Engineering bunched Pt-Ni alloy nanocages for efficient oxygen reduction in practical fuel cells

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#	Paper	IF	Citations
756	Engineering bunched Pt-Ni alloy nanocages for efficient oxygen reduction in practical fuel cells. *Science*, **2019**, 366, 850-856	33.3	545
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327	The Underlying Molecular Mechanism of Fence Engineering to Break the Activity□Stability Trade-Off in Catalysts for the Hydrogen Evolution Reaction.	
326	Strategies for designing more efficient electrocatalysts towards the urea oxidation reaction.	13

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122	Stabilizing Pt Electrocatalysts via Introducing Reducible Oxide Support as Reservoir of Electrons and Oxygen Species. 13523-13532	1
121	Mixed-Dimensional Pt-Ni Alloy Polyhedral Nanochains As Bifunctional Electrocatalysts for Direct Methanol Fuel Cell. 2206508	1
120	Atomistic understanding of Pt-based medium entropy alloys for oxygen reduction electrocatalysis based on first principles. **2022**,	0
119	PtCu subnanoclusters epitaxial on octahedral PtCu/Pt skin matrix as ultrahigh stable cathode electrocatalysts for room-temperature hydrogen fuel cells.	0
118	Role of Ni in PtNi Alloy for Modulating the Proton□Electron Transfer of Electrocatalytic Hydrogenation Revealed by the In Situ Raman□Rotating Disk Electrode Method. 14062-14071	1
117	Novel PtNi nanoflowers regulated by a third element (Rh, Ru, Pd) as Efficient Multifunctional Electrocatalysts for ORR, MOR and HER. **2022**, 140131	0
116	Highly dispersed La□O/N□ sites anchored in hierarchically porous nitrogen-doped carbon as bifunctional catalysts for high-performance rechargeable Zn□air batteries. **2023**, 54, 313-322	1
115	Defect enriched N, S-codoped carbon sheets as an efficient electrocatalyst to oxygen reduction reaction. **2023**, 935, 167923	0
114	Tailoring of Active Sites from Single to Dual Atom Sites for Highly Efficient Electrocatalysis.	0
113	An integrated platinum-nanocarbon electrocatalyst for efficient oxygen reduction. **2022**, 13,	5
112	A strategy to promote the ORR electrocatalytic activity by the novel engineering bunched three-dimensional Pd-Cu alloy aerogel. **2022**, 140293	0
111	Construction of Ordered Atomic Donor□Acceptor Architectures in bcc IrGa Intermetallic Compounds toward Highly Electroactive and Stable Overall Water Splitting. 2202703	0
110	Laser-induced assembly of Au nano-polyhedron clusters as stable 3D superstructures with ultrabroadband plasmonic resonance for promoting multi-band SERS.	0

109	NCNT grafted perovskite oxide as an active bifunctional electrocatalyst for rechargeable zinc-air battery. **2022**, 100287	1
108	Design of five two-dimensional Co-metal-organic frameworks for oxygen evolution reaction and dye degradation properties. 10,	0
107	Role of Ni in PtNi Bimetallic Electrocatalysts for Hydrogen and Value-Added Chemicals Coproduction via Glycerol Electrooxidation. 14492-14506	1
106	Autocatalytic reduction-assisted synthesis of segmented porous PtTe nanochains for enhancing methanol oxidation reaction. **2022**,	2
105	Isolated Electron-Rich Ruthenium Atoms in Intermetallic Compounds for Boosting Electrochemical Nitric Oxide Reduction to Ammonia.	0
104	Ordered CoPt oxygen reduction catalyst with high performance and durability. **2022**,	1
103	Synthesis of a Hexagonal-Phase Platinum–Lanthanide Alloy as a Durable Fuel-Cell-Cathode Catalyst.	1
102	A crystal glass–nanostructured Al-based electrocatalyst for hydrogen evolution reaction. **2022**, 8,	2
101	A Systematic Theoretical Study on Electronic Interaction in Cu-based Single-Atom Alloys. **2022**, 7, 41586-41593	0
100	Platinum based high entropy alloy oxygen reduction electrocatalysts for proton exchange membrane fuel cells. **2022**, 100282	0
99	Isolated Electron-Rich Ruthenium Atoms in Intermetallic Compounds for Boosting Electrochemical Nitric Oxide Reduction to Ammonia.	0
98	An Ultrastable Rechargeable Zinc–Air Battery Using a Janus Superwetting Air Electrode.	0
97	Metal Sulfides Yolk–Shell Nanoreactors with Dual Component for Enhanced Acidic Electrochemical Hydrogen Production. 2200247	1
96	A closely packed Pt1.5Ni1−x/Ni–N–C hybrid for relay catalysis towards oxygen reduction.	2
95	Mass Production of Dealloyed Pt3Co/C Catalyst for Oxygen Reduction Catalysis in PEMFC.	0
94	Kirkendall effect-driven formation of hollow PtNi alloy nanostructures with enhanced oxygen reduction reaction performance. **2023**, 556, 232483	0
93	Dual-doping Fe-Ni oxide for ultrahigh performance seawater oxidation by high-concentration electrolytes. **2023**, 658, 130682	0
92	Two-dimensional alloying MNS4 (M, N = Mn, Fe, Co, Ni, Pd) materials with pentagonal pucker for highly efficient electrocatalytic hydrogen reaction. **2023**, 612, 155897	0

91	Roles of structural defects in polycrystalline platinum nanowires for enhanced oxygen reduction activity. **2023**, 324, 122268	0
90	Pt-Based Oxygen Reduction Reaction Catalysts in Proton Exchange Membrane Fuel Cells: Controllable Preparation and Structural Design of Catalytic Layer. **2022**, 12, 4173	2
89	Zinc Intercalated Lattice Expansion of Ultrafine Platinum□Nickel Oxygen Reduction Catalyst for PEMFC. 2212442	0
88	Catalytic Properties of Molybdenum-Modified Platinum Nanoalloys toward Hydrogen Evolution, Oxygen Reduction Reaction, and Methanol Oxidation. **2022**, 5, 15102-15113	0
87	Sulfur-Doped rGO Aerogel Enables the Anchoring of 1T/2H MoS 2 for Durable Oxygen Reduction Reaction Catalyst Support.	0
86	Preparation of Sub-1 nm Pt3Co Nanoclusters via a Seed-Densification Strategy for Enhanced O2 Capture in Low-Pt-Loading Fuel Cells. 628-636	0
85	Higher degree of order enables a more stable fuel cell. **2022**, 2, 3282-3285	0
84	A Novel Electrode for Value-Generating Anode Reactions in Water Electrolyzers at Industrial Current Densities.	2
83	The emerging coupled low-PGM and PGM-free catalysts for oxygen reduction reaction. **2022**, 100484	0
82	A Novel Electrode for Value-Generating Anode Reactions in Water Electrolyzers at Industrial Current Densities.	0
81	PtCoNi Ternary Intermetallic Compounds Anchored on Co, Ni and N co-doped Mesoporous Carbon: Synergetic Effect between PtCoNi Nanoparticles and Doped Mesoporous Carbon Promotes the Catalytic Activity. **2022**,	1
80	Lattice and Surface Engineering of Ruthenium Nanostructures for Enhanced Hydrogen Oxidation Catalysis. 2210328	0
79	Aerosol Spray Drying Guided Synthesis of Ultrasmall Alloyed Bimetallic Nanoparticles Supported on Silica for Catalytic Semihydrogenation. 2204744	0
78	Enhanced Multifunctional Electrocatalytic Activity of Pt-Co Nanoalloy-Decorated Graphene Oxide Sheets through Strong Metal□Support Interaction. **2022**, 36, 15055-15065	0
77	Research Advances in Amorphous-Crystalline Heterostructures Toward Efficient Electrochemical Applications. 2206081	1
76	Synthesis of amorphous Pd-based nanocatalysts for efficient alcoholysis of styrene oxide and electrochemical hydrogen evolution.	0
75	In situ electrochemical Raman spectroscopy and ab initio molecular dynamics study of interfacial water on a single-crystal surface.	0
74	Enhanced Triple-Phase Interface in PEMFC by Proton Conductor Absorption on the Pt Catalyst.	0

73	Advances in Low Pt Loading Membrane Electrode Assembly for Proton Exchange Membrane Fuel Cells. **2023**, 28, 773	0
72	Monodispersed ultrathin twisty PdBi alloys nanowires assemblies with tensile strain enhance C2+ alcohols electrooxidation. **2023**,	0
71	Application of Time-Resolved Synchrotron X-ray Absorption Spectroscopy in an Energy Conversion Reaction. 645-652	0
70	Metal single-site catalyst design for electrocatalytic production of hydrogen peroxide at industrial-relevant currents. **2023**, 14,	0
69	Synthesis of noble/non-noble metal alloy nanostructures via an active-hydrogen-involved interfacial reduction strategy.	1
68	Electron spin catalysis with graphene belts.	1
67	Recent progress on the synthesis of metal alloy nanowires as electrocatalysts.	1
66	Design of New Test System for Proton Exchange Membrane Fuel Cell. **2023**, 16, 833	0
65	PtRuFe/Carbon Nanotube Composites as Bifunctional Catalysts for Efficient Methanol Oxidation and Oxygen Reduction.	0
64	Ternary PtCoMo Alloy with Dual Surface Co and Mo Defects for Synergistically Enhanced Acidic Oxygen Reduction.	0
63	Electron spin catalysis with graphene belts.	0
62	New Conceptual Catalyst on Spatial High-Entropy Alloy Heterostructures for High-Performance Li-O 2 Batteries. 2206742	1
61	Towards Ultralow Platinum Loading Proton Exchange Membrane Fuel Cells.	0
60	3D Porous Graphene-like Carbons Encaged Single-Atom-Based Pt for Ultralow Loading and High-Performance Fuel Cells. 1856-1862	0
59	PtFeCoNiCu high-entropy solid solution alloy as highly efficient electrocatalyst for the oxygen reduction reaction. **2023**, 26, 105890	0
58	Pd3Pb1@Pt2 core□shell concave nanocubes to boost the ethanol oxidation reaction. **2023**, 442, 141866	0
57	Model Metallic Glasses for Superior Electrocatalytic Performance in a Hydrogen Oxidation Reaction. **2023**, 15, 6697-6707	0
56	Ternary PtZrNi nanorods for efficient multifunctional electrocatalysis towards oxygen reduction and alcohol oxidation. **2023**,	0

55	Dual Structural Design of Platinum-Nickel Hydrogels for Wearable Glucose Biosensing with Ultrahigh Stability. 2206868	3
54	Ion-Assisted Preparation of Bimetallic Porous Nanodendrites for Active and Stable Water Electrolysis. 2207332	0
53	Scalable production of an intermetallic PtCo electrocatalyst for high-power proton-exchange-membrane fuel cells.	0
52	Curved Porous PdCu Metallene as a High-Efficiency Bifunctional Electrocatalyst for Oxygen Reduction and Formic Acid Oxidation. **2023**, 15, 5198-5208	0
51	Rational Design of Atomically Dispersed Metal Site Electrocatalysts for Oxygen Reduction Reaction. 2203391	0
50	Controllable design of multi-metallic aerogels as efficient electrocatalysts for methanol fuel cells.	0
49	Electrodeposition of MnO2-doped Pb-0.6%Sb/PbO2/PbO2 novel composite energy-saving anode for zinc electrowinning. **2023**, 61, 106264	0
48	Rational Design and Preparation of Core-Shell Nanomaterials to Boost their Catalytic Performance. 1,	0
47	Subnanoscale Dual-Site PdPt Layers Make PdPtCu Nanocrystals CO-Tolerant Bipolar Effective Electrocatalysts for Alcohol Fuel Cell Devices.	0
46	The structure and plasmonic properties regulation of Au@Ag core-shell nanostructures with Au triangular nanoprisms as the core mediated by halide. **2023**, 944, 169245	0
45	Highly stable PtCu3Auy nanowires-nanoparticles composite as efficient electrocatalysts towards oxygen reduction reaction. **2023**, 567, 232924	0
44	Lattice stain dominated hydrazine oxidation reaction in single-metal-element nanosheet. **2023**, 463, 142385	0
43	Small-size MOF derived highly active low-platinum catalysts for oxygen reduction reactions. **2023**, 322, 123899	0
42	Atomic defects engineering on Fe-N4 sites for boosting oxygen reduction by in-situ ZnO thermal etching strategy. **2023**, 465, 142820	0
41	Synthesis of platinum intermetallic nanoparticle fuel cell catalysts within secure inter-particle distance on carbon blacks. **2023**, 328, 122543	0
40	Freetemplated synthesis of Ndoped PtCu porous hollow nanospheres for efficient ethanol oxidation and oxygen reduction reactions. **2023**, 330, 122602	0
39	Epitaxial growth of PtPd bimetallic heterostructures for the oxygen reduction reaction. **2023**, 2, 100131	0
38	A facile green synthesis of Pd3Cu1 nano-urchins with highly catalytic selectivity for p-nitrobenzaldehyde hydrogenation. **2023**, 949, 169875	0

37	Poly(ionic liquid)-mediated green synthesis of 3D AuPt flower-like nanoballs with composition-dependent SERS sensitivity and catalytic activity. **2023**, 381, 121823	0
36	A hint from phosphine complex: The back-bonding in cobalt-phosphorene composite enables enhanced electrocatalytic performance. **2023**,	0
35	Core-shell nanoparticle enhanced Raman spectroscopy in situ probing the composition and evolution of interfacial species on PtCo surfaces.	0
34	Single-Molecule Study on the Catalytic Role of CoO2 Binding in ORR by In Situ ECSTM. **2023**, 127, 2929-2935	0
33	Nanostructure Engineering and Electronic Modulation of a PtNi Alloy Catalyst for Enhanced Oxygen Reduction Electrocatalysis in Zinc–Air Batteries. **2023**, 14, 1740-1747	0
32	Hydrogen Production and Polymer Electrode Membrane (PEM) Fuel Cells for Electrical Vehicles. **2023**, 149-198	0
31	A metallic La3C2 monolayer with remarkable activity for the hydrogen evolution reaction: a first-principles study. **2023**, 11, 6394-6402	0
30	Recent advancements in high performance polymer electrolyte fuel cell electrode fabrication – Novel materials and manufacturing processes. **2023**, 562, 232734	1
29	Tailoring the d-Band Center over Isomorphism Pyrite Catalyst for Optimized Intrinsic Affinity to Intermediates in Lithium–Oxygen Batteries. **2023**, 13,	0
28	Electronic Enhancement Engineering by Atomic FeN 4 Sites for Highly-Efficient PEMFCs: Tailored Electric-Thermal Field on Pt Surface. **2023**, 13,	0
27	Ultralow overpotential nitrate reduction to ammonia via a three step relay mechanism.	0
26	Size and structure tuning of FePt nanoparticles on hollow mesoporous carbon spheres as efficient catalysts for oxygen reduction reaction.	0
25	Atomically Dispersed NiN 4 Sites Assist Pt 3 Ni Nanocages with Pt Skin to Synergistically Enhance Oxygen Reduction Activity and Stability. 2300200	0
24	Porous electrodes from self-assembled 3D jointed Pd polyhedra for direct formic acid fuel cells. **2023**, 462, 142244	0
23	Asymmetric Coordination of Iridium Single-atom IrN 3 O Boosting Formic Acid Oxidation Catalysis. **2023**, 62,	0
22	One-Step Synthesis of a Non-Precious-Metal Tris (Fe/N/F)-Doped Carbon Catalyst for Oxygen Reduction Reactions. **2023**, 28, 2392	0
21	Asymmetric Coordination of Iridium Single-atom IrN 3 O Boosting Formic Acid Oxidation Catalysis. **2023**, 135,	0
20	Solar-Driven Interfacial Evaporation Accelerated Electrocatalytic Water Splitting on 2D Perovskite Oxide/MXene Heterostructure. 2215061	0

19	3d orbital electron engineering in oxygen electrocatalyst for zinc-air batteries. **2023**, 462, 142321	0
18	Interface synergism and engineering of Pd/Co@N-C for direct ethanol fuel cells. **2023**, 14,	0
17	Rational design of septenary high-entropy alloy for direct ethanol fuel cells. **2023**, 7, 587-602	0
16	Achieving superior methanol oxidation electrocatalytic performance by surface reconstruction of PtNi nanoalloys during acid etching process.	0
15	Mesoporous Pt@Pt-skin Pt3Ni core-shell framework nanowire electrocatalyst for efficient oxygen reduction. **2023**, 14,	0
14	Highly Stable Pt-Based Oxygen Reduction Electrocatalysts toward Practical Fuel Cells: Progress and Perspectives. **2023**, 16, 2590	0
13	Synergistic effect between Ru cluster and Co3O4 nanowires assisted by B-O bonding for hydrogen evolution. **2023**, 953, 169826	0
12	Scalable and Controllable Synthesis of Pt-Ni Bunched-Nanocages Aerogels as Efficient Electrocatalysts for Oxygen Reduction Reaction.	0
11	Catalytic Activity Maps for Alloy Nanoparticles. **2023**, 145, 7352-7360	0
10	Non-planar Nest-like [Fe2S2] Cluster Sites for Efficient Oxygen Reduction Catalysis.	0
9	Shape-Controlled Synthesis of Platinum-Based Nanocrystals and Their Electrocatalytic Applications in Fuel Cells. **2023**, 15,	0
8	Interfacial assembly of binary atomic metal-Nx sites for high-performance energy devices. **2023**, 14,	0
7	Enhancement Mechanism of Pt/Pd-Based Catalysts for Oxygen Reduction Reaction. **2023**, 13, 1275	0
6	How Size and Strain Effect Synergistically Improve Electrocatalytic Activity: A Systematic Investigation Based on PtCoCu Alloy Nanocrystals.	0
5	Exploration and Insight of Dynamic Structure Evolution for Electrocatalysts.	0
4	Self-supporting trimetallic PtAuBi aerogels as electrocatalyst for ethanol oxidation reaction. **2023**, 100088	0
3	Ultralow overpotential nitrate reduction to ammonia via a three-step relay mechanism.	0
2	Double Riveting and Steric Hindrance Strategy for Ultrahigh-Loading Atomically Dispersed Iron Catalysts Toward Oxygen Reduction.	0

1	Elucidating the role of P on Mn- and N-doped graphene catalysts in promoting oxygen reduction: Density functional theory studies.	0