen adsorption over Pt(111) in 0.05M NaOH.. **2021**, 155, 244704	
124	Electrocatalytic Properties of Pulse-Reverse Electrodeposited Nickel Phosphide for Hydrogen Evolution Reaction.. **2021**, 9, 781838	0
123	References. **2021**, 317-358	
122	Pencil Graphite Electrodes Decorated with Platinum Nanoparticles as Efficient Electrocatalysts for Hydrogen Evolution Reaction.. **2021**, 15,	1
121	PtSe2 on a reduced graphene foil for the alkaline hydrogen evolution reaction.	0
120	How to Minimise Hydrogen Evolution on Carbon Based Materials?.	0
119	Ternary Ni-Mo-P catalysts for enhanced activity and durability in proton exchange membrane water electrolysis.	
118	Conducting polymers-derived fascinating electrocatalysts for advanced hydrogen and oxygen electrocatalysis. **2022**, 464, 214555	1

117	Data_Sheet_1.pdf. **2018**,	
116	Table_1.DOCX. **2019**,	
115	Catalysts for hydrogen and oxygen evolution reactions (HER/OER) in cells. **2022**, 457-470	0
114	One-step fabrication of MoS2/Ni3S2 with P doping for efficient water splitting.	0
113	Electronic Structure Optimization of PdZn-Graphitic Carbon Nitride Nanocomposites as Electrocatalysts for Selective CO2 to CO Conversion.	1
112	Efficient Self-Supported Bifunctional NiMo Alloy Electrocatalysts for Water Splitting in Alkaline Environment. **2022**, 7,	0
111	Electrocatalytic behaviour of the strontium selenide nanowires for hydrogen evolution reaction at various pH values. **2022**, 147, 106765	1
110	Water electrolysis: from textbook knowledge to the latest scientific strategies and industrial developments.. **2022**,	21
109	Electrochemical H2 Production using Polypyrazole based Zinc(II) Complex in Alkaline Medium. **2022**, 34, 1366-1372	
108	Highly dispersed platinum on LaNi nanoparticles/nanoporous carbon for highly efficient electrocatalyic hydrogen evolution. **2022**,	1
107	Metallic glass nanostructures: Forming strategies and functional applications. **2022**, 15, 100253	0
106	Prospects of non-noble metal single atoms embedded in two-dimensional (2D) carbon and non-carbon-based structures in electrocatalytic applications. **2022**, 467, 214613	1
105	Cobalt-Based Co-Ordination Complex-Derived Nanostructure for Efficient Oxygen Evolution Reaction in Acidic and Alkaline Medium.	
104	Enhancing the Alkaline Hydrogen Evolution Reaction of Graphene Quantum Dots by Ethylenediamine Functionalization.	1
103	Recent progress on tungsten oxide-based materials for the hydrogen and oxygen evolution reactions. **2022**, 47, 20378-20397	0
102	Large-Area MoS2 Nanosheets with Triangular Nanopore Arrays as Active and Robust Electrocatalysts for Hydrogen Evolution.	1
101	Electrocatalytic activity of pristine and electrochemically activated SnSe2 nanoplates for the hydrogen evolution reaction. **2022**, 918, 116464	0
100	Strategies to improve electrocatalytic performance of MoS2-based catalysts for hydrogen evolution reactions. **2022**, 12, 17959-17983	2

99	Plant polyphenol-involved coordination assembly-derived Mo3Co3C/Mo2C/Co@NC with phase regulation and interface engineering for efficient hydrogen evolution reaction electrocatalysis.	0
98	Concurrent reduction of CO2 and generation of biofuels by electrified microbial systems□oncepts and perspectives. **2022**, 347-382	
97	Recent Status and Challenges in Multifunctional Electrocatalysis Based on 2D MXenes.	2
96	Single-step in situ synthesis of MoO2-faceted structures as highly efficient HER electrocatalysts and electrode materials for pseudocapacitors.	1
95	Sulfide and selenide-based electrocatalysts for hydrogen evolution reaction (HER). **2022**, 427-463	
94	Metal□rganic framework (MOF)-derived plate-shaped CoS1.097 nanoparticles for an improved hydrogen evolution reaction.	
93	Anodic corrosion of heteroatom doped graphene oxide supports and its influence on the electrocatalytic oxygen evolution reaction. **2022**, 47, 22738-22751	2
92	Electrical Discharge Induced Bulk-to-Nanoparticle Transformation: Nano High-Entropy Carbide as Catalysts for Hydrogen Evolution Reaction. 2203787	1
91	Electrocatalyst Modulation toward Bidirectional Sulfur Redox in Li□ Batteries: From Strategic Probing to Mechanistic Understanding. 2201056	8
90	Active site and adsorption behavior engineering of subsize PdNi nanoparticles for boosting electrocatalytic hydrodechlorination of 4-chlorophenol. **2022**, 153988	0
89	Towards high-performance electrocatalysts: Activity optimization strategy of 2D MXenes-based nanomaterials for water-splitting. **2022**, 469, 214668	2
88	Vanadate Encapsulated Polyoxoborate Framework with [V12B18] Clusters: An Efficient Bifunctional Electrocatalyst for Oxygen and Hydrogen Evolution Reactions.	1
87	Continuous Flow Fabrication of MoS2 Scrolls for Electrocatalytic Hydrogen Evolution.	
86	Disclosing the thermal behaviour, electrochemical and optical properties of synthetic Fe3(PO4)2(OH)2 materials.	1
85	Directed synthesis of an unusual uniform trimetallic hydrogen evolution catalyst by a predesigned cobalt-bipy modified bivanadyl capped polymolybdate. **2022**, 314, 123403	
84	Nanoarchitectonics of binary transition metal phosphides embedded in carbon fibers as a bifunctional electrocatalysts for electrolytic water splitting. **2022**, 166472	0
83	Microwave-assisted synthesis of iridium oxide and palladium nanoparticles supported on a nitrogen-rich covalent triazine framework as superior electrocatalysts for the hydrogen evolution and oxygen reduction reaction. 10,	1
82	Electrochemical behavior of heteroatom doped on reduced graphene oxide with RuO2 for HER, OER, and supercapacitor applications. **2022**, 138, 104471	1

81	Alloying at a Subnanoscale Maximizes the Synergistic Effect on the Electrocatalytic Hydrogen Evolution.	0
80	Scalable Synthesis of Pt Nanoflowers on Solution-Processed MoS 2 Thin Film for Efficient Hydrogen Evolution Reaction. 2200043	
79	Recent development of transition metal doped carbon materials derived from biomass for hydrogen evolution reaction. **2022**,	0
78	Alloying at a Subnanoscale Maximizes the Synergistic Effect on the Electrocatalytic Hydrogen Evolution.	
77	Coordination chemistry of silver(I), gold(I) and nickel(II) with bis N-heterocyclic carbenes: applications in electrocatalytic hydrogen evolution reaction. 1-16	1
76	Hydrogen Evolution, Oxygen Evolution and Oxygen Reduction at Polarizable Liquid|Liquid Interfaces.	0
75	Decorated fractal Ni-Cu foam with Pd nanoparticles as a high-performance electrocatalyst toward hydrogen evolution reaction. **2022**, 758, 139415	0
74	Facile one-step synthesis of CuGaS2 nanosheets and its electrocatalytic activity towards hydrogen evolution. **2022**, 170, 110929	
73	Controlling the electrochemical hydrogen generation and storage in graphene oxide by in-situ Raman spectroscopy. **2022**, 200, 227-235	2
72	Effect of constituent cations on the electrocatalytic oxygen evolution reaction in high-entropy oxide (Mg0.2Fe0.2Co0.2Ni0.2Cu0.2)O. **2022**, 922, 116737	0
71	Nanotubes-nanosheets (1D/2D) heterostructured bifunctional electrocatalysts for overall water splitting. **2022**, 430, 141095	0
70	Tailoring the electrocatalytic activity of mesoporous graphitic carbon nitride towards hydrogen evolution reaction by incorporation of amorphous carbon. **2022**, 129, 109359	0
69	Interfacial component coupling effects towards precise heterostructure design for efficient electrocatalytic water splitting. **2022**, 103, 107753	2
68	Recent trends in MXenes hybrids as efficient 2D materials for photo- and electrocatalysis hydrogen production. **2022**, 26, 101108	0
67	Tuning the band (p and d) center and enhancing the active sites by nitrogen(N) doping on iridium diphosphide (IrP2) for accelerating pH-universal water electrolysis. **2022**, 319, 121906	0
66	Construction of Core‐Shell Co-Nc@W2n Schottky Heterojunctions for High-Efficiency Hydrogen Evolution Reaction.	0
65	Mononuclear nickel(ii) complexes as electrocatalysts in hydrogen evolution reactions: effects of alkyl side chain lengths.	0
64	Unravelling the potential of disposable and modifiable pencils as catalyst supports for hydrogen evolution reaction.	0

63	Research Progress of Oxygen Evolution Catalyst for Alkaline Electrolysis of Water with High Current. **2022**, 12, 105-114	0
62	Recent Development of Nickel-Based Electrocatalysts for Urea Electrolysis in Alkaline Solution. **2022**, 12, 2970	0
61	Accelerated bubble departure and reduced overpotential with nanoengineered porous bifunctional Ni5P4 electrocatalyst for PV-driven water splitting. **2022**,	0
60	Two dimensional LiMgAs: A topological quantum catalyst for hydrogen evolution reaction. **2022**, 121, 123101	0
59	Mixed-Metal Nickel□Iron Oxide Aerogels for Oxygen Evolution Reaction. **2022**, 12, 12162-12169	1
58	The Influence of Electrode Constituents on Hydrogen Evolution Reaction on Phosphate W- and Mo-Bronze-Based Electrodes.	0
57	Super-Fast and Super-Long-Life Rechargeable Zinc Battery. 2202784	0
56	An ultrasensitive and highly selective nanomolar electrochemical sensor based on an electrocatalytic Peak Shift Analysis approach for copper trace detection in water.. **2022**, 141298	0
55	Cobalt-based co-ordination complex-derived nanostructure for efficient oxygen evolution reaction in acidic and alkaline medium. **2022**, 8, e10939	0
54	Construction of core□shell Co-NC@W2N Schottky heterojunctions for high-efficiency hydrogen evolution reaction. **2022**, 155159	0
53	Heterostructure Induced S p-Band Center Shift for Activating 1T-MoS 2 Basal Plane towards Hydrogen Evolution Reaction.	0
52	Local Structure Insight into Hydrogen Evolution Reaction with Bimetal Nanocatalysts.	0
51	One-pot synthesis of delafossite CuCoO2 microcrystal as visible-light-driven photocatalyst. **2022**, 57, 18687-18710	0
50	Evaluation of HER and OER electrocatalytic activity over RuO2□e2O3 nanocomposite deposited on HrGO nanosheets. **2022**,	0
49	A Pt cathode with high mass activity for proton exchange membrane water electrolysis. **2022**,	0
48	Iridium-incorporated cobalt nanofibers as efficient and robust bifunctional catalysts for high-performance water electrolysis.	0
47	CuxO nanorod arrays shelled with CoNi layered double hydroxide nanosheets for enhanced oxygen evolution reaction under alkaline conditions. **2023**, 630, 57-65	0
46	Synthesis of Co 2 P Nanoparticles Embedded N, P Co-Doped Mesoporous Carbon via Molten Salt Process as Hydrogen Evolution Electrocatalyst under Alkaline Conditions. **2022**, 7,	0

45	Corrosion Lifetime Estimation of Printed Circuit Board in Marine Atmosphere Environment Using Multiphysics Simulation.	0
44	Enhanced Performance of Laser-Structured Copper Electrodes Towards Electrocatalytic Hydrogenation of Furfural. **2022**, 9,	0
43	MOF-Derived CoS2@NiS-MoS2 Ternary Composite Heterojunction Electrocatalyst for Efficient Water Splitting.	0
42	Surface oxygen vacancy defects induced CoTiO3-x perovskite nanostructures for highly efficient catalytic activity from acidic and seawater electrolysis. **2023**, 44, 106179	0
41	Optimizing the electronic structure of Fe-doped Co3O4 supported Ru catalyst via metal-support interaction boosting oxygen evolution reaction and hydrogen evolution reaction. **2022**, 108085	1
40	Enhanced Electrocatalytic Activity of Mo-Doped NiFe Layered Double Hydroxide Nanosheet Arrays for the Hydrogen Evolution Reaction.	0
39	Nano-Dimensional Carbon Nanosphere Supported Non-Precious Metal Oxide Composite: A Cathode Material for Sea Water Reduction. **2022**, 12, 4348	0
38	Pristine Metal□Organic Frameworks and their Composites for Renewable Hydrogen Energy Applications. 2203224	1
37	In-situ Encapsulation of Mo:Mo2C with nano-mosaic structure on wood-derived carbon for hydrogen evolution reaction. **2022**,	0
36	Ionic liquids: Promisingly functional mediators in electrocatalysts for water splitting.	0
35	Tunable Aryl Alkyl Ionic Liquid Supported Synthesis of Platinum Nanoparticles and Their Catalytic Activity in the Hydrogen Evolution Reaction and in Hydrosilylation. **2023**, 28, 405	0
34	A review on recent advances and progress in Mo2C@C: A suitable and stable electrocatalyst for HER. **2023**,	0
33	2D Layered Bimetallic Phosphorous Trisulfides M I M III P 2 S 6 (M I = Cu, Ag; M III = Sc, V, Cr, In) for Electrochemical Energy Conversion. 2201358	0
32	A review of nickel-molybdenum based hydrogen evolution electrocatalysts from theory to experiment. **2023**, 651, 119013	2
31	Ni-based Electro/Photo-Catalysts in HER □A Review. **2023**, 36, 102619	0
30	A structural study of size selected WSe2 nanoflakes prepared via liquid phase exfoliation: X-ray absorption to electrochemical application. **2023**, 206, 110788	0
29	Collectively exhaustive electrochemical hydrogen evolution reaction of polymorphic cobalt selenides derived from organic surfactants modified Co-MOFs. **2023**, 325, 122367	1
28	Versatile Janus Architecture for Electrocatalytic Applications. 2205940	0

27	Effects of Metal‐Support Interaction in the Electrocatalysis of the Hydrogen Evolution Reaction of the Metal-Decorated Titanium Dioxide Supported Carbon. **2023**, 13, 22	0
26	Electrocatalytic performance of copper selenide as structural phase dependent for hydrogen evolution reaction. **2023**,	0
25	A comprehensive review on the electrochemical parameters and recent material development of electrochemical water splitting electrocatalysts. **2023**, 13, 3843-3876	0
24	Palladium(II)‐N-Heterocyclic Carbene Complex-Based Electrocatalysts for Hydrogen Evolution Reaction. **2023**, 37, 2237-2244	0
23	High-entropy alloys in water electrolysis: Recent advances, fundamentals, and challenges.	0
22	Electrocatalysts based on MoS 2 and WS 2 for hydrogen evolution reaction: An overview. 20220057	0
21	Lattice Distorted Rhodium Nanocrystals in Porous Nanofiber toward Aqueous Zinc-CO2 System. **2023**, 5, 1271-1280	0
20	Comprehensive overview of polyoxometalates for electrocatalytic hydrogen evolution reaction. **2023**, 482, 215058	0
19	Cl-doped CuO for electrochemical hydrogen evolution reaction and tetracycline photocatalytic degradation. **2023**, 11, 109852	0
18	Emerging trends of electrocatalytic technologies for renewable hydrogen energy from seawater: Recent advances, challenges, and techno-feasible assessment. **2023**, 80, 658-688	0
17	Using nickel-molybdenum cathode catalysts for efficient hydrogen gas production in microbial electrolysis cells. **2023**, 560, 232594	0
16	First row transition metal doped B12P12 and Al12P12 nanocages as excellent single atom catalysts for the hydrogen evolution reaction. **2023**,	1
15	Recent Progress on Metal Catalysts for Electrochemical Hydrogen Evolution. **2023**, 147-180	0
14	Mononuclear nickel and copper complexes as electrocatalyst for generation of hydrogen from acetic acid. **2023**, 150, 110521	0
13	Mechanistic insight into hydrothermally prepared molybdenum-based electrocatalyst for overall water splitting. **2023**, 445, 142050	0
12	Significantly Stabilizing Hydrogen Evolution Reaction Induced by Nb-Doping Pt/Co(OH) 2 Nanosheets. 2207569	0
11	Multi-layer Architecture of Novel Sea Urchin-like Co-Hopeite to Boosting Overall Alkaline Water Splitting. 2202349	0
10	Litchi-derived platinum group metal-free electrocatalysts for oxygen reduction reaction and hydrogen evolution reaction in alkaline media.	0

9	Status and Perspectives of Transparent Conductive Oxide Films for Silicon Heterojunction Solar Cells. **2023**, 100329	0
8	Ultrafast Synthesis of Mo2C-Based Catalyst by Joule Heating towards Electrocatalytic Hydrogen Evolution Reaction. **2023**, 15, 801	0
7	Electrocatalysis on Atomically Precise Metal Nanoclusters. **2023**, 161-193	0
6	Synergistic effects of Mo2C/CeO2 nanoparticles anchored on nitrogen-doped carbon as an efficiently electrocatalyst for hydrogen evolution reaction. **2023**,	0
5	Iron Nickel Sulfide Nanorods for Oxygen and Hydrogen Evolution Reaction. **2023**, 8,	0
4	High throughput discovery of ternary CuFeRu alloy catalysts for photo-driven hydrogen production.	0
3	Perovskite oxides successfully catalyze the electrolytic hydrogen production from oilfield wastewater. **2023**,	0
2	Nickel sulfide-based electrocatalysts for overall water splitting. **2023**,	0
1	Constructing Novel Ternary Heterostructure of CeP 5 O 14 /WP/WS 2 to Enhance Catalytic Activity for Hydrogen Evolution in a Full pH Range.	0