

# A Review of Electrocatalytic Reduction of Dinitrogen to Ammonia under Mild Conditions

Advanced Energy Materials

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Citation Report

#	ARTICLE	IF	CITATIONS
1	Recent advances in energy chemistry of precious-metal-free catalysts for oxygen electrocatalysis. Chinese Chemical Letters, 2018, 29, 1757-1767.	9.0	63
2	Direct chemical synthesis of ultrathin holey iron doped cobalt oxide nanosheets on nickel foam for oxygen evolution reaction. Nano Energy, 2018, 54, 238-250.	16.0	114
3	Electrochemical N <sub>2</sub> fixation to NH <sub>3</sub> under ambient conditions: Mo <sub>2</sub> N nanorod as a highly efficient and selective catalyst. Chemical Communications, 2018, 54, 8474-8477.	4.1	287
4	Hierarchical Cobalt Phosphide Hollow Nanocages toward Electrocatalytic Ammonia Synthesis under Ambient Pressure and Room Temperature. Small Methods, 2018, 2, 1800204.	8.6	171
5	Unravelling the electrochemical mechanisms for nitrogen fixation on single transition metal atoms embedded in defective graphitic carbon nitride. Journal of Materials Chemistry A, 2018, 6, 21941-21948.	10.3	161
6	Highly Selective Electrochemical Reduction of Dinitrogen to Ammonia at Ambient Temperature and Pressure over Iron Oxide Catalysts. Chemistry - A European Journal, 2018, 24, 18494-18501.	3.3	129
7	Electronically Coupled SnO <sub>2</sub> Quantum Dots and Graphene for Efficient Nitrogen Reduction Reaction. ACS Applied Materials & Interfaces, 2019, 11, 31806-31815.	8.0	163
8	Atomic-level insights in tuning defective structures for nitrogen photofixation over amorphous SnOCl nanosheets. Nano Energy, 2019, 65, 104003.	16.0	36
9	<i>In situ</i> nano Au triggered by a metal boron organic polymer: efficient electrochemical N <sub>2</sub> fixation to NH <sub>3</sub> under ambient conditions. Journal of Materials Chemistry A, 2019, 7, 20945-20951.	10.3	46
10	Composition-dependent electrochemical activity of Ag-based alloy nanotubes for efficient nitrogen reduction under ambient conditions. Electrochimica Acta, 2019, 321, 134691.	5.2	20
11	Photocatalytic ammonia synthesis: Recent progress and future. EnergyChem, 2019, 1, 100013.	19.1	204
12	Amorphous Sn/Crystalline SnS <sub>2</sub> Nanosheets via In Situ Electrochemical Reduction Methodology for Highly Efficient Ambient N <sub>2</sub> Fixation. Small, 2019, 15, e1902535.	10.0	80
13	Theoretical insights into nitrogen fixation on Ti <sub>2</sub> C and Ti <sub>2</sub> CO <sub>2</sub> in a lithium-ion nitrogen battery. Journal of Materials Chemistry A, 2019, 7, 19950-19960.	10.3	21
14	Characterization techniques and analytical methods of carbon-based materials for energy applications. , 2019, , 63-88.		4
15	Carbonaceous materials for efficient electrocatalysis. , 2019, , 375-394.		2
16	Metal-Free B@g-CN: Visible/Infrared Light-Driven Single Atom Photocatalyst Enables Spontaneous Dinitrogen Reduction to Ammonia. Nano Letters, 2019, 19, 6391-6399.	9.1	236
17	Spinel LiMn <sub>2</sub> O <sub>4</sub> Nanofiber: An Efficient Electrocatalyst for N <sub>2</sub> Reduction to NH <sub>3</sub> under Ambient Conditions. Inorganic Chemistry, 2019, 58, 9597-9601.	4.0	90
18	Mild Ammonia Synthesis over Ba-Promoted Ru/MPC Catalysts: Effects of the Ba/Ru Ratio and the Mesoporous Structure. Catalysts, 2019, 9, 480.	3.5	19

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19	Efficient Photoelectrochemical Route for the Ambient Reduction of N <sub>2</sub> to NH <sub>3</sub> Based on Nanojunctions Assembled from MoS <sub>2</sub> Nanosheets and TiO <sub>2</sub> . ACS Applied Materials & Interfaces, 2019, 11, 28809-28817.	8.0	123
20	Size-Dependent Association of Cobalt Deuteride Cluster Anions Co <sub>3</sub> D <sub>n</sub> ( <i>n</i> = 4) with Dinitrogen. Journal of the American Society for Mass Spectrometry, 2019, 30, 1956-1963.	2.8	20
21	Nitrogen-Doped NiO Nanosheet Array for Boosted Electrocatalytic N <sub>2</sub> Reduction. ChemCatChem, 2019, 11, 4529-4536.	3.7	74
22	ZnO Quantum Dots Coupled with Graphene toward Electrocatalytic N <sub>2</sub> Reduction: Experimental and DFT Investigations. Chemistry - A European Journal, 2019, 25, 11933-11939.	3.3	71
23	Biomimetic Nitrogen Fixation Catalyzed by Transition Metal Sulfide Surfaces in an Electrolytic Cell. ChemSusChem, 2019, 12, 4265-4273.	6.8	35
24	Activated TiO <sub>2</sub> with tuned vacancy for efficient electrochemical nitrogen reduction. Applied Catalysis B: Environmental, 2019, 257, 117896.	20.2	220
25	Computational Evaluation of Electrocatalytic Nitrogen Reduction on TM Single-, Double-, and Triple-Atom Catalysts (TM = Mn, Fe, Co, Ni) Based on Graphdiyne Monolayers. Journal of Physical Chemistry C, 2019, 123, 19066-19076.	3.1	224
26	Metal-organic framework-derived materials for electrochemical energy applications. EnergyChem, 2019, 1, 100001.	19.1	438
27	Doping strain induced bi-Ti <sub>3</sub> + pairs for efficient N <sub>2</sub> activation and electrocatalytic fixation. Nature Communications, 2019, 10, 2877.	12.8	279
28	Elucidating the Mechanism of Electrochemical N <sub>2</sub> Reduction at the Ru(0001) Electrode. ACS Catalysis, 2019, 9, 11137-11145.	11.2	78
29	High Efficiency Electrochemical Nitrogen Fixation Achieved with a Lower Pressure Reaction System by Changing the Chemical Equilibrium. Angewandte Chemie - International Edition, 2019, 58, 15541-15547.	13.8	164
30	Corrosion-Induced Cl-Doped Ultrathin Graphdiyne toward Electrocatalytic Nitrogen Reduction at Ambient Conditions. ACS Catalysis, 2019, 9, 10649-10655.	11.2	95
31	Doping single transition metal atom into PtTe sheet for catalyzing nitrogen reduction and hydrogen evolution reactions. Journal of Chemical Physics, 2019, 151, 144710.	3.0	9
32	High Efficiency Electrochemical Nitrogen Fixation Achieved with a Lower Pressure Reaction System by Changing the Chemical Equilibrium. Angewandte Chemie, 2019, 131, 15687-15693.	2.0	34
33	Recent Advances in Solar Thermal Electrochemical Process (STEP) for Carbon Neutral Products and High Value Nanocarbons. Accounts of Chemical Research, 2019, 52, 3177-3187.	15.6	55
34	Ambient Electrosynthesis of Ammonia Using Core-Shell Structured Au@C Catalyst Fabricated by One-Step Laser Ablation Technique. ACS Applied Materials & Interfaces, 2019, 11, 44186-44195.	8.0	38
35	Salt-Templated Construction of Ultrathin Cobalt Doped Iron Thiophosphite Nanosheets toward Electrochemical Ammonia Synthesis. Small, 2019, 15, e1903500.	10.0	57
36	New Mechanism for N <sub>2</sub> Reduction: The Essential Role of Surface Hydrogenation. Journal of the American Chemical Society, 2019, 141, 18264-18270.	13.7	166

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37	Electrochemical Nitrogen Reduction Reaction Performance of Single-Boron Catalysts Tuned by MXene Substrates. <i>Journal of Physical Chemistry Letters</i> , 2019, 10, 6984-6989.	4.6	120
38	N-Doped Porous Carbon Self-Generated on Nickel Oxide Nanosheets for Electrocatalytic N <sub>2</sub> Fixation with a Faradaic Efficiency beyond 30%. <i>ACS Sustainable Chemistry and Engineering</i> , 2019, 7, 18874-18883.	6.7	37
39	Operando Oxygen Vacancies for Enhanced Activity and Stability toward Nitrogen Photofixation. <i>Advanced Energy Materials</i> , 2019, 9, 1902319.	19.5	88
40	Glycerol oxidation assisted electrocatalytic nitrogen reduction: ammonia and glyceraldehyde co-production on bimetallic RhCu ultrathin nanoflake nanoaggregates. <i>Journal of Materials Chemistry A</i> , 2019, 7, 21149-21156.	10.3	77
41	Single molybdenum atom anchored on 2D Ti <sub>2</sub> NO <sub>2</sub> MXene as a promising electrocatalyst for N <sub>2</sub> fixation. <i>Nanoscale</i> , 2019, 11, 18132-18141.	5.6	55
42	Electrocatalytic Ammonia Oxidation Mediated by a Polypyridyl Iron Catalyst. <i>ACS Catalysis</i> , 2019, 9, 10101-10108.	11.2	72
43	Electrochemical Reduction of N <sub>2</sub> into NH <sub>3</sub> by Donor–Acceptor Couples of Ni and Au Nanoparticles with a 67.8% Faradaic Efficiency. <i>Journal of the American Chemical Society</i> , 2019, 141, 14976-14980.	13.7	290
44	Recent Developments in Polymeric Carbon Nitride-Derived Photocatalysts and Electrocatalysts for Nitrogen Fixation. <i>ACS Catalysis</i> , 2019, 9, 10260-10278.	11.2	116
45	Elementary kinetics of nitrogen electroreduction to ammonia on late transition metals. <i>Catalysis Science and Technology</i> , 2019, 9, 174-181.	4.1	47
46	One-pot synthesis of bi-metallic PdRu tripods as an efficient catalyst for electrocatalytic nitrogen reduction to ammonia. <i>Journal of Materials Chemistry A</i> , 2019, 7, 801-805.	10.3	136
47	Metal–organic framework-derived shuttle-like V <sub>2</sub> O <sub>3</sub> /C for electrocatalytic N <sub>2</sub> reduction under ambient conditions. <i>Inorganic Chemistry Frontiers</i> , 2019, 6, 391-395.	6.0	79
48	CuO/Graphene Nanocomposite for Nitrogen Reduction Reaction. <i>ChemCatChem</i> , 2019, 11, 1441-1447.	3.7	95
49	Single-Boron Catalysts for Nitrogen Reduction Reaction. <i>Journal of the American Chemical Society</i> , 2019, 141, 2884-2888.	13.7	497
50	A boron-interstitial doped C <sub>2</sub> N layer as a metal-free electrocatalyst for N <sub>2</sub> fixation: a computational study. <i>Journal of Materials Chemistry A</i> , 2019, 7, 2392-2399.	10.3	162
51	Low-Coordinated Gold Atoms Boost Electrochemical Nitrogen Reduction Reaction under Ambient Conditions. <i>ACS Sustainable Chemistry and Engineering</i> , 2019, 7, 10214-10220.	6.7	37
52	Theoretical Screening of Single-Atom-Embedded MoSSe Nanosheets for Electrocatalytic N <sub>2</sub> Fixation. <i>Journal of Physical Chemistry C</i> , 2019, 123, 14501-14507.	3.1	72
53	Tuning the catalytic activity of a single Mo atom supported on graphene for nitrogen reduction <i>via</i> Se atom doping. <i>Physical Chemistry Chemical Physics</i> , 2019, 21, 14583-14588.	2.8	57
54	Experimental and theoretical understanding on electrochemical activation and inactivation processes of Nb <sub>3</sub> O <sub>7</sub> (OH) for ambient electrosynthesis of NH <sub>3</sub> . <i>Journal of Materials Chemistry A</i> , 2019, 7, 16969-16978.	10.3	39

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55	Electron distribution tuning of fluorine-doped carbon for ammonia electrosynthesis. Journal of Materials Chemistry A, 2019, 7, 16979-16983.	10.3	46
56	Oxygen vacancy-engineered Fe <sub>2</sub> O <sub>3</sub> nanocubes <i>via</i> a task-specific ionic liquid for electrocatalytic N <sub>2</sub> fixation. Chemical Communications, 2019, 55, 7370-7373.	4.1	67
57	Electrocatalytic Nitrogen Reduction to Ammonia by Fe <sub>2</sub> O <sub>3</sub> Nanorod Array on Carbon Cloth. ACS Sustainable Chemistry and Engineering, 2019, 7, 11754-11759.	6.7	77
58	Self-power electroreduction of N <sub>2</sub> into NH <sub>3</sub> by 3D printed triboelectric nanogenerators. Materials Today, 2019, 28, 17-24.	14.2	127
59	Oxygen vacancy enables electrochemical N <sub>2</sub> fixation over WO <sub>3</sub> with tailored structure. Nano Energy, 2019, 62, 869-875.	16.0	150
60	Two-dimensional Ir-conjugated osmium bis(dithiolene) complex (OsC <sub>4</sub> S <sub>4</sub> ) as a promising electrocatalyst for ambient nitrogen reduction to ammonia. Applied Surface Science, 2019, 487, 833-839.	6.1	39
61	Advanced Non-metallic Catalysts for Electrochemical Nitrogen Reduction under Ambient Conditions. Chemistry - A European Journal, 2019, 25, 12464-12485.	3.3	57
62	N <sub>2</sub> reduction using single transition-metal atom supported on defective WS <sub>2</sub> monolayer as promising catalysts: A DFT study. Applied Surface Science, 2019, 489, 684-692.	6.1	88
63	Prospects and Challenges for Solar Fertilizers. Joule, 2019, 3, 1578-1605.	24.0	153
64	How to explore ambient electrocatalytic nitrogen reduction reliably and insightfully. Chemical Society Reviews, 2019, 48, 3166-3180.	38.1	670
65	The electronic structure underlying electrocatalysis of two-dimensional materials. Wiley Interdisciplinary Reviews: Computational Molecular Science, 2019, 9, e1418.	14.6	17
66	Boosting nitrogen reduction reaction by bio-inspired FeMoS containing hybrid electrocatalyst over a wide pH range. Nano Energy, 2019, 62, 282-288.	16.0	108
67	Bimetallic Ag <sub>3</sub> Cu porous networks for ambient electrolysis of nitrogen to ammonia. Journal of Materials Chemistry A, 2019, 7, 12526-12531.	10.3	67
68	Photo(electro)catalytic Nitrogen Fixation: Problems and Possibilities. Advanced Materials Interfaces, 2019, 6, 1900091.	3.7	76
69	Kinetics of Li-Mediated N <sub>2</sub> Electroreduction. Joule, 2019, 3, 915-916.	24.0	14
70	Electrochemical N <sub>2</sub> splitting at well-defined metal complexes. Current Opinion in Electrochemistry, 2019, 15, 97-101.	4.8	11
71	Homogeneous, Heterogeneous, and Biological Catalysts for Electrochemical N <sub>2</sub> Reduction toward NH <sub>3</sub> under Ambient Conditions. ACS Catalysis, 2019, 9, 5245-5267.	11.2	145
72	Heterogeneous electrocatalysts design for nitrogen reduction reaction under ambient conditions. Materials Today, 2019, 27, 69-90.	14.2	289

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73	Hydrides, Amides and Imides Mediated Ammonia Synthesis and Decomposition. Chinese Journal of Chemistry, 2019, 37, 442-451.	4.9	32
74	3D Hierarchical Porous Graphene-Based Energy Materials: Synthesis, Functionalization, and Application in Energy Storage and Conversion. Electrochemical Energy Reviews, 2019, 2, 332-371.	25.5	82
75	Defect-rich fluorographene nanosheets for artificial N <sub>2</sub> fixation under ambient conditions. Chemical Communications, 2019, 55, 4266-4269.	4.1	105
76	Phosphide protected FeS <sub>2</sub> anchored oxygen defect oriented CeO <sub>2</sub> /NS based ternary hybrid for electrocatalytic and photocatalytic N <sub>2</sub> reduction to NH <sub>3</sub> . Journal of Materials Chemistry A, 2019, 7, 9145-9153.	10.3	69
77	Understanding Continuous Lithium-Mediated Electrochemical Nitrogen Reduction. Joule, 2019, 3, 1127-1139.	24.0	191
78	Nitrogen (N), Phosphorus (P)-Codoped Porous Carbon as a Metal-Free Electrocatalyst for N <sub>2</sub> Reduction under Ambient Conditions. ACS Applied Materials & Interfaces, 2019, 11, 12408-12414.	8.0	103
79	Electrocatalytic N <sub>2</sub> -to-NH <sub>3</sub> conversion with high faradaic efficiency enabled using a Bi nanosheet array. Chemical Communications, 2019, 55, 5263-5266.	4.1	95
80	Pt-embedded in monolayer g-C <sub>3</sub> N <sub>4</sub> as a promising single-atom electrocatalyst for ammonia synthesis. Journal of Materials Chemistry A, 2019, 7, 11908-11914.	10.3	78
81	Electrosynthesis of Hydrogen Peroxide Synergistically Catalyzed by Atomic Co <sup>II</sup> N <sub>x</sub> C Sites and Oxygen Functional Groups in Noble-Metal-Free Electrocatalysts. Advanced Materials, 2019, 31, e1808173.	21.0	252
82	B-terminated (111) polar surfaces of BP and BAs: promising metal-free electrocatalysts with large reaction regions for nitrogen fixation. Journal of Materials Chemistry A, 2019, 7, 13284-13292.	10.3	87
83	Structured Polyaniline: An Efficient and Durable Electrocatalyst for the Nitrogen Reduction Reaction in Acidic Media. ChemElectroChem, 2019, 6, 2215-2218.	3.4	16
84	In Situ Growth of Nitrogen-Doped Carbon-Coated $\text{Fe}_2\text{O}_3$ Nanoparticles on Carbon Fabric for Electrochemical N <sub>2</sub> Fixation. ACS Sustainable Chemistry and Engineering, 2019, 7, 8853-8859.	6.7	58
85	Predicting two-dimensional pentagonal transition metal monophosphides for efficient electrocatalytic nitrogen reduction. Journal of Materials Chemistry A, 2019, 7, 11444-11451.	10.3	49
86	Single Layer 2D Crystals for Electrochemical Applications of Ion Exchange Membranes and Hydrogen Evolution Catalysts. Advanced Materials Interfaces, 2019, 6, 1801838.	3.7	25
87	Ambient Electrosynthesis of Ammonia on a Core-Shell Structured Au@CeO <sub>2</sub> Catalyst: Contribution of Oxygen Vacancies in CeO <sub>2</sub> . Chemistry - A European Journal, 2019, 25, 5904-5911.	3.3	69
88	Nitrogen Reduction to Ammonia on Atomic-Scale Active Sites under Mild Conditions. Small Methods, 2019, 3, 1800501.	8.6	148
89	Bimodal nanoporous Pd <sub>3</sub> Cu <sub>1</sub> alloy with restrained hydrogen evolution for stable and high yield electrochemical nitrogen reduction. Nano Energy, 2019, 58, 834-841.	16.0	145
90	Dramatically Enhanced Ambient Ammonia Electrosynthesis Performance by In-Operando Created Li <sup>+</sup> S Interactions on MoS <sub>2</sub> Electrocatalyst. Advanced Energy Materials, 2019, 9, 1803935.	19.5	176

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91	Two-Dimensional Mosaic Bismuth Nanosheets for Highly Selective Ambient Electrocatalytic Nitrogen Reduction. ACS Catalysis, 2019, 9, 2902-2908.	11.2	467
92	Cu doping in CeO <sub>2</sub> to form multiple oxygen vacancies for dramatically enhanced ambient N <sub>2</sub> reduction performance. Chemical Communications, 2019, 55, 2952-2955.	4.1	138
93	A Flower-like Bismuth Oxide as an Efficient, Durable and Selective Electrocatalyst for Artificial N <sub>2</sub> Fixation in Ambient Condition. ChemCatChem, 2019, 11, 1884-1888.	3.7	31
94	Selective electroreduction of dinitrogen to ammonia on a molecular iron phthalocyanine/O-MWCNT catalyst under ambient conditions. Chemical Communications, 2019, 55, 14111-14114.	4.1	46
95	Boron and nitrogen co-doped porous carbon nanofibers as metal-free electrocatalysts for highly efficient ammonia electrosynthesis. Journal of Materials Chemistry A, 2019, 7, 26272-26278.	10.3	66
96	Strategies for computational design and discovery of two-dimensional transition-metal-free materials for electro-catalysis applications. Physical Chemistry Chemical Physics, 2019, 21, 25535-25547.	2.8	12
97	Single atom electrocatalysts supported on graphene or graphene-like carbons. Chemical Society Reviews, 2019, 48, 5207-5241.	38.1	441
98	Single-atom catalysts templated by metal-organic frameworks for electrochemical nitrogen reduction. Journal of Materials Chemistry A, 2019, 7, 26371-26377.	10.3	152
99	Achieving 59% faradaic efficiency of the N <sub>2</sub> electroreduction reaction in an aqueous Zn-N <sub>2</sub> battery by facily regulating the surface mass transport on metallic copper. Chemical Communications, 2019, 55, 12801-12804.	4.1	45
100	Electrochemical nitrogen fixation and utilization: theories, advanced catalyst materials and system design. Chemical Society Reviews, 2019, 48, 5658-5716.	38.1	541
101	Two-dimensional transition metal diborides: promising Dirac electrocatalysts with large reaction regions toward efficient N <sub>2</sub> fixation. Journal of Materials Chemistry A, 2019, 7, 25887-25893.	10.3	45
102	Single atom-supported MXene: how single-atomic-site catalysts tune the high activity and selectivity of electrochemical nitrogen fixation. Journal of Materials Chemistry A, 2019, 7, 27620-27631.	10.3	133
103	Electrochemical Water Oxidation in Acidic Solution Using Titanium Diboride (TiB <sub>2</sub> ) Catalyst. ChemCatChem, 2019, 11, 3877-3881.	3.7	24
104	Review on photocatalytic and electrocatalytic artificial nitrogen fixation for ammonia synthesis at mild conditions: Advances, challenges and perspectives. Nano Research, 2019, 12, 1229-1249.	10.4	301
105	Ambient Electrosynthesis of Ammonia on a Biomass-Derived Nitrogen-Doped Porous Carbon Electrocatalyst: Contribution of Pyridinic Nitrogen. ACS Energy Letters, 2019, 4, 377-383.	17.4	142
106	A Voltammetric Study of Nitrogenase Catalysis Using Electron Transfer Mediators. ACS Catalysis, 2019, 9, 1366-1372.	11.2	38
107	Recent Progress on Electrocatalyst and Photocatalyst Design for Nitrogen Reduction. Small Methods, 2019, 3, 1800388.	8.6	252
108	Electrocatalytic Reduction of Nitrogen: From Haber-Bosch to Ammonia Artificial Leaf. CheM, 2019, 5, 263-283.	11.7	339



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109	NbO <sub>2</sub> Electrocatalyst Toward 32% Faradaic Efficiency for N <sub>2</sub> Fixation. Small Methods, 2019, 3, 1800386.	8.6	111
110	Visible-Light Bismuth Iron Molybdate Photocatalyst for Artificial Nitrogen Fixation. Journal of the Electrochemical Society, 2019, 166, H3091-H3096.	2.9	19
111	Computational Design of Single-Molybdenum Catalysts for the Nitrogen Reduction Reaction. Journal of Physical Chemistry C, 2019, 123, 2347-2352.	3.1	63
112	Electrochemical Fabrication of Porous Au Film on Ni Foam for Nitrogen Reduction to Ammonia. Small, 2019, 15, e1804769.	10.0	132
113	Selective Electrochemical Nitrogen Reduction Driven by Hydrogen Bond Interactions at Metal/Ionic Liquid Interfaces. Journal of Physical Chemistry Letters, 2019, 10, 513-517.	4.6	36
114	Defect Engineering Strategies for Nitrogen Reduction Reactions under Ambient Conditions. Small Methods, 2019, 3, 1800331.	8.6	199
115	Advances in Electrocatalytic N <sub>2</sub> Reduction—Strategies to Tackle the Selectivity Challenge. Small Methods, 2019, 3, 1800337.	8.6	387
116	Computational Screening of Efficient Single-Atom Catalysts Based on Graphitic Carbon Nitride (g-C <sub>3</sub> N <sub>4</sub> ) for Nitrogen Electroreduction. Small Methods, 2019, 3, 1800368.	8.6	347
117	Rational Design of Fe-N/C Hybrid for Enhanced Nitrogen Reduction Electrocatalysis under Ambient Conditions in Aqueous Solution. ACS Catalysis, 2019, 9, 336-344.	11.2	278
118	Modulierung der elektronischen Strukturen anorganischer Nanomaterialien für eine effiziente elektrokatalytische Wasserspaltung. Angewandte Chemie, 2019, 131, 4532-4551.	2.0	34
119	Modulating Electronic Structures of Inorganic Nanomaterials for Efficient Electrocatalytic Water Splitting. Angewandte Chemie - International Edition, 2019, 58, 4484-4502.	13.8	340
120	2D Electrocatalysts for Converting Earth-Abundant Simple Molecules into Value-Added Commodity Chemicals: Recent Progress and Perspectives. Advanced Materials, 2020, 32, e1904870.	21.0	76
121	Recent Advanced Materials for Electrochemical and Photoelectrochemical Synthesis of Ammonia from Dinitrogen: One Step Closer to a Sustainable Energy Future. Advanced Energy Materials, 2020, 10, 1902020.	19.5	113
122	New insights into mechanisms on electrochemical N <sub>2</sub> reduction reaction driven by efficient zero-valence Cu nanoparticles. Journal of Power Sources, 2020, 448, 227417.	7.8	22
123	Synergistic Promotion of the Electrochemical Reduction of Nitrogen to Ammonia by Phosphorus and Potassium. ChemCatChem, 2020, 12, 334-341.	3.7	34
124	MoP supported on reduced graphene oxide for high performance electrochemical nitrogen reduction. Dalton Transactions, 2020, 49, 988-992.	3.3	20
125	Coupling Cu with Au for enhanced electrocatalytic activity of nitrogen reduction reaction. Nanoscale, 2020, 12, 1811-1816.	5.6	61
126	Electrochemical ammonia synthesis through N <sub>2</sub> and H <sub>2</sub> O under ambient conditions: Theory, practices, and challenges for catalysts and electrolytes. Nano Energy, 2020, 69, 104469.	16.0	123



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127	W supported on g-CN manifests high activity and selectivity for N <sub>2</sub> electroreduction to NH <sub>3</sub> . Journal of Materials Chemistry A, 2020, 8, 1378-1385.	10.3	93
128	In <sub>2</sub> O <sub>3</sub> nanoparticle-reduced graphene oxide hybrid for electrocatalytic nitrogen fixation: Computational and experimental studies. Journal of Materials Science, 2020, 55, 4624-4632.	3.7	41
129	Hierarchical hollow nanotubes of NiFeV-layered double hydroxides@CoVP heterostructures towards efficient, pH-universal electrocatalytic nitrogen reduction reaction to ammonia. Applied Catalysis B: Environmental, 2020, 265, 118559.	20.2	252
130	Tuning electronic structure of PdZn nanocatalyst via acid-etching strategy for highly selective and stable electrolytic nitrogen fixation under ambient conditions. Applied Catalysis B: Environmental, 2020, 265, 118568.	20.2	42
131	Au <sub>1</sub> Co <sub>1</sub> Alloy Supported on Graphene Oxide with Enhanced Performance for Ambient Electrolysis of Nitrogen to Ammonia. ACS Sustainable Chemistry and Engineering, 2020, 8, 44-49.	6.7	34
132	Engineering Local Coordination Environments of Atomically Dispersed and Heteroatom-Coordinated Single Metal Site Electrocatalysts for Clean Energy Conversion. Advanced Energy Materials, 2020, 10, 1902844.	19.5	245
133	Chemically coupled NiCoS/C nanocages as efficient electrocatalysts for nitrogen reduction reactions. Journal of Materials Chemistry A, 2020, 8, 543-547.	10.3	52
134	P-Doped graphene toward enhanced electrocatalytic N <sub>2</sub> reduction. Chemical Communications, 2020, 56, 1831-1834.	4.1	67
135	Adsorption and catalytic activation of N <sub>2</sub> molecule on iron dimer supported by different two-dimensional carbon-based substrates: A computational study. Applied Surface Science, 2020, 506, 144943.	6.1	21
136	Ambient Electrochemical N <sub>2</sub> Reduction to NH <sub>3</sub> on Nitrogen and Phosphorus Co-doped Porous Carbon with Trace Iron in Alkaline Electrolytes. ChemElectroChem, 2020, 7, 212-216.	3.4	11
137	Atomic Structure Modification for Electrochemical Nitrogen Reduction to Ammonia. Advanced Energy Materials, 2020, 10, 1903172.	19.5	110
138	Non-thermal atmospheric plasma synthesis of ammonia in a DBD reactor packed with various catalysts. Journal Physics D: Applied Physics, 2020, 53, 064002.	2.8	23
139	Electrochemical ammonia synthesis catalyzed with a CoFe layered double hydroxide – A new initiative in clean fuel synthesis. Journal of Cleaner Production, 2020, 250, 119525.	9.3	20
140	Nanostructured MoO <sub>3</sub> for Efficient Energy and Environmental Catalysis. Molecules, 2020, 25, 18.	3.8	74
141	An Overview on Noble Metal (Group VIII)-based Heterogeneous Electrocatalysts for Nitrogen Reduction Reaction. Chemistry - an Asian Journal, 2020, 15, 4131-4152.	3.3	25
142	Element table of TM-substituted polyoxotungstates for direct electrocatalytic reduction of nitric oxide to ammonia: a DFT guideline for experiments. Inorganic Chemistry Frontiers, 2020, 7, 4507-4516.	6.0	19
143	Molybdenum and boron synergistically boosting efficient electrochemical nitrogen fixation. Nano Energy, 2020, 78, 105391.	16.0	21
144	Metal-Encapsulated Boron Nitride Nanocages for Solar-Driven Nitrogen Fixation. Journal of Physical Chemistry C, 2020, 124, 23798-23806.	3.1	12

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145	A two-dimensional conductive Mo-based covalent organic framework as an efficient electrocatalyst for nitrogen fixation. <i>Journal of Materials Chemistry A</i> , 2020, 8, 23599-23606.	10.3	54
146	Fast Screening Method for Nitrogen Reduction Reaction (NRR) Electrocatalytic Activity with Rotating Ring-Disc Electrode (RRDE) Analysis in Alkaline Environment. <i>ChemCatChem</i> , 2020, 12, 6205-6213.	3.7	16
147	Theoretical screening of di-metal atom (M=Fe, Co, Ni, Cu, Zn) electrocatalysts for ammonia synthesis. <i>International Journal of Hydrogen Energy</i> , 2020, 45, 31881-31891.	7.1	28
148	Electrochemical N <sub>2</sub> Reduction to Ammonia Using Single Au/Fe Atoms Supported on Nitrogen-Doped Porous Carbon. <i>ACS Applied Energy Materials</i> , 2020, 3, 10061-10069.	5.1	40
149	The rational design of single-atom catalysts for electrochemical ammonia synthesis <i>via</i> a descriptor-based approach. <i>Journal of Materials Chemistry A</i> , 2020, 8, 17078-17088.	10.3	60
150	Insights into Nitrogenase Bioelectrocatalysis for Green Ammonia Production. <i>ChemSusChem</i> , 2020, 13, 4856-4865.	6.8	28
151	Active Site Engineering in Porous Electrocatalysts. <i>Advanced Materials</i> , 2020, 32, e2002435.	21.0	304
152	Recent Progress with Pincer Transition Metal Catalysts for Sustainability. <i>Catalysts</i> , 2020, 10, 773.	3.5	71
153	Atom-Pair Catalysts Supported by N-Doped Graphene for the Nitrogen Reduction Reaction: <i>d</i> -Band Center-Based Descriptor. <i>Journal of Physical Chemistry Letters</i> , 2020, 11, 6320-6329.	4.6	82
154	Two-dimensional Metal-organic Frameworks and Derivatives for Electrocatalysis. <i>Chemical Research in Chinese Universities</i> , 2020, 36, 662-679.	2.6	27
155	Defect engineering for electrochemical nitrogen reduction reaction to ammonia. <i>Nano Energy</i> , 2020, 77, 105126.	16.0	143
156	Nanostructured and Boron-Doped Diamond as an Electrocatalyst for Nitrogen Fixation. <i>ACS Energy Letters</i> , 2020, 5, 2590-2596.	17.4	55
157	Ruddlesden-Popper perovskites in electrocatalysis. <i>Materials Horizons</i> , 2020, 7, 2519-2565.	12.2	139
158	Enhancing electrochemical nitrogen reduction with Ru nanowires <i>via</i> the atomic decoration of Pt. <i>Journal of Materials Chemistry A</i> , 2020, 8, 25142-25147.	10.3	22
159	Gas Chromatographic Method for <i>In Situ</i> Ammonia Quantification at Parts per Billion Levels. <i>ACS Energy Letters</i> , 2020, 5, 3773-3777.	17.4	29
160	Regulating kinetics and thermodynamics of electrochemical nitrogen reduction with metal single-atom catalysts in a pressurized electrolyser. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , 2020, 117, 29462-29468.	7.1	104
161	Study on POM assisted electrolysis for hydrogen and ammonia production. <i>International Journal of Hydrogen Energy</i> , 2020, 45, 28313-28324.	7.1	6
162	A zero-dimensional nickel, iron-metal-organic framework (MOF) for synergistic N <sub>2</sub> electrofixation. <i>Journal of Materials Chemistry A</i> , 2020, 8, 18810-18815.	10.3	52

#	ARTICLE	IF	CITATIONS
163	Oxygen Vacancy Regulation Strategy Promotes Electrocatalytic Nitrogen Fixation by Doping Bi into Ce-MOF-Derived CeO <sub>2</sub> Nanorods. Journal of Physical Chemistry C, 2020, 124, 18003-18009.	3.1	33
164	Activity origin and design principles for atomic vanadium anchoring on phosphorene monolayer for nitrogen reduction reaction. Nano Research, 2020, 13, 2925-2932.	10.4	39
165	MOF-based atomically dispersed metal catalysts: Recent progress towards novel atomic configurations and electrocatalytic applications. Coordination Chemistry Reviews, 2020, 422, 213483.	18.8	105
166	Boosting Electrocatalytic Ammonia Production through Mimicking "Back-Donation". Chem, 2020, 6, 2690-2702.	11.7	88
167	A Janus antimony sulfide catalyst for highly selective N <sub>2</sub> electroreduction. Chemical Communications, 2020, 56, 10345-10348.	4.1	19
168	Two-dimensional CuAg/Ti <sub>3</sub> C <sub>2</sub> catalyst for electrochemical synthesis of ammonia under ambient conditions: a combined experimental and theoretical study. Sustainable Energy and Fuels, 2020, 4, 5061-5071.	4.9	26
169	Engineering Surface Atomic Architecture of NiTe Nanocrystals Toward Efficient Electrochemical N <sub>2</sub> Fixation. Advanced Functional Materials, 2020, 30, 2004208.	14.9	42
170	FeVO <sub>4</sub> porous nanorods for electrochemical nitrogen reduction: contribution of the Fe <sub>2</sub> V <sub>2</sub> dimer as a dual electron-donation center. Chemical Communications, 2020, 56, 10505-10508.	4.1	25
171	Recent Progress on 2D Transition Metal Compounds-based Electrocatalysts for Efficient Nitrogen Reduction. Chemical Research in Chinese Universities, 2020, 36, 648-661.	2.6	7
172	Copper nanocrystals anchored on an O-rich carbonized corn gel for nitrogen electroreduction to ammonia. Inorganic Chemistry Frontiers, 2020, 7, 3555-3560.	6.0	5
173	Transition metal-tetracyanoquinodimethane monolayers as single-atom catalysts for the electrocatalytic nitrogen reduction reaction. Materials Advances, 2020, 1, 1285-1292.	5.4	20
174	Recent Advances in MOF-Derived Single Atom Catalysts for Electrochemical Applications. Advanced Energy Materials, 2020, 10, 2001561.	19.5	265
175	A Pd/MnO <sub>2</sub> Electrocatalyst for Nitrogen Reduction to Ammonia under Ambient Conditions. Catalysts, 2020, 10, 802.	3.5	7
176	Double Atom Catalysts: Heteronuclear Transition Metal Dimer Anchored on Nitrogen-Doped Graphene as Superior Electrocatalyst for Nitrogen Reduction Reaction. Advanced Theory and Simulations, 2020, 3, 2000190.	2.8	26
177	Advanced Electrocatalysts with Single-Metal-Atom Active Sites. Chemical Reviews, 2020, 120, 12217-12314.	47.7	563
178	Theoretical Understandings of Graphene-based Metal Single-Atom Catalysts: Stability and Catalytic Performance. Chemical Reviews, 2020, 120, 12315-12341.	47.7	354
179	Robust Active Site Design of Single-Atom Catalysts for Electrochemical Ammonia Synthesis. Journal of Physical Chemistry C, 2020, 124, 23164-23176.	3.1	8
180	Selenium vacancy triggered atomic disordering of Co <sub>0.85</sub> Se nanoparticles towards a highly-active electrocatalyst for water oxidation. Chemical Communications, 2020, 56, 14451-14454.	4.1	14

#	ARTICLE	IF	CITATIONS
181	Unveiling Electrodeâ€“Electrolyte Design-Based NO Reduction for NH <sub>3</sub> Synthesis. ACS Energy Letters, 2020, 5, 3647-3656.	17.4	97
182	MXene-Derived Nanocomposites as Earth-Abundant Efficient Electrocatalyst for Nitrogen Reduction Reaction under Ambient Conditions. Inorganic Chemistry, 2020, 59, 16672-16678.	4.0	7
183	Efficient Ambient Electrocatalytic Ammonia Synthesis by Nanogold Triggered via Boron Clusters Combined with Carbon Nanotubes. ACS Applied Materials & Interfaces, 2020, 12, 42821-42831.	8.0	27
184	Two-Dimensional Nanomesh Arrays as Bifunctional Catalysts for N <sub>2</sub> Electrolysis. ACS Catalysis, 2020, 10, 11371-11379.	11.2	55
185	Ambient electrosynthesis of ammonia with efficient denitration. Nano Energy, 2020, 78, 105321.	16.0	110
186	Glycerine-based synthesis of a highly efficient Fe <sub>2</sub> O <sub>3</sub> electrocatalyst for N <sub>2</sub> fixation. RSC Advances, 2020, 10, 29575-29579.	3.6	13
187	Exploration and Investigation of Periodic Elements for Electrocatalytic Nitrogen Reduction. Small, 2020, 16, e2002885.	10.0	88
188	Alcohol oxidation as alternative anode reactions paired with (photo)electrochemical fuel production reactions. Nature Communications, 2020, 11, 4594.	12.8	67
189	A mesoporous Au film with surface sulfur modification for efficient ammonia electrosynthesis. Journal of Materials Chemistry A, 2020, 8, 20414-20419.	10.3	34
190	Plasma-driven catalysis: green ammonia synthesis with intermittent electricity. Green Chemistry, 2020, 22, 6258-6287.	9.0	163
191	Modulation strategies of Cu-based electrocatalysts for efficient nitrogen reduction. Journal of Materials Chemistry A, 2020, 8, 20286-20293.	10.3	35
192	Significantly enhanced electrocatalytic N <sub>2</sub> reduction to NH <sub>3</sub> by surface selenization with multiple functions. Journal of Materials Chemistry A, 2020, 8, 20331-20336.	10.3	16
193	Boosting electrocatalytic reduction of nitrogen to ammonia under ambient conditions by alloy engineering. Chemical Communications, 2020, 56, 11477-11480.	4.1	20
194	Flower-like Hollow MoSe <sub>2</sub> Nanospheres as Efficient Earth-Abundant Electrocatalysts for Nitrogen Reduction Reaction under Ambient Conditions. Inorganic Chemistry, 2020, 59, 12941-12946.	4.0	28
195	Catalytic Performance of Two-Dimensional Bismuth Tuned by Defect Engineering for Nitrogen Reduction Reaction. Journal of Physical Chemistry C, 2020, 124, 19563-19570.	3.1	8
196	Facet-Dependent Catalytic Performance of Au Nanocrystals for Electrochemical Nitrogen Reduction. ACS Applied Materials & Interfaces, 2020, 12, 41613-41619.	8.0	42
197	Highly effective and selective molecular nanowire catalysts for hydrogen and ammonia synthesis. Journal of Materials Chemistry A, 2020, 8, 26075-26084.	10.3	11
198	Facile All-Optical Method for In Situ Detection of Low Amounts of Ammonia. IScience, 2020, 23, 101757.	4.1	12

#	ARTICLE	IF	CITATIONS
199	Recent Advances in the Application of Structuralâ€Phase Engineering Strategies in Electrochemical Nitrogen Reduction Reaction. <i>Advanced Materials Interfaces</i> , 2020, 7, 2001215.	3.7	10
200	Promoted Electrocatalytic Nitrogen Fixation in Feâ€Ni Layered Double Hydroxide Arrays Coupled to Carbon Nanofibers: The Role of Phosphorus Doping. <i>Angewandte Chemie</i> , 2020, 132, 13725-13729.	2.0	14
201	Bimetallic Pairs Supported on Graphene as Efficient Electrocatalysts for Nitrogen Fixation: Search for the Optimal Coordination Atoms. <i>ChemSusChem</i> , 2020, 13, 3636-3644.	6.8	45
202	Oxidationâ€etching induced morphology regulation of Cu catalysts for highâ€performance electrochemical $\text{N}_2$ reduction. <i>EcoMat</i> , 2020, 2, e12026.	11.9	13
203	Direct Synthesis of Ammonia from $\text{N}_2$ and $\text{H}_2\text{O}$ on Different Iron Species Supported on Carbon Nanotubes using a Gasâ€Phase Electrocatalytic Flow Reactor. <i>ChemElectroChem</i> , 2020, 7, 3028-3037.	3.4	12
204	Ultrathin 1T-MoS <sub>2</sub> Nanoplates Induced by Quaternary Ammonium-Type Ionic Liquids on Polypyrrole/Graphene Oxide Nanosheets and Its Irreversible Crystal Phase Transition During Electrocatalytic Nitrogen Reduction. <i>ACS Applied Materials &amp; Interfaces</i> , 2020, 12, 25189-25199.	8.0	35
205	Chlorine-doped carbon for electrocatalytic nitrogen reduction. <i>Molecular Catalysis</i> , 2020, 492, 111029.	2.0	7
206	Graphdiyne Interface Engineering: Highly Active and Selective Ammonia Synthesis. <i>Angewandte Chemie</i> , 2020, 132, 13121-13127.	2.0	15
207	MBenes: emerging 2D materials as efficient electrocatalysts for the nitrogen reduction reaction. <i>Nanoscale Horizons</i> , 2020, 5, 1106-1115.	8.0	114
208	Rational Catalyst Design for $\text{N}_2$ Reduction under Ambient Conditions: Strategies toward Enhanced Conversion Efficiency. <i>ACS Catalysis</i> , 2020, 10, 6870-6899.	11.2	273
209	A Review of Composite/Hybrid Electrocatalysts and Photocatalysts for Nitrogen Reduction Reactions: Advanced Materials, Mechanisms, Challenges and Perspectives. <i>Electrochemical Energy Reviews</i> , 2020, 3, 506-540.	25.5	35
210	A review of the current trends in high-temperature electrocatalytic ammonia production using solid electrolytes. <i>Journal of Catalysis</i> , 2020, 387, 207-216.	6.2	25
211	Recent Advances and Challenges of Electrocatalytic $\text{N}_2$ Reduction to Ammonia. <i>Chemical Reviews</i> , 2020, 120, 5437-5516.	47.7	718
212	Machine-Learning-Enabled Exploration of Morphology Influence on Wire-Array Electrodes for Electrochemical Nitrogen Fixation. <i>Journal of Physical Chemistry Letters</i> , 2020, 11, 4625-4630.	4.6	23
213	3D Nanostructures for the Next Generation of Highâ€Performance Nanodevices for Electrochemical Energy Conversion and Storage. <i>Advanced Energy Materials</i> , 2020, 10, 2001460.	19.5	106
214	BCN-Encapsulated Nano-nickel Synergistically Promotes Ambient Electrochemical Dinitrogen Reduction. <i>ACS Applied Materials &amp; Interfaces</i> , 2020, 12, 31419-31430.	8.0	33
215	Enhanced Electrochemical Reduction of $\text{N}_2$ to Ammonia over Pyrite FeS <sub>2</sub> with Excellent Selectivity. <i>ACS Sustainable Chemistry and Engineering</i> , 2020, 8, 10572-10580.	6.7	48
216	Metalâ€Nitrogenâ€Doped Carbon Materials as Highly Efficient Catalysts: Progress and Rational Design. <i>Advanced Science</i> , 2020, 7, 2001069.	11.2	228

#	ARTICLE	IF	CITATIONS
217	Progress and Prospective of Nitrogen-Based Alternative Fuels. Chemical Reviews, 2020, 120, 5352-5436.	47.7	165
218	Nitrogen reduction reaction on small iron clusters supported by N-doped graphene: A theoretical study of the atomically precise active-site mechanism. Nano Research, 2020, 13, 2280-2288.	10.4	59
219	Self-powered electrocatalytic ammonia synthesis directly from air as driven by dual triboelectric nanogenerators. Energy and Environmental Science, 2020, 13, 2450-2458.	30.8	84
220	Constructing a Novel Surfactant-free MoS <sub>2</sub> Nanosheet Modified MgIn <sub>2</sub> S <sub>4</sub> Marigold Microflower: An Efficient Visible-Light Driven 2D-2D p-n Heterojunction Photocatalyst toward HER and pH Regulated NRR. ACS Sustainable Chemistry and Engineering, 2020, 8, 4848-4862.	6.7	127
221	Defective Carbon-Doped Boron Nitride Nanosheets for Highly Efficient Electrocatalytic Conversion of N <sub>2</sub> to NH <sub>3</sub> . ACS Sustainable Chemistry and Engineering, 2020, 8, 5278-5286.	6.7	61
222	Crystal-phase and surface-structure engineering of ruthenium nanocrystals. Nature Reviews Materials, 2020, 5, 440-459.	48.7	118
223	Bismuth hollow nanospheres for efficient electrosynthesis of ammonia under ambient conditions. Journal of Alloys and Compounds, 2020, 830, 154668.	5.5	12
224	Transition Metal Aluminum Boride as a New Candidate for Ambient-Condition Electrochemical Ammonia Synthesis. Nano-Micro Letters, 2020, 12, 65.	27.0	53
225	Electrocatalytic production of ammonia: Biomimetic electrode-electrolyte design for efficient electrocatalytic nitrogen fixation under ambient conditions. Applied Catalysis B: Environmental, 2020, 271, 118919.	20.2	55
226	Ambient Ammonia Electrosynthesis: Current Status, Challenges, and Perspectives. ChemSusChem, 2020, 13, 3061-3078.	6.8	65
227	Unique hollow Ni-Fe@MoS <sub>2</sub> nanocubes with boosted electrocatalytic activity for N <sub>2</sub> reduction to NH <sub>3</sub> . Journal of Materials Chemistry A, 2020, 8, 7339-7349.	10.3	60
228	Low-Coordinate Step Atoms via Plasma-Assisted Calcinations to Enhance Electrochemical Reduction of Nitrogen to Ammonia. Small, 2020, 16, e2000421.	10.0	24
229	A Janus Fe <sub>3</sub> SnO <sub>2</sub> Catalyst that Enables Bifunctional Electrochemical Nitrogen Fixation. Angewandte Chemie - International Edition, 2020, 59, 10888-10893.	13.8	192
230	Multi-yolk-shell bismuth@porous carbon as a highly efficient electrocatalyst for artificial N <sub>2</sub> fixation under ambient conditions. Inorganic Chemistry Frontiers, 2020, 7, 2006-2016.	6.0	15
231	Iridium Nanotubes as Bifunctional Electrocatalysts for Oxygen Evolution and Nitrate Reduction Reactions. ACS Applied Materials & Interfaces, 2020, 12, 14064-14070.	8.0	91
232	Anchoring Au nanoparticles on Bi ultrathin nanosheets for use as an efficient heterogeneous catalyst for ambient-condition electrochemical ammonia synthesis. Sustainable Energy and Fuels, 2020, 4, 4516-4521.	4.9	12
233	Advances in electrocatalytic ammonia synthesis under mild conditions. Progress in Energy and Combustion Science, 2020, 81, 100860.	31.2	38
234	Defect and Interface Engineering on Two-Dimensional Nanosheets for the Photocatalytic Nitrogen Reduction Reaction. ChemPhotoChem, 2020, 4, 5322-5336.	3.0	12



#	ARTICLE	IF	CITATIONS
235	Rigorous and reliable operations for electrocatalytic nitrogen reduction. Applied Catalysis B: Environmental, 2020, 278, 119325.	20.2	49
236	Unveiling the Essential Nature of Lewis Basicity in Thermodynamically and Dynamically Promoted Nitrogen Fixation. Advanced Functional Materials, 2020, 30, 2001244.	14.9	49
237	Electronic state optimization for electrochemical N <sub>2</sub> reduction reaction in aqueous solution. Journal of Materials Chemistry A, 2020, 8, 13896-13915.	10.3	45
238	Porous CuFe for Plasmon-Assisted N <sub>2</sub> Photofixation. ACS Energy Letters, 2020, 5, 2444-2451.	17.4	35
239	A highly selective and active metal-free catalyst for ammonia production. Nanoscale Horizons, 2020, 5, 1274-1278.	8.0	20
240	Recent Progress in MXene-Based Materials: Potential High-Performance Electrocatalysts. Advanced Functional Materials, 2020, 30, 2003437.	14.9	181
241	Nitrogen Fixation with Water Vapor by Nonequilibrium Plasma: toward Sustainable Ammonia Production. ACS Sustainable Chemistry and Engineering, 2020, 8, 2996-3004.	6.7	92
242	S-Doped three-dimensional graphene (S-3DG): a metal-free electrocatalyst for the electrochemical synthesis of ammonia under ambient conditions. Dalton Transactions, 2020, 49, 2258-2263.	3.3	20
243	Refining Universal Procedures for Ammonium Quantification via Rapid <sup>1</sup> H NMR Analysis for Dinitrogen Reduction Studies. ACS Energy Letters, 2020, 5, 736-741.	17.4	93
244	Highly boosted gas diffusion for enhanced electrocatalytic reduction of N <sub>2</sub> to NH <sub>3</sub> on 3D hollow Co-MoS <sub>2</sub> nanostructures. Nanoscale, 2020, 12, 6029-6036.	5.6	30
245	Ru-polyoxometalate as a single-atom electrocatalyst for N <sub>2</sub> reduction to NH <sub>3</sub> with high selectivity at applied voltage: a perspective from DFT studies. Physical Chemistry Chemical Physics, 2020, 22, 7234-7240.	2.8	30
246	Surface oxidized two-dimensional antimonene nanosheets for electrochemical ammonia synthesis under ambient conditions. Journal of Materials Chemistry A, 2020, 8, 4735-4739.	10.3	57
247	The VN <sub>3</sub> embedded graphene with the improved selectivity for nitrogen fixation. Applied Surface Science, 2020, 513, 145855.	6.1	23
248	Recent advances in catalysts, electrolytes and electrode engineering for the nitrogen reduction reaction under ambient conditions. Nanoscale, 2020, 12, 6900-6920.	5.6	97
249	Synergistic boron-dopants and boron-induced oxygen vacancies in MnO <sub>2</sub> nanosheets to promote electrocatalytic nitrogen reduction. Journal of Materials Chemistry A, 2020, 8, 5200-5208.	10.3	157
250	Fe doping promoted electrocatalytic N <sub>2</sub> reduction reaction of 2H MoS <sub>2</sub> . Chinese Chemical Letters, 2020, 31, 2487-2490.	9.0	39
251	Promotion of electrocatalytic nitrogen reduction reaction on N-doped porous carbon with secondary heteroatoms. Applied Catalysis B: Environmental, 2020, 266, 118633.	20.2	103
252	Overcoming Chemical Inertness under Ambient Conditions: A Critical View on Recent Developments in Ammonia Synthesis via Electrochemical N <sub>2</sub> Reduction by Asking Five Questions. ChemElectroChem, 2020, 7, 878-889.	3.4	32



#	ARTICLE	IF	CITATIONS
253	Atomic Modulation, Structural Design, and Systematic Optimization for Efficient Electrochemical Nitrogen Reduction. <i>Advanced Science</i> , 2020, 7, 1902390.	11.2	73
254	Size-dependent electrochemical nitrogen reduction catalyzed by monodisperse Au nanoparticles. <i>Electrochimica Acta</i> , 2020, 335, 135708.	5.2	29
255	Two-dimensional (2D)/2D Interface Engineering of a $\text{MoS}_2/\text{C}_3\text{N}_4$ Heterostructure for Promoted Electrocatalytic Nitrogen Fixation. <i>ACS Applied Materials &amp; Interfaces</i> , 2020, 12, 7081-7090.	8.0	255
256	The identification of optimal active boron sites for $\text{N}_2$ reduction. <i>Journal of Materials Chemistry A</i> , 2020, 8, 3910-3917.	10.3	44
257	Reactive Ionic Liquid Enables the Construction of 3D Rh Particles with Nanowire Subunits for Electrocatalytic Nitrogen Reduction. <i>Chemistry - an Asian Journal</i> , 2020, 15, 1081-1087.	3.3	25
258	Metal-Tuned $\text{W}_{18}\text{O}_{49}$ for Efficient Electrocatalytic $\text{N}_2$ Reduction. <i>ACS Sustainable Chemistry and Engineering</i> , 2020, 8, 2957-2963.	6.7	39
259	PdAgCu Alloy Nanoparticles Integrated on Three-Dimensional Nanoporous CuO for Efficient Electrocatalytic Nitrogen Reduction under Ambient Conditions. <i>Langmuir</i> , 2020, 36, 5112-5117.	3.5	13
260	<i>In situ</i> electrochemical reduction-assisted exfoliation: conversion of BiOCl nanoplates into Bi nanosheets enables efficient electrocatalytic nitrogen fixation. <i>Sustainable Energy and Fuels</i> , 2020, 4, 3334-3339.	4.9	15
261	Promoted Electrocatalytic Nitrogen Fixation in Fe-Ni Layered Double Hydroxide Arrays Coupled to Carbon Nanofibers: The Role of Phosphorus Doping. <i>Angewandte Chemie - International Edition</i> , 2020, 59, 13623-13627.	13.8	61
262	Single-atom catalysts boost nitrogen electroreduction reaction. <i>Materials Today</i> , 2020, 38, 99-113.	14.2	52
263	A Janus Fe-SnO <sub>2</sub> Catalyst that Enables Bifunctional Electrochemical Nitrogen Fixation. <i>Angewandte Chemie</i> , 2020, 132, 10980-10985.	2.0	57
264	Amorphous/Crystalline Hetero-Phase $\text{TiO}_2$ -Coated $\text{Fe}_2\text{O}_3$ Core-Shell Nanospindles: A High-Performance Artificial Nitrogen Fixation Electrocatalyst. <i>Chemistry - A European Journal</i> , 2020, 26, 10226-10229.	3.3	7
265	Feasibility of $\text{N}_2$ Reduction on the V Anchored 1T-MoS <sub>2</sub> Monolayer: A Density Functional Theory Study. <i>ChemPhysChem</i> , 2020, 21, 1235-1242.	2.1	14
266	Alternative Strategies Toward Sustainable Ammonia Synthesis. <i>Transactions of Tianjin University</i> , 2020, 26, 67-91.	6.4	51
267	Co <sub>3</sub> (hexahydroxytriphenylene) <sub>2</sub> : A conductive metal-organic framework for ambient electrocatalytic N <sub>2</sub> reduction to NH <sub>3</sub> . <i>Nano Research</i> , 2020, 13, 1008-1012.	10.4	56
268	Graphdiyne Interface Engineering: Highly Active and Selective Ammonia Synthesis. <i>Angewandte Chemie - International Edition</i> , 2020, 59, 13021-13027.	13.8	154
269	High-Performance Nitrogen Fixation over Mo Atom Modified Defective $\text{MnO}_2$ (001). <i>ChemCatChem</i> , 2020, 12, 3937-3945.	3.7	5
270	Efficient Electrochemical Nitrogen Fixation over Isolated Pt Sites. <i>Small</i> , 2020, 16, e2000015.	10.0	63

#	ARTICLE	IF	CITATIONS
271	Phosphorus cation substitution in TiO <sub>2</sub> nanorods toward enhanced N <sub>2</sub> electroreduction. Applied Surface Science, 2020, 523, 146517.	6.1	8
272	Mo <sub>2</sub> C@3D ultrathin macroporous carbon realizing efficient and stable nitrogen fixation. Science China Chemistry, 2020, 63, 1570-1577.	8.2	27
273	Computational Design of Transition Metal Single-Atom Electrocatalysts on PtS <sub>2</sub> for Efficient Nitrogen Reduction. ACS Applied Materials & Interfaces, 2020, 12, 20448-20455.	8.0	58
274	Isotopically Selective Quantification by UPLC-MS of Aqueous Ammonia at Submicromolar Concentrations Using Dansyl Chloride Derivatization. ACS Energy Letters, 2020, 5, 1532-1536.	17.4	34
275	Efficient charge separation between ZnIn <sub>2</sub> S <sub>4</sub> nanoparticles and polyaniline nanorods for nitrogen photofixation. New Journal of Chemistry, 2020, 44, 7350-7356.	2.8	35
276	ZIF-supported AuCu nanoalloy for ammonia electrosynthesis from nitrogen and thin air. Journal of Materials Chemistry A, 2020, 8, 8868-8874.	10.3	30
277	Bimetallic Mo@Co nanoparticles anchored on nitrogen-doped carbon for enhanced electrochemical nitrogen fixation. Journal of Materials Chemistry A, 2020, 8, 9091-9098.	10.3	62
278	The Journey toward Low Temperature, Low Pressure Catalytic Nitrogen Fixation. Advanced Energy Materials, 2020, 10, 2000659.	19.5	127
279	Altering the rate-determining step over cobalt single clusters leading to highly efficient ammonia synthesis. National Science Review, 2021, 8, nwaa136.	9.5	64
280	Heterogeneous single-cluster catalysts (Mn <sub>3</sub> , Fe <sub>3</sub> , Co <sub>3</sub> , and Mo <sub>3</sub> ) supported on nitrogen-doped graphene for robust electrochemical nitrogen reduction. Journal of Energy Chemistry, 2021, 54, 612-619.	12.9	57
281	A simple synthesis of Co <sub>3</sub> O <sub>4</sub> @CNT to boost electrochemical nitrogen fixation. Electrochimica Acta, 2021, 367, 137421.	5.2	15
282	FeTe <sub>2</sub> as an earth-abundant metal telluride catalyst for electrocatalytic nitrogen fixation. Journal of Energy Chemistry, 2021, 56, 259-263.	12.9	41
283	Insights into electrochemical nitrogen reduction reaction mechanisms: Combined effect of single transition-metal and boron atom. Journal of Energy Chemistry, 2021, 58, 577-585.	12.9	66
284	Ammonia Production Technologies. , 2021, , 41-83.		28
285	Encapsulating vanadium nitride nanodots into N,S-codoped graphitized carbon for synergistic electrocatalytic nitrogen reduction and aqueous Zn-N <sub>2</sub> battery. Applied Catalysis B: Environmental, 2021, 280, 119434.	20.2	51
286	Zn nanosheets: An earth-abundant metallic catalyst for efficient electrochemical ammonia synthesis. Journal of Energy Chemistry, 2021, 54, 318-322.	12.9	36
287	Advanced Electrocatalysis for Energy and Environmental Sustainability via Water and Nitrogen Reactions. Advanced Materials, 2021, 33, e2000381.	21.0	231
288	Enhanced photocatalytic N <sub>2</sub> fixation via defective and fluoride modified TiO <sub>2</sub> surface. Applied Catalysis B: Environmental, 2021, 282, 119580.	20.2	125

#	ARTICLE	IF	CITATIONS
289	Electrocatalytic reduction of nitrogen on FeAg/Si for ammonia synthesis: A simple strategy for continuous regulation of faradaic efficiency by controlling H <sup>+</sup> ions transfer rate. Applied Catalysis B: Environmental, 2021, 283, 119606.	20.2	21
290	Fundamentals and Recent Progress of Photocatalytic Nitrogen Fixation Reaction over Semiconductors. Solar Rrl, 2021, 5, 2000487.	5.8	90
291	Modulating Single-Atom Palladium Sites with Copper for Enhanced Ambient Ammonia Electrosynthesis. Angewandte Chemie, 2021, 133, 349-354.	2.0	44
292	Metal-free boron carbonitride with tunable boron Lewis acid sites for enhanced nitrogen electroreduction to ammonia. Applied Catalysis B: Environmental, 2021, 283, 119622.	20.2	108
293	“More is Different”: Synergistic Effect and Structural Engineering in Double-Atom Catalysts. Advanced Functional Materials, 2021, 31, 2007423.	14.9	179
294	W-N <sub>3</sub> center supported on blue phosphorus as a promising efficient electrocatalyst with ultra-low limiting potential for nitrogen fixation. Applied Surface Science, 2021, 536, 147706.	6.1	13
295	Nitrogenase inspired artificial photosynthetic nitrogen fixation. Chem, 2021, 7, 1431-1450.	11.7	43
296	Molecular single iron site catalysts for electrochemical nitrogen fixation under ambient conditions. Applied Catalysis B: Environmental, 2021, 285, 119794.	20.2	58
297	Design of Local Atomic Environments in Single-Atom Electrocatalysts for Renewable Energy Conversions. Advanced Materials, 2021, 33, e2003075.	21.0	187
298	An exfoliated iron phosphorus trisulfide nanosheet with rich sulfur vacancy for efficient dinitrogen fixation and Zn-N <sub>2</sub> battery. Nano Energy, 2021, 81, 105613.	16.0	43
299	Multiatom Catalysts for Energy-Related Electrocatalysis. Advanced Sustainable Systems, 2021, 5, 2000213.	5.3	13
300	Strain engineered gas-consumption electroreduction reactions: Fundamentals and perspectives. Coordination Chemistry Reviews, 2021, 429, 213649.	18.8	6
301	Recent progress in electrochemical synthesis of ammonia from nitrogen: strategies to improve the catalytic activity and selectivity. Energy and Environmental Science, 2021, 14, 672-687.	30.8	188
302	Challenges and Opportunities in Utilizing MXenes of Carbides and Nitrides as Electrocatalysts. Advanced Energy Materials, 2021, 11, 2002967.	19.5	94
303	A shape-memory V <sub>3</sub> O <sub>7</sub> ·H <sub>2</sub> O electrocatalyst for foldable N <sub>2</sub> fixation. Journal of Materials Chemistry A, 2021, 9, 1603-1609.	10.3	16
304	Enhanced N <sub>2</sub> affinity of 1T-MoS <sub>2</sub> with a unique pseudo-six-membered ring consisting of Na-Li-S-Mo-S-Mo for high ambient ammonia electrosynthesis performance. Journal of Materials Chemistry A, 2021, 9, 1230-1239.	10.3	44
305	Enhanced catalytic activity of MXene for nitrogen electroreduction reaction by carbon doping. Journal of Colloid and Interface Science, 2021, 588, 1-8.	9.4	29
306	Exploring the sustainable production of ammonia by recycling N and H in biological residues: Evolution of fuel-N during glutamic acid gasification. Journal of Cleaner Production, 2021, 282, 124417.	9.3	19

#	ARTICLE	IF	CITATIONS
307	Coordination tunes the activity and selectivity of the nitrogen reduction reaction on single-atom iron catalysts: a computational study. <i>Journal of Materials Chemistry A</i> , 2021, 9, 1240-1251.	10.3	135
308	Electrocatalytic Nitrogen Reduction Performance of Si-doped 2D Nanosheets of Boron Nitride Evaluated via Density Functional Theory. <i>ChemCatChem</i> , 2021, 13, 1239-1245.	3.7	18
309	Graphene Derivatives and Graphene Composite Electrocatalysts for N <sub>2</sub> Reduction Reaction. <i>Small Structures</i> , 2021, 2, 2000075.	12.0	36
310	Recent Advances in Graphitic Carbon Nitride Supported Single-Atom Catalysts for Energy Conversion. <i>ChemCatChem</i> , 2021, 13, 1250-1270.	3.7	46
311	Enriched oxygen vacancies of Cu <sub>2</sub> O/SnS <sub>2</sub> /SnO <sub>2</sub> heterostructure for enhanced photocatalytic reduction of CO <sub>2</sub> by water and nitrogen fixation. <i>Journal of Colloid and Interface Science</i> , 2021, 585, 764-777.	9.4	49
312	Electrochemical synthesis of ammonia: Progress and challenges. <i>Materials Today Physics</i> , 2021, 16, 100310.	6.0	50
313	Oxygen vacancy engineering of calcium cobaltate: A nitrogen fixation electrocatalyst at ambient condition in neutral electrolyte. <i>Nano Research</i> , 2021, 14, 501-506.	10.4	17
314	Modulating Single-Atom Palladium Sites with Copper for Enhanced Ambient Ammonia Electrosynthesis. <i>Angewandte Chemie - International Edition</i> , 2021, 60, 345-350.	13.8	150
315	Iron-group electrocatalysts for ambient nitrogen reduction reaction in aqueous media. <i>Nano Research</i> , 2021, 14, 555-569.	10.4	137
316	Computational Study of Transition-Metal Substitutions in Rutile TiO <sub>2</sub> (110) for Photoelectrocatalytic Ammonia Synthesis. <i>Catalysis Letters</i> , 2021, 151, 1142-1154.	2.6	4
317	Atomistic modeling of electrocatalysis: Are we there yet?. <i>Wiley Interdisciplinary Reviews: Computational Molecular Science</i> , 2021, 11, e1499.	14.6	79
318	Elongated heterometal double-sites promote nitrogen reduction on two-dimensional MM <sub>2</sub> B <sub>7</sub> monolayers. <i>Journal of Materials Chemistry A</i> , 2021, 9, 10855-10868.	10.3	16
319	Achieving ultrahigh electrocatalytic NH <sub>3</sub> yield rate on Fe-doped Bi <sub>2</sub> WO <sub>6</sub> electrocatalyst. <i>Nano Research</i> , 2021, 14, 2711-2716.	10.4	34
320	Iron-doped titanium dioxide hollow nanospheres for efficient nitrogen fixation and Zn-N <sub>2</sub> aqueous batteries. <i>Journal of Materials Chemistry A</i> , 2021, 9, 4026-4035.	10.3	36
321	Colloidal synthesis of Au nanomaterials with a controlled morphology and crystal phase <i>via</i> the [Au( <i>scp</i> )-oleylamine] complex. <i>Journal of Materials Chemistry A</i> , 2021, 9, 19534-19553.	10.3	11
322	Efficient electrocatalytic nitrogen reduction to ammonia with aqueous silver nanodots. <i>Communications Chemistry</i> , 2021, 4, .	4.5	36
323	Phosphorus modulation of a mesoporous rhodium film for enhanced nitrogen electroreduction. <i>Nanoscale</i> , 2021, 13, 13809-13815.	5.6	6
324	Electroreduction of nitrogen to ammonia on nanoporous gold. <i>Nanoscale</i> , 2021, 13, 1717-1722.	5.6	17

#	ARTICLE	IF	CITATIONS
325	Coreâ€‘Shell Functional Materials for Electrocatalysis. Nanostructure Science and Technology, 2021, , 303-342.	0.1	0
326	Efficient nitrogen reduction to ammonia by fluorine vacancies with a multi-step promoting effect. Journal of Materials Chemistry A, 2021, 9, 894-899.	10.3	18
327	A comparative study of Bi, Sb, and BiSb for electrochemical nitrogen reduction leading to a new catalyst design strategy. Journal of Materials Chemistry A, 2021, 9, 20453-20465.	10.3	15
328	Gas diffusion electrodes (GDEs) for electrochemical reduction of carbon dioxide, carbon monoxide, and dinitrogen to value-added products: a review. Energy and Environmental Science, 2021, 14, 1959-2008.	30.8	243
329	Single metal atom anchored on a CN monolayer as an excellent electrocatalyst for the nitrogen reduction reaction. Physical Chemistry Chemical Physics, 2021, 23, 2658-2662.	2.8	10
330	One-step electrocatalytic synthesis of ammonia and acetone from nitrogen and isopropanol in an ionic liquid. Green Chemistry, 2021, 23, 7685-7691.	9.0	3
331	Exploring the synergistic effect of Bâ€‘N doped defective graphdiyne for N <sub>2</sub> fixation. New Journal of Chemistry, 2021, 45, 6327-6335.	2.8	13
332	Screening of effective NRR electrocatalysts among the Si-based MSi <sub>2</sub> N <sub>4</sub> (M =) Tj ETQq1 10.3 14 34	10.3	14
333	Unlocking the potential of ruthenium catalysts for nitrogen fixation with subsurface oxygen. Journal of Materials Chemistry A, 2021, 9, 6575-6582.	10.3	14
334	A General Strategy to Boost Electrocatalytic Nitrogen Reduction on Perovskite Oxides via the Oxygen Vacancies Derived from Aâ€‘Site Deficiency. Advanced Energy Materials, 2021, 11, 2003799.	19.5	86
335	Understanding the lattice nitrogen stability and deactivation pathways of cubic CrN nanoparticles in the electrochemical nitrogen reduction reaction. Journal of Materials Chemistry A, 2021, 9, 8568-8575.	10.3	12
336	SnNb <sub>2</sub> O <sub>6</sub> nanosheets for the electrocatalytic NRR: dual-active-center mechanism of Nb <sub>3c</sub> and Sn <sub>4c</sub> â€‘Nb <sub>5c</sub> dimer. Sustainable Energy and Fuels, 2021, 5, 4277-4283.	4.9	30
337	Density functional theory study of transition metal single-atoms anchored on graphyne as efficient electrocatalysts for the nitrogen reduction reaction. Physical Chemistry Chemical Physics, 2021, 23, 10418-10428.	2.8	68
338	Recent advances in photocatalytic nitrogen fixation: from active sites to ammonia quantification methods. RSC Advances, 2021, 11, 14844-14861.	3.6	47
339	A small change in the local atomic environment for a big improvement in single-atom catalysis. Journal of Materials Chemistry A, 2021, 9, 4184-4192.	10.3	44
340	Theoretical Research on Catalytic Performance of TMNxCy Catalyst for Nitrogen Reduction in Actual Water Solvent. Acta Chimica Sinica, 2021, 79, 1138.	1.4	1
341	Reduction of N <sub>2</sub> to NH <sub>3</sub> by TiO <sub>2</sub> -supported Ni cluster catalysts: a DFT study. Physical Chemistry Chemical Physics, 2021, 23, 16707-16717.	2.8	15
342	Electrochemical Câ€‘N coupling with perovskite hybrids toward efficient urea synthesis. Chemical Science, 2021, 12, 6048-6058.	7.4	138

#	ARTICLE	IF	CITATIONS
343	Electrochemical nitrogen reduction: recent progress and prospects. Chemical Communications, 2021, 57, 7335-7349.	4.1	74
344	Rational design of an Fe cluster catalyst for robust nitrogen activation. Journal of Materials Chemistry A, 2021, 9, 21219-21227.	10.3	24
345	Self-powered ammonia synthesis under ambient conditions via N <sub>2</sub> discharge driven by Tesla turbine triboelectric nanogenerators. Microsystems and Nanoengineering, 2021, 7, 7.	7.0	24
346	Multistep Functional Embellishment for p-ZnTe as a Cathode to Boost the Faraday Efficiency of Nitrogen Conversion. ACS Applied Materials & Interfaces, 2021, 13, 8129-8137.	8.0	4
347	The Role of Defects in Metal-Organic Frameworks for Nitrogen Reduction Reaction: When Defects Switch to Features. Advanced Functional Materials, 2021, 31, 2010052.	14.9	92
348	Defected MoS <sub>2</sub> : An efficient electrochemical nitrogen reduction catalyst under mild conditions. Electrochimica Acta, 2021, 370, 137695.	5.2	40
349	Designing High-Valence Metal Sites for Electrochemical Water Splitting. Advanced Functional Materials, 2021, 31, 2009779.	14.9	195
350	Recent development of high-performance photocatalysts for N <sub>2</sub> fixation: A review. Journal of Environmental Chemical Engineering, 2021, 9, 104997.	6.7	33
351	Reduction of N <sub>2</sub> to Ammonia by Phosphate Molten Salt and Li Electrode: Proof of Concept Using Quantum Mechanics. Journal of Physical Chemistry Letters, 2021, 12, 1696-1701.	4.6	6
352	Iron-Doped MoO <sub>3</sub> Nanosheets for Boosting Nitrogen Fixation to Ammonia at Ambient Conditions. ACS Applied Materials & Interfaces, 2021, 13, 7142-7151.	8.0	21
353	Amorphous MoS <sub>3</sub> enriched with sulfur vacancies for efficient electrocatalytic nitrogen reduction. Journal of Energy Chemistry, 2021, 53, 132-138.	12.9	98
354	Efficiency Accreditation and Testing Protocols for Particulate Photocatalysts toward Solar Fuel Production. Joule, 2021, 5, 344-359.	24.0	165
355	2D Materials Bridging Experiments and Computations for Electro/Photocatalysis. Advanced Energy Materials, 2022, 12, 2003841.	19.5	116
356	Electrochemical Reduction of Nitrogen to Ammonia by Pd-S-Mo Nanosheets on Hydrophobic Hierarchical Graphene Support. ChemElectroChem, 0, , .	3.4	1
357	Engineering transition metal-based nanomaterials for high-performance electrocatalysis. Materials Reports Energy, 2021, 1, 100006.	3.2	14
358	Aqueous Rechargeable Zn-N <sub>2</sub> Battery Assembled by Bifunctional Cobalt Phosphate Nanocrystals-Loaded Carbon Nanosheets for Simultaneous NH <sub>3</sub> Production and Power Generation. ACS Applied Materials & Interfaces, 2021, 13, 12106-12117.	8.0	32
359	Recent Advances in Nonprecious Metal Oxide Electrocatalysts and Photocatalysts for N <sub>2</sub> Reduction Reaction under Ambient Condition. Small Science, 2021, 1, 2000069.	9.9	63
361	Boosting Electroreduction Kinetics of Nitrogen to Ammonia via Tuning Electron Distribution of Single-Atomic Iron Sites. Angewandte Chemie, 2021, 133, 9160-9167.	2.0	26



#	ARTICLE	IF	CITATIONS
362	Synergistic Effect of Boron Nitride and Carbon Domains in Boron Carbide Nitride Nanotube Supported Single-Atom Catalysts for Efficient Nitrogen Fixation. Chemistry - A European Journal, 2021, 27, 6945-6953.	3.3	17
363	Nanocarbon for Energy Material Applications: N <sub>2</sub> Reduction Reaction. Small, 2021, 17, e2007055.	10.0	26
364	Engineering of electrocatalyst/electrolyte interface for ambient ammonia synthesis. SusMat, 2021, 1, 150-173.	14.9	47
365	Boosting Electroreduction Kinetics of Nitrogen to Ammonia via Tuning Electron Distribution of Single-Atomic Iron Sites. Angewandte Chemie - International Edition, 2021, 60, 9078-9085.	13.8	157
366	Engineering electrocatalyst for low-temperature N <sub>2</sub> reduction to ammonia. Materials Today, 2021, 44, 136-167.	14.2	37
367	Carbon-Coordinated Single Cr Site for Efficient Electrocatalytic N <sub>2</sub> Fixation. Advanced Theory and Simulations, 2021, 4, 2100044.	2.8	24
368	Aggrandizing the Photoactivity of ZnO Nanorods toward N <sub>2</sub> Reduction and H <sub>2</sub> Evolution through Facile <i>In Situ</i> Coupling with Ni <sub>x</sub> P <sub>y</sub> . ACS Sustainable Chemistry and Engineering, 2021, 9, 6305-6317.	6.7	35
369	Preliminary economics for green ammonia synthesis via lithium mediated pathway. International Journal of Energy Research, 2021, 45, 13461-13470.	4.5	7
370	Proton-filtering covalent organic frameworks with superior nitrogen penetration flux promote ambient ammonia synthesis. Nature Catalysis, 2021, 4, 322-331.	34.4	216
371	Ampoule method fabricated sulfur vacancy-rich N-doped ZnS electrodes for ammonia production in alkaline media. Materials for Renewable and Sustainable Energy, 2021, 10, 1.	3.6	11
372	Perovskite Oxides for Cathodic Electrocatalysis of Energy-Related Gases: From O <sub>2</sub> to CO <sub>2</sub> and N <sub>2</sub> . Advanced Functional Materials, 2021, 31, 2101872.	14.9	21
373	Surface evolution of electrocatalysts in energy conversion reactions. Nano Energy, 2021, 82, 105745.	16.0	36
374	Mo <sub>2</sub> C embedded on nitrogen-doped carbon toward electrocatalytic nitrogen reduction to ammonia under ambient conditions. International Journal of Hydrogen Energy, 2021, 46, 13011-13019.	7.1	28
375	Carbon Fiber Supported Binary Metal Sulfide Catalysts with Multi-Dimensional Structures for Electrocatalytic Nitrogen Reduction Reactions Over a Wide pH Range. Advanced Fiber Materials, 2021, 3, 229-238.	16.1	34
376	Emerging Materials and Methods toward Ammonia-Based Energy Storage and Conversion. Advanced Materials, 2021, 33, e2005721.	21.0	137
377	Single Mo atom supported on defective BC <sub>2</sub> N monolayers as promising electrochemical catalysts for nitrogen reduction reaction. Applied Surface Science, 2021, 546, 149131.	6.1	14
378	Strategic Structure Tuning of Yolk-Shell Microcages for Efficient Nitrogen Fixation. ChemSusChem, 2021, 14, 2521-2528.	6.8	4
379	Promoting N <sub>2</sub> electroreduction to ammonia by fluorine-terminating Ti <sub>3</sub> C <sub>2</sub> T <sub>x</sub> MXene. Nano Convergence, 2021, 8, 14.	12.1	13



#	ARTICLE	IF	CITATIONS
380	Theoretical insights into bimetallic atoms supported on PC6 as highly efficient electrocatalysts for N <sub>2</sub> electroreduction to NH <sub>3</sub> . Applied Surface Science, 2021, 547, 149208.	6.1	25
381	Zirconium Metal-Organic Frameworks Integrating Chloride Ions for Ammonia Capture and/or Chemical Separation. ACS Applied Materials & Interfaces, 2021, 13, 22485-22494.	8.0	27
382	Plasmonic Photoelectrochemistry: In View of Hot Carriers. Advanced Materials, 2021, 33, e2006654.	21.0	54
383	Bioinspired Activation of N <sub>2</sub> on Asymmetrical Coordinated Fe Grafted 1T MoS <sub>2</sub> at Room Temperature. Chinese Journal of Chemistry, 2021, 39, 1898-1904.	4.9	7
384	Green Synthesis of Nitrogen-to-Ammonia Fixation: Past, Present, and Future. Energy and Environmental Materials, 2022, 5, 452-457.	12.8	51
385	Electrochemical Catalysts for Green Hydrogen Energy. Advanced Energy and Sustainability Research, 2021, 2, 2100019.	5.8	4
386	Role of Catalyst in Controlling N <sub>2</sub> Reduction Selectivity: A Unified View of Nitrogenase and Solid Electrodes. ACS Catalysis, 2021, 11, 6596-6601.	11.2	25
387	Electrochemical ammonia synthesis via nitrate reduction on Fe single atom catalyst. Nature Communications, 2021, 12, 2870.	12.8	605
388	Metal-Organic Frameworks for Photo/Electrocatalysis. Advanced Energy and Sustainability Research, 2021, 2, 2100033.	5.8	123
389	Dimensionality reduction of complex reaction networks in heterogeneous catalysis: From linear scaling relationships to statistical learning techniques. Wiley Interdisciplinary Reviews: Computational Molecular Science, 2021, 11, e1540.	14.6	10
390	On scaling relations of single atom catalysts for electrochemical ammonia synthesis. Applied Surface Science, 2021, 550, 149283.	6.1	15
391	Identifying the Dominant Role of Pyridinic-N-Mo Bonding in Synergistic Electrocatalysis for Ambient Nitrogen Reduction. ACS Nano, 2021, 15, 12109-12118.	14.6	51
392	Recent advances in wireless photofixation of dinitrogen to ammonia under the ambient condition: A review. Journal of Photochemistry and Photobiology C: Photochemistry Reviews, 2021, 47, 100402.	11.6	22
393	Conversion of Dinitrogen to Ammonia by Fe-Embedded Graphyne. Journal of the Electrochemical Society, 2021, 168, 066503.	2.9	15
394	Mechanistic Elucidation of Dimer Formation and Strategies for Its Suppression in Electrochemical Reduction of Mn(bpy)(CO) <sub>3</sub> Br. ChemElectroChem, 2021, 8, 2108-2114.	3.4	17
395	Engineering two-dimensional metal oxides and chalcogenides for enhanced electro- and photocatalysis. Science Bulletin, 2021, 66, 1228-1252.	9.0	103
396	Regulating the Catalytic Performance of a Dual-Atom Iron Species Deposited on Graphitic Carbon Nitride for Electrochemical Nitrogen Reduction. Journal of Physical Chemistry C, 2021, 125, 14253-14262.	3.1	18
397	Molybdenum-based materials for electrocatalytic nitrogen reduction reaction. Cell Reports Physical Science, 2021, 2, 100447.	5.6	30

#	ARTICLE	IF	CITATIONS
398	Oxygen Groups Enhancing the Mechanism of Nitrogen Reduction Reaction Properties on Ru- or Fe-Supported Nb <sub>2</sub> C MXene. Journal of Physical Chemistry C, 2021, 125, 14636-14645.	3.1	24
399	Efficient dinitrogen fixation on porous covalent organic framework/carbon nanotubes hybrid at low overpotential. Functional Materials Letters, 2021, 14, 2151027.	1.2	2
400	Boron-Doped MXenes as Electrocatalysts for Nitrogen Reduction Reaction: A Theoretical Study. Frontiers in Chemical Engineering, 2021, 3, .	2.7	4
401	Current Density Calculations of an Octahedral Fe Nanocluster for Selective Electrocatalytic for Nitrogen Reduction. ACS Applied Nano Materials, 2021, 4, 7758-7770.	5.0	14
402	Semimetal 1T $\alpha$ phase MoS <sub>2</sub> nanosheets for promoted electrocatalytic nitrogen reduction. EcoMat, 2021, 3, e12122.	11.9	15
403	Carbon-Based Catalysts for Selective Electrochemical Nitrogen-to-Ammonia Conversion. ACS Sustainable Chemistry and Engineering, 2021, 9, 7687-7703.	6.7	41
404	Electrocatalytic Mechanism of N <sub>2</sub> Reduction Reaction by Single-Atom Catalyst Rectangular TM-TCNQ Monolayers. ACS Applied Materials & Interfaces, 2021, 13, 29641-29653.	8.0	42
405	Boosting electrocatalytic nitrogen reduction to ammonia in alkaline media. International Journal of Energy Research, 2021, 45, 19634-19644.	4.5	3
406	Decoding of crystal synthesis of fcc-hcp reversible transition for metals: theoretical mechanistic study from facet control to phase transition engineering. Nano Energy, 2021, 85, 106026.	16.0	7
407	Enhancing electrochemical ammonia synthesis on palladium nanorods through surface hydrogenation. Chemical Engineering Journal, 2021, 416, 129105.	12.7	57
408	Redox-Mediated Ambient Electrolytic Nitrogen Reduction for Hydrazine and Ammonia Generation. Angewandte Chemie, 2021, 133, 18869-18875.	2.0	3
409	Electrochemical ammonia synthesis: Mechanistic understanding and catalyst design. Chem, 2021, 7, 1708-1754.	11.7	253
410	Intrinsic Electron Localization of Metastable MoS <sub>2</sub> Boosts Electrocatalytic Nitrogen Reduction to Ammonia. Advanced Materials, 2021, 33, e2007509.	21.0	96
411	Recent development of perovskite oxide-based electrocatalysts and their applications in low to intermediate temperature electrochemical devices. Materials Today, 2021, 49, 351-377.	14.2	91
412	Electrocatalytic performance of Sb-modified Bi <sub>2</sub> FeO <sub>4</sub> for nitrogen fixation. Journal of Colloid and Interface Science, 2021, 593, 335-344.	9.4	16
413	Mechanistic Insights into the Electrochemical Reduction of CO <sub>2</sub> and N <sub>2</sub> on the Regulation of a Boron Nitride Defect-Derived Two-Dimensional Catalyst using Density Functional Theory Calculations. Journal of Physical Chemistry Letters, 2021, 12, 7151-7158.	4.6	9
414	N, S synergistic effect in hierarchical porous carbon for enhanced NRR performance. Carbon, 2021, 179, 358-364.	10.3	18
415	Redox-Mediated Ambient Electrolytic Nitrogen Reduction for Hydrazine and Ammonia Generation. Angewandte Chemie - International Edition, 2021, 60, 18721-18727.	13.8	35

#	ARTICLE	IF	CITATIONS
416	Enhancing Catalytic Properties of Iron- and Nitrogen-Doped Carbon for Nitrogen Reduction through Structural Distortion: A Density Functional Theory Study. <i>Journal of Physical Chemistry C</i> , 2021, 125, 16004-16012.	3.1	14
417	Efficient electrocatalysis for denitrification by using TiO <sub>2</sub> nanotube arrays cathode and adding chloride ions. <i>Chemosphere</i> , 2021, 274, 129706.	8.2	14
418	Comprehensive Understanding of the Thriving Ambient Electrochemical Nitrogen Reduction Reaction. <i>Advanced Materials</i> , 2021, 33, e2007650.	21.0	229
419	Interaction of Ammonia with Nafion and Electrolyte in Electrocatalytic Nitrogen Reduction Study. <i>Journal of Physical Chemistry Letters</i> , 2021, 12, 6861-6866.	4.6	15
420	Trimetallic Mo-/Ni-/Fe-Based Hybrids Anchored on Hierarchical N-CNTs Arrays with Abundant Defects and Interfaces for Alkaline Water Splitting. <i>Industrial &amp; Engineering Chemistry Research</i> , 2021, 60, 12559-12569.	3.7	10
421	The rational adjusting of proton-feeding by Pt-doped FeP/C hollow nanorod for promoting nitrogen reduction kinetics. <i>Applied Catalysis B: Environmental</i> , 2021, 291, 120047.	20.2	43
422	Enhanced electrocatalytic performance of mesoporous Au-Rh bimetallic films for ammonia synthesis. <i>Chemical Engineering Journal</i> , 2021, 418, 129493.	12.7	19
423	Identification of $\text{M}^{\text{I}}\text{NH}_2$ Intermediate and Rate Determining Step for Nitrogen Reduction with Bioinspired Sulfur-Bonded FeW Catalyst. <i>Angewandte Chemie</i> , 2021, 133, 20494-20504.	2.0	11
424	Density Functional Theory for Electrocatalysis. <i>Energy and Environmental Materials</i> , 2022, 5, 157-185.	12.8	95
425	Electrocatalytic nitrate/nitrite reduction to ammonia synthesis using metal nanocatalysts and bio-inspired metalloenzymes. <i>Nano Energy</i> , 2021, 86, 106088.	16.0	136
426	Aqueous Al-N <sub>2</sub> battery assembled by hollow molybdenum phosphate microspheres for simultaneous NH <sub>3</sub> production and power generation. <i>Chemical Engineering Journal</i> , 2021, 418, 129447.	12.7	27
427	Piezo-enhanced activation of dinitrogen for room temperature production of ammonia. <i>Nanotechnology</i> , 2021, 32, 465601.	2.6	3
428	Monodisperse Cu Cluster-Loaded Defective ZrO <sub>2</sub> Nanofibers for Ambient N <sub>2</sub> Fixation to NH <sub>3</sub> . <i>ACS Applied Materials &amp; Interfaces</i> , 2021, 13, 40724-40730.	8.0	13
429	Enhancing the compatibility of abiotic and biological components for efficient nitrogen fixation. <i>Chem Catalysis</i> , 2021, 1, 499-501.	6.1	0
430	Identification of $\text{M}^{\text{I}}\text{NH}_2$ Intermediate and Rate Determining Step for Nitrogen Reduction with Bioinspired Sulfur-Bonded FeW Catalyst. <i>Angewandte Chemie - International Edition</i> , 2021, 60, 20331-20341.	13.8	65
431	Single-atom catalysts for electrochemical energy storage and conversion. <i>Journal of Energy Chemistry</i> , 2021, 63, 170-194.	12.9	61
432	Roads less traveled: Nitrogen reduction reaction catalyst design strategies for improved selectivity. <i>Current Opinion in Electrochemistry</i> , 2021, 28, 100723.	4.8	20
433	Theoretical Exploration of the Thermodynamic Process Competition between NRR and HER on Transition-Metal-Doped CoP (101) Facets. <i>Journal of Physical Chemistry C</i> , 2021, 125, 17051-17057.	3.1	15

#	ARTICLE	IF	CITATIONS
434	Advances in Electrochemical Ammonia Synthesis Beyond the Use of Nitrogen Gas as a Source. ChemPlusChem, 2021, 86, 1211-1224.	2.8	43
435	Ambient electrosynthesis of NH <sub>3</sub> from N <sub>2</sub> using Bi-doped CeO <sub>2</sub> cube as electrocatalyst. International Journal of Hydrogen Energy, 2021, 46, 31523-31532.	7.1	11
436	Photocatalytic nitrogen reduction to ammonia: Insights into the role of defect engineering in photocatalysts. Nano Research, 2022, 15, 2773-2809.	10.4	69
437	Macroporous spider net-like NiO nanowire on carbon nanowire to grow a biofilm with multi-layered bacterium cells toward high-power microbial fuel cells. Journal of Power Sources, 2021, 506, 230133.	7.8	6
438	Subsurface intercalation activating basal plane of black phosphorus for nitrogen reduction. Journal of Energy Chemistry, 2021, 60, 293-299.	12.9	8
439	Synergism of Interfaces and Defects: Cu/Oxygen Vacancy-Rich Cu-Mn <sub>3</sub> O <sub>4</sub> Heterostructured Ultrathin Nanosheet Arrays for Selective Nitrate Electroreduction to Ammonia. ACS Applied Materials & Interfaces, 2021, 13, 44733-44741.	8.0	64
440	Recent Advances and Perspective on Electrochemical Ammonia Synthesis under Ambient Conditions. Small Methods, 2021, 5, e2100460.	8.6	33
441	Theoretical Insights on Au-based Bimetallic Alloy Electrocatalysts for Nitrogen Reduction Reaction with High Selectivity and Activity. ChemSusChem, 2021, 14, 4525-4535.	6.8	11
442	Conversion of dinitrogen to ammonia by rhenium doped graphyne. International Journal of Hydrogen Energy, 2021, 46, 33409-33419.	7.1	5
443	Recent progress of inorganic metal-based catalysts in electrocatalytic synthesis of ammonia. Materials Today Energy, 2021, 21, 100766.	4.7	22
444	Selective conversion of N <sub>2</sub> to NH <sub>3</sub> on highly dispersed RuO <sub>2</sub> using amphiphilic ionic liquid-anchored fibrous carbon structure. Journal of Energy Chemistry, 2022, 67, 474-482.	12.9	19
445	MXenes and their derivatives as nitrogen reduction reaction catalysts: recent progress and perspectives. Materials Today Energy, 2021, 22, 100864.	4.7	24
446	Water flooding behavior in flow cells for ammonia production via electrocatalytic nitrogen reduction. Fundamental Research, 2022, 2, 757-763.	3.3	10
447	Nanostructured Metal Borides for Energy-Related Electrocatalysis: Recent Progress, Challenges, and Perspectives. Small Methods, 2021, 5, e2100699.	8.6	47
448	Carbon nitride-supported CuCeO <sub>2</sub> composites derived from bimetal MOF for efficiently electrocatalytic nitrogen fixation. International Journal of Hydrogen Energy, 2021, 46, 35319-35329.	7.1	12
449	Bi-atom active sites embedded in a two-dimensional covalent organic framework for efficient nitrogen reduction reaction. Applied Surface Science, 2021, 563, 150352.	6.1	25
450	The pitfalls in electrocatalytic nitrogen reduction for ammonia synthesis. Journal of Energy Chemistry, 2021, 61, 149-154.	12.9	32
451	Advances in molecular electrochemical activation of dinitrogen. Current Opinion in Electrochemistry, 2021, 29, 100834.	4.8	12

#	ARTICLE	IF	CITATIONS
452	Effect on electrochemical reduction of nitrogen to ammonia under ambient conditions: Challenges and opportunities for chemical fuels. <i>Journal of Energy Chemistry</i> , 2021, 61, 304-318.	12.9	50
453	High temperature induced S vacancies in natural molybdenite for robust electrocatalytic nitrogen reduction. <i>Journal of Colloid and Interface Science</i> , 2021, 599, 849-856.	9.4	16
454	Vacancy and N dopants facilitated Ti3+ sites activity in 3D Ti3-xC2Ty MXene for electrochemical nitrogen fixation. <i>Applied Catalysis B: Environmental</i> , 2021, 297, 120482.	20.2	30
455	Main group metal elements for ambient-condition electrochemical nitrogen reduction. <i>Journal of Energy Chemistry</i> , 2021, 62, 51-70.	12.9	70
456	Concave-convex surface oxide layers over copper nanowires boost electrochemical nitrate-to-ammonia conversion. <i>Chemical Engineering Journal</i> , 2021, 426, 130759.	12.7	110
457	Catalyst design strategies for aqueous N2 electroreduction. <i>Applied Materials Today</i> , 2021, 25, 101184.	4.3	3
458	Electrochemical synthesis of ammonia by nitrate reduction on indium incorporated in sulfur doped graphene. <i>Chemical Engineering Journal</i> , 2021, 426, 131317.	12.7	40
459	Direct ammonia synthesis from the air via gliding arc plasma integrated with single atom electrocatalysis. <i>Applied Catalysis B: Environmental</i> , 2021, 299, 120667.	20.2	55
460	Defect and interface engineering for electrochemical nitrogen reduction reaction under ambient conditions. <i>Journal of Energy Chemistry</i> , 2022, 65, 448-468.	12.9	38
461	Atomic-dispersed copper simultaneously achieve high-efficiency removal and high-value-added conversion to ammonia of nitrate in sewage. <i>Journal of Hazardous Materials</i> , 2022, 424, 127319.	12.4	43
462	Taming the challenges of activity and selectivity in catalysts for electrochemical N2 fixation via single metal atom supported on WS2. <i>Applied Surface Science</i> , 2022, 571, 151357.	6.1	16
463	Synergistic ultra-high activity of double B doped graphyne for electrocatalytic nitrogen reduction. <i>Chemical Engineering Journal</i> , 2022, 428, 131318.	12.7	26
464	A tuned Lewis acidic catalyst guided by hard-soft acid-base theory to promote N <sub>2</sub> electroreduction. <i>Journal of Materials Chemistry A</i> , 2021, 9, 13036-13043.	10.3	19
465	Double boron atom-doped graphdiynes as efficient metal-free electrocatalysts for nitrogen reduction into ammonia: a first-principles study. <i>Physical Chemistry Chemical Physics</i> , 2021, 23, 17683-17692.	2.8	19
466	A computational study of the electrochemical cyanide reduction for ambient ammonia production on a nickel cathode. <i>Catalysis Science and Technology</i> , 2021, 11, 5633-5640.	4.1	3
467	Biomimetic photocatalysts for the conversion of aqueous- and gas-phase nitrogen species to molecular nitrogen via denitrification and ammonia oxidation. <i>Journal of Materials Chemistry A</i> , 2021, 9, 19179-19205.	10.3	6
468	Recent Progress on Electrocatalytic Synthesis of Ammonia Under Ambient Conditions. <i>Acta Chimica Sinica</i> , 2021, 79, 146.	1.4	8
469	Strategies to suppress hydrogen evolution for highly selective electrocatalytic nitrogen reduction: challenges and perspectives. <i>Energy and Environmental Science</i> , 2021, 14, 1176-1193.	30.8	275

#	ARTICLE	IF	CITATIONS
470	The twinned Pd nanocatalyst exhibits sustainable NRR electrocatalytic performance by promoting the desorption of $\text{NH}_3$ . Journal of Materials Chemistry A, 2021, 9, 13483-13489.	10.3	48
471	Selective nitrogen reduction to ammonia on iron porphyrin-based single-site metal-organic frameworks. Journal of Materials Chemistry A, 2021, 9, 4673-4678.	10.3	42
472	Vacancy engineering of $\text{WO}_3$ nanosheets for electrocatalytic NRR process – a first-principles study. Physical Chemistry Chemical Physics, 2021, 23, 16658-16663.	2.8	9
473	Ni nanoparticles/ $\text{V}_4\text{C}_3\text{T}_x$ MXene heterostructures for electrocatalytic nitrogen fixation. Materials Chemistry Frontiers, 2021, 5, 2338-2346.	5.9	38
474	Strain-controlled single Cr-embedded nitrogen-doped graphene achieves efficient nitrogen reduction. Materials Advances, 2021, 2, 5704-5711.	5.4	9
475	Electrochemically synthesized $\text{SnO}_2$ with tunable oxygen vacancies for efficient electrocatalytic nitrogen fixation. Nanoscale, 2021, 13, 16307-16315.	5.6	13
476	Rational design of bimetallic $\text{Rh}_{0.6}\text{Ru}_{0.4}$ nanoalloys for enhanced nitrogen reduction electrocatalysis under mild conditions. Journal of Materials Chemistry A, 2021, 9, 259-263.	10.3	25
477	A two-dimensional MXene-supported metal-organic framework for highly selective ambient electrocatalytic nitrogen reduction. Nanoscale, 2021, 13, 2843-2848.	5.6	81
478	Development of Electrocatalysts for Efficient Nitrogen Reduction Reaction under Ambient Condition. Advanced Functional Materials, 2021, 31, 2008983.	14.9	124
479	Recent Advances in Electrochemical Synthesis of Ammonia through Nitrogen Reduction under Ambient Conditions. ChemElectroChem, 2020, 7, 1067-1079.	3.4	56
480	Black phosphorus-hosted single-atom catalyst for electrocatalytic nitrogen reduction. Science China Materials, 2021, 64, 1173-1181.	6.3	28
481	Metal-free electrocatalysts for nitrogen reduction reaction. EnergyChem, 2020, 2, 100040.	19.1	34
482	Scalable synthesis of nanoporous boron for high efficiency ammonia electrosynthesis. Materials Today, 2020, 38, 58-66.	14.2	29
483	Photocatalytic $\text{N}_2$ Reduction: Uncertainties in the Determination of Ammonia Production. ACS Sustainable Chemistry and Engineering, 2021, 9, 560-568.	6.7	20
484	Nitrogen electroreduction performance of transition metal dimers embedded into N-doped graphene: a theoretical prediction. Journal of Materials Chemistry A, 2020, 8, 4533-4543.	10.3	124
485	Two dimensional electrocatalyst engineering via heteroatom doping for electrocatalytic nitrogen reduction. Chemical Communications, 2020, 56, 14154-14162.	4.1	16
486	Au nanoparticle-embedded, nitrogen-deficient hollow mesoporous carbon nitride spheres for nitrogen photofixation. Journal of Materials Chemistry A, 2020, 8, 16218-16231.	10.3	74
487	Activation of dinitrogen by gas-phase species. Chinese Journal of Chemical Physics, 2020, 33, 507-520.	1.3	28



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488	Two-dimensional transition metal borides as high activity and selectivity catalysts for ammonia synthesis. <i>Nanoscale</i> , 2021, 13, 17331-17339.	5.6	18
489	Emerging two-dimensional nanomaterials for electrochemical nitrogen reduction. <i>Chemical Society Reviews</i> , 2021, 50, 12744-12787.	38.1	75
490	Rational design of boron-containing co-doped graphene as highly efficient electro-catalysts for the nitrogen reduction reaction. <i>Journal of Materials Chemistry A</i> , 2021, 9, 24590-24599.	10.3	14
491	Al <sub>2</sub> O <sub>3</sub> -Supported Transition Metals for Plasma-Catalytic NH <sub>3</sub> Synthesis in a DBD Plasma: Metal Activity and Insights into Mechanisms. <i>Catalysts</i> , 2021, 11, 1230.	3.5	24
492	Methanol-Mediated Electrosynthesis of Ammonia. <i>ACS Energy Letters</i> , 2021, 6, 3844-3850.	17.4	50
493	Electrocatalytic N <sub>2</sub> Reduction on FeS <sub>2</sub> Nanoparticles Embedded in Graphene Oxide in Acid and Neutral Conditions. <i>ACS Applied Materials &amp; Interfaces</i> , 2021, 13, 50027-50036.	8.0	11
494	Decarbonization in ammonia production, new technological methods in industrial scale ammonia production and critical evaluations. <i>Heliyon</i> , 2021, 7, e08257.	3.2	19
495	Surface-coordinated metal-organic framework thin films (SURMOFs): From fabrication to energy applications. <i>EnergyChem</i> , 2021, 3, 100065.	19.1	25
496	Descriptors for the Evaluation of Electrocatalytic Reactions: d-Band Theory and Beyond. <i>Advanced Functional Materials</i> , 2022, 32, 2107651.	14.9	154
497	Uniform octahedral ZrO <sub>2</sub> @C from carbonized UiO-66 for electrocatalytic nitrogen reduction. <i>Materials Today Energy</i> , 2021, 22, 100884.	4.7	10
498	Metal-organic framework supported Au nanoparticles with organosilicone coating for high-efficiency electrocatalytic N <sub>2</sub> reduction to NH <sub>3</sub> . <i>Applied Catalysis B: Environmental</i> , 2022, 302, 120840.	20.2	120
499	Electrochemical Reduction of N <sub>2</sub> into NH <sub>3</sub> under Ambient Conditions Using Ag-doped TiO <sub>2</sub> Nanofibers. <i>ACS Applied Nano Materials</i> , 2021, 4, 10370-10377.	5.0	4
500	Advancement of Bismuth-Based Materials for Electrocatalytic and Photo(electro)catalytic Ammonia Synthesis. <i>Advanced Functional Materials</i> , 2022, 32, 2106713.	14.9	44
501	Elemental 2D Materials: Solution-Processed Synthesis and Applications in Electrochemical Ammonia Production. <i>Advanced Functional Materials</i> , 2022, 32, 2107280.	14.9	20
502	Electrocatalytic oxidation of ammonia on Pt: Mechanistic insights into the formation of N <sub>2</sub> in alkaline media. <i>Journal of Catalysis</i> , 2022, 405, 626-633.	6.2	17
503	Highly effective Ru-based Heusler alloy catalysts for N <sub>2</sub> activation: A theoretical study. <i>Applied Surface Science</i> , 2022, 575, 151658.	6.1	9
504	Tuning metal catalysts via nitrogen-doped nanocarbons for energy chemistry: From metal nanoparticles to single metal sites. <i>EnergyChem</i> , 2021, 3, 100066.	19.1	31
505	Recent advances in structural engineering of 2D hexagonal boron nitride electrocatalysts. <i>Nano Energy</i> , 2022, 91, 106661.	16.0	49



#	ARTICLE	IF	CITATIONS
506	Recent Advances in MOF-Based Materials for Photocatalytic Nitrogen Fixation. European Journal of Inorganic Chemistry, 2022, 2022, .	2.0	15
507	Simultaneous anchoring of Ni nanoparticles and single-atom Ni on BCN matrix promotes efficient conversion of nitrate in water into high-value-added ammonia. Chemical Engineering Journal, 2022, 433, 133190.	12.7	46
508	Engineering the Electrochemical Interface of Oxygen Reduction Electrocatalysts with Ionic Liquids: A Review. Advanced Energy and Sustainability Research, 2021, 2, 2000062.	5.8	13
509	Conductive MOFs based on Thiol-functionalized Linkers: Challenges, Opportunities, and Recent Advances. Coordination Chemistry Reviews, 2022, 450, 214235.	18.8	42
510	Li-intercalation boosted oxygen vacancies enable efficient electrochemical nitrogen reduction on ultrathin TiO <sub>2</sub> nanosheets. Chemical Engineering Journal, 2022, 430, 133085.	12.7	30
511	High-loading metal atoms on graphdiyne for efficient nitrogen fixation to ammonia. Journal of Materials Chemistry A, 2022, 10, 6073-6077.	10.3	18
512	Fe doped InVO <sub>4</sub> nanosheets with rich surface oxygen vacancies for enhanced electrochemical nitrogen fixation. Chemical Engineering Journal, 2022, 431, 133383.	12.7	15
513	Development of Carbon-Based Electrocatalysts for Ambient Nitrogen Reduction Reaction: Challenges and Perspectives. ChemElectroChem, 2022, 9, .	3.4	9
514	Accelerated Discovery of Single-Atom Catalysts for Nitrogen Fixation via Machine Learning. Energy and Environmental Materials, 2023, 6, .	12.8	26
515	Renewable Ammonia as an Energy Fuel for Ocean Exploration and Transportation. Marine Technology Society Journal, 2020, 54, 126-136.	0.4	5
516	Unveiling the underlying mechanism of nitrogen fixation by a new class of electrocatalysts two-dimensional TM@g-C <sub>4</sub> N <sub>3</sub> monosheets. Applied Surface Science, 2022, 576, 151839.	6.1	37
517	Engineering vacancy and hydrophobicity of two-dimensional TaTe <sub>2</sub> for efficient and stable electrocatalytic N <sub>2</sub> reduction. Innovation(China), 2022, 3, 100190.	9.1	16
518	Porous Î <sup>2</sup> -FeOOH nanotube stabilizing Au single atom for high-efficiency nitrogen fixation. Nano Research, 2022, 15, 3026-3033.	10.4	28
519	Transition Metal-Modified Co <sub>4</sub> Clusters Supported on Graphdiyne as an Effective Nitrogen Reduction Reaction Electrocatalyst. Inorganic Chemistry, 2021, 60, 18251-18259.	4.0	21
520	Main-group elements boost electrochemical nitrogen fixation. Chem, 2021, 7, 3232-3255.	11.7	123
521	Rational Design of Graphene Derivatives for Electrochemical Reduction of Nitrogen to Ammonia. ACS Nano, 2021, 15, 17275-17298.	14.6	48
522	Evaluation of Electrocatalytic Activity of Noble Metal Catalysts Toward Nitrogen Reduction Reaction in Aqueous Solutions under Ambient Conditions. ChemSusChem, 2022, 15, .	6.8	12
523	Communication-Partial Oxidation of MnS for Synergistic Electrocatalysis of N <sub>2</sub> -to-NH <sub>3</sub> Fixation at Ambient Conditions. Journal of the Electrochemical Society, 2021, 168, 116518.	2.9	0

#	ARTICLE	IF	CITATIONS
524	Screening Highly Efficient Hetero-Diatomic Doped PC6 Electrocatalysts for Selective Nitrogen Reduction to Ammonia. Journal of the Electrochemical Society, 2021, 168, 116519.	2.9	3
525	Slow Auger Recombination of Trapped Excitons Enables Efficient Multiple Electron Transfer in CdS@Pt Nanorod Heterostructures. Journal of the American Chemical Society, 2021, 143, 20264-20273.	13.7	16
526	Molybdenum Atom-Mediated Salphen-Based Covalent Organic Framework as a Promising Electrocatalyst for the Nitrogen Reduction Reaction: A First-Principles Study. Journal of Physical Chemistry C, 2021, 125, 26061-26072.	3.1	34
527	Single-Atom Fe-N <sub>4</sub> on a Carbon Substrate for Nitrogen Reduction Reaction. ACS Applied Nano Materials, 2021, 4, 13001-13009.	5.0	19
528	Porous TiO <sub>2</sub> /rGO nanocomposites prepared by cold sintering as efficient electrocatalyst for nitrogen reduction reaction under ambient conditions. Journal of the European Ceramic Society, 2022, 42, 1548-1555.	5.7	4
529	Advancing Photoelectrochemical Energy Conversion through Atomic Design of Catalysts. Advanced Science, 2022, 9, e2104363.	11.2	21
530	Photocatalytic reaction mechanisms at the gas-solid interface for environmental and energy applications. Catalysis Science and Technology, 2021, 11, 7807-7839.	4.1	12
531	Tailoring Electron-Riched Boron Sites in BCN for Nitrogen Fixation via Alternate Mechanism. Advanced Materials Interfaces, 2022, 9, .	3.7	9
532	Recent advances in MoS <sub>2</sub> -based materials for electrocatalysis. Chemical Communications, 2022, 58, 2259-2278.	4.1	30
533	Iron covalent doping in WB <sub>2</sub> to boost its hydrogen evolution activity. Inorganic Chemistry Frontiers, 2022, 9, 524-530.	6.0	8
534	Nitrogenase-Inspired Atomically Dispersed Fe-S-C Linkages for Improved Electrochemical Reduction of Dinitrogen to Ammonia. ACS Catalysis, 2022, 12, 1443-1451.	11.2	58
535	Two-dimensional graphdiyne analogue containing Mo-coordinated porphyrin covalent organic framework as a high-performance electrocatalyst for nitrogen fixation. Applied Surface Science, 2022, 580, 152359.	6.1	12
536	Boosting nitrogen reduction on single Mo atom by tuning its coordination environment. Sustainable Energy and Fuels, 2021, 5, 6488-6497.	4.9	7
537	Enhancing electrocatalytic nitrogen reduction to ammonia with rare earths (La, Y, and Sc) on high-index faceted platinum alloy concave nanocubes. Journal of Materials Chemistry A, 2021, 9, 26277-26285.	10.3	20
538	Double-atom catalysts for energy-related electrocatalysis applications: a theoretical perspective. Journal Physics D: Applied Physics, 2022, 55, 203001.	2.8	57
539	Overcoming Hurdles in Oxygen Evolution Catalyst Discovery via Codesign. Chemistry of Materials, 2022, 34, 899-910.	6.7	17
540	Biomimetic FeMo(Se, Te) as Joint Electron Pool Promoting Nitrogen Electrofixation. Angewandte Chemie, 2022, 134, .	2.0	3
541	Superiority of Dual-Atom Catalysts in Electrocatalysis: One Step Further Than Single-Atom Catalysts. Advanced Energy Materials, 2022, 12, .	19.5	189

#	ARTICLE	IF	CITATIONS
542	Single-atom catalyst of TM@D-siliceneâ€”an effective way to reduce N <sub>2</sub> into ammonia. Physical Chemistry Chemical Physics, 2022, 24, 3486-3497.	2.8	11
543	Electrochemical Synthesis of Nitric Acid from Nitrogen Oxidation. Angewandte Chemie - International Edition, 2022, 61, .	13.8	47
544	Electrochemical Synthesis of Nitric Acid from Nitrogen Oxidation. Angewandte Chemie, 2022, 134, .	2.0	6
545	Screening of transition metal single atom catalysts supported on B36 cluster for nitrogen fixation. International Journal of Hydrogen Energy, 2022, 47, 5281-5291.	7.1	4
546	Progress and Perspective of Metallic Glasses for Energy Conversion and Storage. Advanced Energy Materials, 2022, 12, .	19.5	19
547	Boosting electrochemical nitriteâ€”ammonia conversion properties by a Cu foam@Cu <sub>2</sub> O catalyst. Chemical Communications, 2022, 58, 517-520.	4.1	32
548	Surface hydrophobic modification enhanced catalytic performance of electrochemical nitrogen reduction reaction. Nano Research, 2022, 15, 3886-3893.	10.4	40
549	Progress in Mo/W-based electrocatalysts for nitrogen reduction to ammonia under ambient conditions. Chemical Communications, 2022, 58, 2096-2111.	4.1	7
550	Biomimetic FeMo(Se, Te) as Joint Electron Pool Promoting Nitrogen Electrofixation. Angewandte Chemie - International Edition, 2022, 61, .	13.8	29
551	Interfacial Microextraction Boosting Nitrogen Feed for Efficient Ambient Ammonia Synthesis in Aqueous Electrolyte. Advanced Functional Materials, 2022, 32, .	14.9	41
552	Electro-reduction of N <sub>2</sub> on nanostructured materials and the design strategies of advanced catalysts based on descriptors. Materials Today Physics, 2022, 22, 100609.	6.0	42
553	Facile Synthesis and Highâ€”Value Utilization of Ammonia. Chinese Journal of Chemistry, 2022, 40, 953-964.	4.9	14
554	Emerging 2D Materials for Electrocatalytic Applications: Synthesis, Multifaceted Nanostructures, and Catalytic Center Design. Small, 2022, 18, e2105831.	10.0	31
555	Toward Excellence of Electrocatalyst Design by Emerging Descriptorâ€”Oriented Machine Learning. Advanced Functional Materials, 2022, 32, .	14.9	43
556	Perspectives on electrochemical nitrogen fixation catalyzed by two-dimensional MXenes. Materials Reports Energy, 2022, 2, 100076.	3.2	2
557	Efficient modulation of the catalytic performance of electrocatalytic nitrogen reduction with transition metals anchored on N/O-codoped graphene by coordination engineering. Journal of Materials Chemistry A, 2022, 10, 1481-1496.	10.3	43
558	Green ammonia synthesis using CeO <sub>2</sub> /RuO <sub>2</sub> nanolayers on vertical graphene catalyst <i>via</i> electrochemical route in alkaline electrolyte. Nanoscale, 2022, 14, 1395-1408.	5.6	11
559	Electroâ€”and Photocatalytic Oxidative Upgrading of Bioâ€”based 5â€”Hydroxymethylfurfural. ChemSusChem, 2022, 15, .	6.8	67

#	ARTICLE	IF	CITATIONS
560	Active sites-rich layered double hydroxide for nitrate-to-ammonia production with high selectivity and stability. Chemical Engineering Journal, 2022, 434, 134641.	12.7	26
561	A photo-assisted electrochemical-based demonstrator for green ammonia synthesis. Journal of Energy Chemistry, 2022, 68, 826-834.	12.9	7
562	Sulfur-deficient Bi <sub>2</sub> S <sub>3</sub> synergistically coupling Ti <sub>3</sub> C <sub>2</sub> Tx-MXene for boosting electrocatalytic N <sub>2</sub> reduction. Nano Research, 2022, 15, 3991-3999.	10.4	113
563	Efficient Ammonia Electrosynthesis and Energy Conversion through a Zn-Nitrate Battery by Iron Doping Engineered Nickel Phosphide Catalyst. Advanced Energy Materials, 2022, 12, .	19.5	108
564	Engineering Reductive Iron on a Layered Double Hydroxide Electrocatalyst for Facilitating Nitrogen Reduction Reaction. Advanced Materials Interfaces, 2022, 9, .	3.7	19
565	Catalytic Kinetics Regulation for Enhanced Electrochemical Nitrogen Oxidation by Ru-Nanoclusters-Coupled Mn <sub>3</sub> O <sub>4</sub> Catalysts Decorated with Atomically Dispersed Ru Atoms. Advanced Materials, 2022, 34, e2108180.	21.0	57
566	Ambient Ammonia Synthesis via Electrochemical Reduction of Nitrate Enabled by NiCo <sub>2</sub> O <sub>4</sub> Nanowire Array. Small, 2022, 18, e2106961.	10.0	171
567	Insight into the Reactivity of Carbon Structures for Nitrogen Reduction Reaction. Langmuir, 2021, 37, 14657-14667.	3.5	5
568	Electrocatalytic Reduction of Nitrate to Ammonia on Low-Cost Ultrathin CoO <sub>x</sub> Nanosheets. ACS Catalysis, 2021, 11, 15135-15140.	11.2	144
569	Recent advances in material design and reactor engineering for electrocatalytic ambient nitrogen fixation. Materials Chemistry Frontiers, 2022, 6, 843-879.	5.9	14
570	Tailoring electron transfer pathway for photocatalytic N <sub>2</sub> -to-NH <sub>3</sub> reduction in a CdS quantum dots-nitrogenase system. Sustainable Energy and Fuels, 2022, 6, 2256-2263.	4.9	6
571	Defect and interface engineering in metal sulfide catalysts for the electrocatalytic nitrogen reduction reaction: a review. Journal of Materials Chemistry A, 2022, 10, 6927-6949.	10.3	39
572	Defective 2D silicon phosphide monolayers for the nitrogen reduction reaction: a DFT study. Nanoscale, 2022, 14, 5782-5793.	5.6	10
573	Single-, double-, and triple-atom catalysts on graphene-like C <sub>2</sub> N enable electrocatalytic nitrogen reduction: insight from first principles. Catalysis Science and Technology, 2022, 12, 2604-2617.	4.1	15
574	Artificial frustrated Lewis pairs facilitating the electrochemical N <sub>2</sub> and CO <sub>2</sub> conversion to urea. Chem Catalysis, 2022, 2, 309-320.	6.1	89
575	Fixation of N <sub>2</sub> into Value-Added Organic Chemicals. ACS Catalysis, 2022, 12, 2898-2906.	11.2	20
576	Surface Valence State Effect of MoO <sub>2+x</sub> on Electrochemical Nitrogen Reduction. Advanced Science, 2022, 9, e2104857.	11.2	23
577	Graphene oxide-derived single-atom catalysts for electrochemical energy conversion. Rare Metals, 2022, 41, 1703-1726.	7.1	37

#	ARTICLE	IF	CITATIONS
578	Electrocatalytic Reduction of Nitrogen to Ammonia in Ionic Liquids. ACS Sustainable Chemistry and Engineering, 2022, 10, 4345-4358.	6.7	21
579	Splicing the active phases of copper/cobalt-based catalysts achieves high-rate tandem electroreduction of nitrate to ammonia. Nature Communications, 2022, 13, 1129.	12.8	235
580	Tetrahedral W <sub>4</sub> cluster confined in graphene-like C <sub>2</sub> N enables electrocatalytic nitrogen reduction from theoretical perspective. Nanotechnology, 2022, 33, 245706.	2.6	8
581	Breaking the linear correlations for enhanced electrochemical nitrogen reduction by carbon-encapsulated mixed-valence Fe <sub>7</sub> (PO <sub>4</sub> ) <sub>6</sub> . Journal of Energy Chemistry, 2022, 71, 182-187.	12.9	11
582	Atomic Molybdenum for Synthesis of Ammonia with 50% Faradic Efficiency. Small, 2022, 18, e2106327.	10.0	20
583	High-Performance Electrochemical Nitrate Reduction to Ammonia under Ambient Conditions Using a FeOOH Nanorod Catalyst. ACS Applied Materials & Interfaces, 2022, 14, 17312-17318.	8.0	58
584	Boosting the electrochemical energy storage and conversion performance by structural distortion in metal-organic frameworks. Chemical Engineering Journal, 2022, 443, 136269.	12.7	12
585	Nitrogen reduction reaction to ammonia at ambient conditions: A short review analysis of the critical factors limiting electrocatalytic performance. Current Opinion in Green and Sustainable Chemistry, 2022, 35, 100604.	5.9	11
586	Layer structured materials for ambient nitrogen fixation. Coordination Chemistry Reviews, 2022, 460, 214468.	18.8	28
587	Ball milling transformed electroplating sludges with different components to spinels for stable electrocatalytic ammonia production under ambient conditions. Chemosphere, 2022, 296, 134060.	8.2	4
588	In-situ reconstruction of catalysts in cathodic electrocatalysis: New insights into active-site structures and working mechanisms. Journal of Energy Chemistry, 2022, 70, 414-436.	12.9	28
589	Screening of transition metal single-atom catalysts doped on $\beta$ -graphyne-like BN sheet for efficient nitrogen reduction reaction. Journal of Alloys and Compounds, 2022, 908, 164675.	5.5	13
590	High-Throughput computational screening of Single-atom embedded in defective BN nanotube for electrocatalytic nitrogen fixation. Applied Surface Science, 2022, 591, 153130.	6.1	13
591	Tuning single metal atoms anchored on graphdiyne for highly efficient and selective nitrate electroreduction to ammonia under aqueous environments: A computational study. Applied Surface Science, 2022, 592, 153213.	6.1	27
592	Electrocatalytic upcycling of nitrate and hydrogen sulfide via a nitrogen-doped carbon nanotubes encapsulated iron carbide electrode. Applied Catalysis B: Environmental, 2022, 310, 121291.	20.2	23
593	MXene—A New Paradigm Toward Artificial Nitrogen Fixation for Sustainable Ammonia Generation: Synthesis, Properties, and Future Outlook. , 2022, 4, 212-245.		20
594	Insights into Tuning of Mo-Based Structures toward Enhanced Electrocatalytic Performance of Nitrogen-to-Ammonia Conversion. Advanced Energy and Sustainability Research, 2022, 3, .	5.8	3
595	Rational Synthesis and Regulation of Hollow Structural Materials for Electrocatalytic Nitrogen Reduction Reaction. Advanced Science, 2022, 9, e2104183.	11.2	33

#	ARTICLE	IF	CITATIONS
596	Strain Engineering in Electrocatalysts: Fundamentals, Progress, and Perspectives. <i>Advanced Energy Materials</i> , 2022, 12, .	19.5	72
597	Robust Photoelectrochemical Route for the Ambient Fixation of Dinitrogen into Ammonia over a Nanojunction Assembled from Ceria and an Iron Boride/Phosphide Cocatalyst. <i>Inorganic Chemistry</i> , 2022, 61, 131-140.	4.0	10
598	CoO nanoparticle decorated N-doped carbon nanotubes: a high-efficiency catalyst for nitrate reduction to ammonia. <i>Chemical Communications</i> , 2022, 58, 5901-5904.	4.1	28
599	Engineering strategies for boosting the nitrogen reduction reaction performance of MoS <sub>2</sub> -based electrocatalysts. <i>Materials Today Nano</i> , 2022, 18, 100202.	4.6	5
600	Copper single-atom catalyst as a high-performance electrocatalyst for nitrate-ammonium conversion. <i>Journal of Hazardous Materials</i> , 2022, 434, 128892.	12.4	34
601	Data-Driven Materials Innovation and Applications. <i>Advanced Materials</i> , 2022, 34, e2104113.	21.0	51
602	Modulating the Active Sites of Oxygen-Deficient TiO <sub>2</sub> by Copper Loading for Enhanced Electrocatalytic Nitrogen Reduction to Ammonia. <i>Small</i> , 2022, 18, e2200996.	10.0	29
603	New framework of integrated electrocatalysis systems for nitrogen fixation. <i>Journal of Materials Chemistry A</i> , 2022, 10, 19506-19517.	10.3	3
604	Screening of transition metal single-atom catalysts supported by a WS <sub>2</sub> monolayer for electrocatalytic nitrogen reduction reaction: insights from activity trend and descriptor. <i>Physical Chemistry Chemical Physics</i> , 2022, 24, 13384-13398.	2.8	10
605	Strategies to activate inert nitrogen molecules for efficient ammonia electrosynthesis: current status, challenges, and perspectives. <i>Energy and Environmental Science</i> , 2022, 15, 2776-2805.	30.8	48
606	Strategies in cell design and operation for the electrosynthesis of ammonia: status and prospects. <i>Energy and Environmental Science</i> , 2022, 15, 2259-2287.	30.8	22
607	Dual transition metal atoms embedded in N-doped graphene for electrochemical nitrogen fixation under ambient conditions. <i>Journal of Materials Chemistry A</i> , 2022, 10, 13527-13543.	10.3	30
608	Pd/PdO Electrocatalysts Boost Their Intrinsic Nitrogen Reduction Reaction Activity and Selectivity <i>via</i> Controllably Modulating the Oxygen Level. <i>ACS Applied Materials &amp; Interfaces</i> , 2022, 14, 20988-20996.	8.0	11
609	Fabrication of self-supported Cu <sub>3</sub> N electrode for electrocatalytic nitrogen reduction reaction. <i>Journal of Fuel Chemistry and Technology</i> , 2022, 50, 484-493.	2.0	2
610	Electrification of Catalytic Ammonia Production and Decomposition Reactions: From Resistance, Induction, and Dielectric Reactor Heating to Electrolysis. <i>ACS Applied Energy Materials</i> , 2022, 5, 5457-5472.	5.1	12
611	Distribution Pattern of Metal Atoms in Bimetal-Doped Pyridinic-N <sub>4</sub> Pores Determines Their Potential for Electrocatalytic N <sub>2</sub> Reduction. <i>Journal of Physical Chemistry A</i> , 2022, 126, 3080-3089.	2.5	0
612	Efficient conversion of low-concentration nitrate sources into ammonia on a Ru-dispersed Cu nanowire electrocatalyst. <i>Nature Nanotechnology</i> , 2022, 17, 759-767.	31.5	318
613	High-entropy perovskite oxides: A versatile class of materials for nitrogen reduction reactions. <i>Science China Materials</i> , 2022, 65, 2711-2720.	6.3	13



#	ARTICLE	IF	CITATIONS
614	Mn-Doped Bi <sub>2</sub> O <sub>3</sub> Nanosheets from a Deep Eutectic Solvent toward Enhanced Electrocatalytic N <sub>2</sub> Reduction. ACS Sustainable Chemistry and Engineering, 2022, 10, 6766-6774.	6.7	15
615	Wet-air co-electrolysis in high-temperature solid oxide electrolysis cell for production of ammonia feedstock. International Journal of Hydrogen Energy, 2022, 47, 18577-18586.	7.1	3
616	Electrocatalytic green ammonia production beyond ambient aqueous nitrogen reduction. Chemical Engineering Science, 2022, 257, 117735.	3.8	41
617	Unveiling the Role of Charge Transfer in Enhanced Electrochemical Nitrogen Fixation at Single-Atom Catalysts on BX Sheets (X = As, P, Sb). Journal of Physical Chemistry Letters, 2022, 13, 4530-4537.	4.6	29
618	Tuning the Electronic Properties of Homoleptic Silver(I) bis-BIAN Complexes towards Efficient Electrocatalytic CO <sub>2</sub> Reduction. Catalysts, 2022, 12, 545.	3.5	6
619	<i>In situ</i> reconstruction enhanced dual-site catalysis towards nitrate electroreduction to ammonia. Journal of Materials Chemistry A, 2022, 10, 12669-12678.	10.3	20
620	Effect of local coordination on catalytic activities and selectivities of Fe-based catalysts for N <sub>2</sub> reduction. Physical Chemistry Chemical Physics, 2022, 24, 14517-14524.	2.8	1
621	Phthalocarbonitride nanosheets as excellent N <sub>2</sub> reduction reaction electrocatalysts: a first-principles study. Physical Chemistry Chemical Physics, 2022, 24, 14472-14478.	2.8	5
622	Two-dimensional Fe-TPPHZ nanosheets for electrohydrogenation of N <sub>2</sub> to NH <sub>3</sub> under ambient conditions. Journal of Applied Electrochemistry, 2022, 52, 1295-1304.	2.9	1
623	Density functional theory study of N <sub>2</sub> adsorption and dissociation on 3d transition metal atoms doped Ir(1 0 0) surface. Applied Surface Science, 2022, 597, 153678.	6.1	7
624	Electron coupled FeS <sub>2</sub> /MoS <sub>2</sub> heterostructure for efficient electrocatalytic ammonia synthesis under ambient conditions. Dalton Transactions, 2022, 51, 9720-9727.	3.3	6
625	Recent advances in nanostructured heterogeneous catalysts for N-cycle electrocatalysis. , 2022, 1, e9120010.		285
626	Flexible 2D Cu Metal: Organic Framework@MXene Film Electrode with Excellent Durability for Highly Selective Electrocatalytic NH <sub>3</sub> Synthesis. Research, 2022, 2022, .	5.7	16
627	The modulation of catalytic active site and support to construct high-efficiency ZnS/NC-X electrocatalyst for nitrogen reduction. Nano Research, 2022, 15, 7903-7909.	10.4	3
628	éžèµé†‘â±žâŸ°â,âŒ–â‰Ÿ,ç””âŽž”Ÿç‰Ÿ©èˆ“ç”µæ°ŸâŒ–é«˜âŒ¼âŒ–âˆ©ç””çšš, ç”ç©Œèžâ±Ÿ. Science China Materials, 2022, 65, 3273-3281.		
629	Rational design of bimetallic atoms supported on C <sub>3</sub> N monolayer to break the linear relations for efficient electrochemical nitrogen reduction. Nano Research, 2022, 15, 8656-8664.	10.4	9
630	FeâŒbased catalysts for nitrogen reduction toward ammonia electrosynthesis under ambient conditions. SusMat, 2022, 2, 214-242.	14.9	35
631	A first-principles investigation of nitrogen reduction to ammonia on zirconium nitride and oxynitride surfaces. Journal of Materials Science, 2022, 57, 10213-10224.	3.7	8



#	ARTICLE	IF	CITATIONS
632	Single boron modulated graphdiyne nanosheets for efficient electrochemical nitrogen fixation: a first-principles study. <i>Physical Chemistry Chemical Physics</i> , 2022, 24, 19817-19826.	2.8	2
633	Recent status and challenges in multifunctional electrocatalysis based on 2D MXenes. <i>Catalysis Science and Technology</i> , 2022, 12, 4413-4441.	4.1	16
634	Ambient N <sub>2</sub> -to-NH <sub>3</sub> fixation over a CeO <sub>2</sub> nanoparticle decorated three-dimensional carbon skeleton. <i>Sustainable Energy and Fuels</i> , 2022, 6, 3344-3348.	4.9	50
635	High-performance electrochemical nitrate reduction to ammonia under ambient conditions using NiFe <sub>2</sub> O <sub>4</sub> nanosheet arrays. <i>Inorganic Chemistry Frontiers</i> , 2022, 9, 3392-3397.	6.0	25
636	Computational screening of single transition-metal atoms anchored to g-C <sub>9</sub> N <sub>4</sub> as catalysts for N <sub>2</sub> reduction to NH <sub>3</sub> . <i>Physical Chemistry Chemical Physics</i> , 2022, 24, 17155-17162.	2.8	5
637	Recent Progress on Titanium Sesquioxide: Fabrication, Properties, and Applications. <i>Advanced Functional Materials</i> , 2022, 32, .	14.9	14
638	Recent Advances in Application of Graphitic Carbon Nitride-Based Catalysts for Photocatalytic Nitrogen Fixation. <i>Small</i> , 2022, 18, .	10.0	37
639	A discrete regenerative fuel cell mediated by ammonia for renewable energy conversion and storage. <i>Applied Energy</i> , 2022, 322, 119463.	10.1	7
640	Theoretical insights into electronic structure and NRR catalytic mechanism based on halide perovskites CsPbBr <sub>3</sub> -x. <i>Computational Materials Science</i> , 2022, 212, 111576.	3.0	5
641	Intrinsic anion vacancy of Mo <sub>6</sub> X <sub>6</sub> (X=As, Se, Te) nanowires as a promising nitrogen fixation catalysis: A first-principles study. <i>Chemical Physics Letters</i> , 2022, 802, 139752.	2.6	0
642	Surface defect-regulated PdCu/TiO <sub>2</sub> promoting efficient electrocatalytic nitrogen reduction. <i>Materials Chemistry Frontiers</i> , 2022, 6, 2190-2200.	5.9	9
643	Performance of the nitrogen reduction reaction on metal bound g-C <sub>6</sub> N <sub>6</sub> : a combined approach of machine learning and DFT. <i>Physical Chemistry Chemical Physics</i> , 2022, 24, 17050-17058.	2.8	15
644	Application of Machine-learning-based global optimization: Potential-dependent Co-electrosorbed Structure and Activity on Pd(110) Surface. <i>Physical Chemistry Chemical Physics</i> , 0, .	2.8	0
645	Sustainable ammonia production enabled by membrane reactor. <i>Nature Sustainability</i> , 2022, 5, 787-794.	23.7	19
646	Mechanisms of electrochemical nitrogen gas reduction to ammonia under ambient conditions: a focused review. <i>Journal of Solid State Electrochemistry</i> , 2022, 26, 1897-1917.	2.5	11
647	High-Efficiency Electrosynthesis of Ammonia with Selective Reduction of Nitrate in Neutral Media Enabled by Self-Supported Mn <sub>2</sub> CoO <sub>4</sub> Nanoarray. <i>ACS Applied Materials &amp; Interfaces</i> , 2022, 14, 33242-33247.	8.0	27
648	High Performance Cobalt-Vanadium Layered Double Hydroxide Nanosheets for Photoelectrochemical Reduction of Nitrogen. <i>European Journal of Inorganic Chemistry</i> , 2022, 2022, .	2.0	5
649	Progress of Experimental and Computational Catalyst Design for Electrochemical Nitrogen Fixation. <i>ACS Catalysis</i> , 2022, 12, 8936-8975.	11.2	41

#	ARTICLE	IF	CITATIONS
650	Interfacial engineering of metallic rhodium by thiol modification approach for ambient electrosynthesis of ammonia. Nano Research, 2022, 15, 8826-8835.	10.4	9
651	Regulating the spin state of single-atom doped covalent triazine frameworks for efficient nitrogen fixation. Journal of Colloid and Interface Science, 2022, 627, 931-941.	9.4	4
652	Nano-CaCO <sub>3</sub> templated porous carbons anchored with Fe single atoms enable high-efficiency N <sub>2</sub> electroreduction to NH <sub>3</sub> . Electrochimica Acta, 2022, 426, 140805.	5.2	5
653	3D interconnected porous Mo-doped WO <sub>3</sub> @CdS hierarchical hollow heterostructures for efficient photoelectrochemical nitrogen reduction to ammonia. Applied Catalysis B: Environmental, 2022, 317, 121711.	20.2	75
654	Electrochemical Nitrogen Reduction to Ammonia Under Ambient Conditions: Stakes and Challenges. Chemical Record, 2022, 22, .	5.8	2
655	Favorable Role of the Metal-Support Perimeter Region in Electrochemical NH <sub>3</sub> Synthesis: A Density Functional Theory Study on Ru/BaCeO <sub>3</sub> . ACS Omega, 0, , .	3.5	0
656	Boosting photocatalytic nitrogen reduction to ammonia by dual defective -C N and K-doping sites on graphitic carbon nitride nanorod arrays. Applied Catalysis B: Environmental, 2022, 317, 121752.	20.2	22
657	Rational design and modulation strategies of Mo-based electrocatalysts and photo/electrocatalysts towards nitrogen reduction to ammonia (NH <sub>3</sub> ). Chemical Engineering Journal, 2023, 451, 138320.	12.7	29
658	Demonstration of no catalytical activity of Fe-N-C and Nb-N-C electrocatalysts toward nitrogen reduction using in-situ quantification. SusMat, 2022, 2, 476-486.	14.9	6
659	Boosting Nitrogen Reduction Activity by Defect Engineering in 2D Iron Monochalcogenides FeX (X=S, Se, Te). Journal of Materials Chemistry A, 2022, 10, 10784-10794.	12.0	14
660	Research Progress and Perspectives on Active Sites of Photo- and Electrocatalytic Nitrogen Reduction. Energy & Fuels, 2022, 36, 11323-11358.	5.1	11
661	Density Functional Theory Studies of Earth-Abundant Late Transition Metal-Substituted Surface + Subsurface Iron Alloys for Selective Electrocatalytic N <sub>2</sub> Reduction. ACS Applied Nano Materials, 2022, 5, 11648-11655.	5.0	4
662	Enhancing electrochemical nitrogen fixation by mimicking $\pi$ -back-donation on laser-tuned Lewis acid sites in noble-metal-molybdenum carbide. Applied Catalysis B: Environmental, 2023, 320, 121777.	20.2	9
663	Atomic Layer Deposited Oxygen-Deficient TiO <sub>2</sub> on Carbon Cloth: An Efficient Electrocatalyst for Nitrogen Fixation. ChemCatChem, 2022, 14, .	3.7	1
664	Enclosing the nitrogen cycle: Ammonia synthesis by NO <sub>x</sub> reduction. Current Opinion in Green and Sustainable Chemistry, 2022, 38, 100681.	5.9	1
666	Nitrogen Electroreduction on Borophene-Supported Atomic and Diatomic Transition Metals: Stability, Activity and Selectivity Improvements via Defect Engineering. ChemSusChem, 2022, 15, .	6.8	3
667	Identification of a Unique Pyridinic FeN <sub>4</sub> C <sub>4</sub> Electrocatalyst for N <sub>2</sub> Reduction: Tailoring the Coordination and Carbon Topologies. Journal of Physical Chemistry C, 2022, 126, 14460-14469.	3.1	1
668	Rational Design of Atomic Site Catalysts for Electrocatalytic Nitrogen Reduction Reaction: One Step Closer to Optimum Activity and Selectivity. Electrochemical Energy Reviews, 2022, 5, .	25.5	22

#	ARTICLE	IF	CITATIONS
669	Z-scheme systems: From fundamental principles to characterization, synthesis, and photocatalytic fuel-conversion applications. <i>Physics Reports</i> , 2022, 983, 1-41.	25.6	69
670	Recent advances in metal-organic frameworks and their derivatives for electrocatalytic nitrogen reduction to ammonia. <i>Coordination Chemistry Reviews</i> , 2022, 471, 214761.	18.8	25
671	A systematic review on recent advances of metal-organic frameworks-based nanomaterials for electrochemical energy storage and conversion. <i>Coordination Chemistry Reviews</i> , 2022, 471, 214741.	18.8	24
672	Synergize curvature and confinement effects for Fe-, Co-, Ni- N2 sites on graphene nanobuds towards eNRR. <i>Molecular Catalysis</i> , 2022, 531, 112656.	2.0	0
673	Recent progress in noble metal electrocatalysts for nitrogen-to-ammonia conversion. <i>Renewable and Sustainable Energy Reviews</i> , 2022, 168, 112845.	16.4	14
674	Rational design synergistic metal-free dual-atom electrocatalyst for N2 to NH3 reaction on g-CN: A first principle study. <i>Applied Surface Science</i> , 2022, 605, 154831.	6.1	8
675	Phase-separated CuAg alloy interfacial stress induced Cu defects for efficient N2 activation and electrocatalytic reduction. <i>Applied Catalysis B: Environmental</i> , 2023, 320, 121915.	20.2	10
676	B-doped MoS2 for nitrate electroreduction to ammonia. <i>Journal of Colloid and Interface Science</i> , 2023, 629, 950-957.	9.4	76
677	Amorphous CoB nanoarray as a high-efficiency electrocatalyst for nitrite reduction to ammonia. <i>Inorganic Chemistry Frontiers</i> , 2022, 9, 6075-6079.	6.0	26
678	Multi-atom cluster catalysts for efficient electrocatalysis. <i>Chemical Society Reviews</i> , 2022, 51, 8923-8956.	38.1	68
679	NH3 Synthesis by Electrochemical Process Under Ambient Condition. <i>Engineering Materials</i> , 2022, , 307-336.	0.6	0
680	Microenvironment Optimization towards Electrocatalytic Ammonia Synthesis: Recent Progress and Future. , 0, 1, .		2
681	Carbon-Based Nanomaterials for Nitrogen Reduction Reaction. <i>Springer Series in Materials Science</i> , 2022, , 187-208.	0.6	0
682	Atomically dispersed metal catalysts for the electrochemical nitrogen reduction reaction. <i>Journal of Materials Chemistry A</i> , 2022, 10, 22331-22353.	10.3	15
683	The role of adsorbed hydroxide reduction in hydrogen evolution and nitrogen reduction reactions in aqueous solution. <i>Journal of Materials Chemistry A</i> , 2022, 10, 18609-18615.	10.3	4
684	Anchor single atom in h-BN assist NO synthesis NH3: a computational view. <i>Rare Metals</i> , 2022, 41, 3456-3465.	7.1	23
685	In-situ Generated MoO <sub>2</sub> on MoS <sub>2</sub> /ZnO Heterostructures with Enriched S, O Vacancies for Enhanced Electrocatalytic Reduction of N <sub>2</sub> to NH <sub>3</sub> . <i>ChemElectroChem</i> , 2022, 9, .	3.4	3
686	Adsorption Energy in Oxygen Electrocatalysis. <i>Chemical Reviews</i> , 2022, 122, 17028-17072.	47.7	45

#	ARTICLE	IF	CITATIONS
687	A Density Functional Theory Study of Electrochemical Nitrogen Reduction to Ammonia on the (100) Surface of Transition-Metal Oxynitrides. <i>Journal of Physical Chemistry C</i> , 2022, 126, 17045-17055.	3.1	2
688	Mechanistic Insights into Nitrogenase FeMo-Cofactor Catalysis through a Steady-State Kinetic Model. <i>Biochemistry</i> , 2022, 61, 2131-2137.	2.5	9
689	Recent Progress in Electrocatalytic Urea Synthesis under Ambient Conditions. <i>ACS Sustainable Chemistry and Engineering</i> , 2022, 10, 12477-12496.	6.7	22
690	Electrochemical Generation of Catalytically Active Edge Sites in C <sub>2</sub> N-Type Carbon Materials for Artificial Nitrogen Fixation. <i>Small</i> , 2022, 18, .	10.0	8
691	Regulating the interfacial charge transfer and constructing symmetry-breaking sites for the enhanced N <sub>2</sub> electroreduction activity. , 2023, 5, .		13
692	Mechanistic analysis of the dissociative reduction of nitrogen to ammonia by ZnMn <sub>2</sub> O <sub>4</sub> catalyst derived from spent batteries. <i>Catalysis Today</i> , 2023, 423, 113898.	4.4	2
693	Recent Advances in Electrochemical Nitrogen Reduction Reaction to Ammonia from the Catalyst to the System. <i>Catalysts</i> , 2022, 12, 1015.	3.5	17
694	Electrochemical nitrogen fixation in metal-N <sub>2</sub> batteries: A paradigm for simultaneous NH <sub>3</sub> synthesis and energy generation. <i>Energy Storage Materials</i> , 2023, 54, 98-119.	18.0	16
695	High-Efficiency Electrochemical Nitrate Reduction to Ammonia on a Co <sub>3</sub> O <sub>4</sub> Nanoarray Catalyst with Cobalt Vacancies. <i>ACS Applied Materials &amp; Interfaces</i> , 2022, 14, 46595-46602.	8.0	62
696	Eliminating nitrogen chemisorption barrier with single-atom supported yttrium cluster via electronic promoting effect for highly efficient ammonia synthesis. <i>Nano Research</i> , 2023, 16, 2185-2191.	10.4	8
697	Mechanistic understanding of the effect of alloying Au with Ni on N <sub>2</sub> electroreduction into NH <sub>3</sub> : theoretical considerations. <i>New Journal of Chemistry</i> , 2022, 46, 21911-21920.	2.8	1
698	Oxygen vacancies engineering in electrocatalysts nitrogen reduction reaction. <i>Frontiers in Chemistry</i> , 0, 10, .	3.6	6
699	Rational catalyst design and mechanistic evaluation for electrochemical nitrogen reduction at ambient conditions. <i>Green Energy and Environment</i> , 2023, 8, 1567-1595.	8.7	6
700	Rigorous Assessment of Cl <sup>-</sup> -Based Anolytes on Electrochemical Ammonia Synthesis. <i>Advanced Science</i> , 2022, 9, .	11.2	12
701	A superaerophilic gas diffusion electrode enabling facilitated nitrogen feeding through hierarchical micro/nano channels for efficient ambient synthesis of ammonia. <i>Chemical Engineering Journal</i> , 2023, 454, 140106.	12.7	22
702	Self-supported Mo-doped TiO <sub>2</sub> electrode for ambient electrocatalytic nitrogen oxidation. <i>Electrochimica Acta</i> , 2022, 435, 141333.	5.2	6
703	Theoretical prediction on stability, electronic and activity properties of single-atom catalysts anchored graphene and boron phosphide heterostructures. <i>Fuel</i> , 2023, 332, 126213.	6.4	10
704	Designing catalysts via evolutionary-based optimization techniques. <i>Computational Materials Science</i> , 2023, 216, 111833.	3.0	4

#	ARTICLE	IF	CITATIONS
705	Theoretical investigation of single-atom catalysts anchored on pure carbon substrate for electroreduction of NO to NH <sub>3</sub> . Physical Chemistry Chemical Physics, 2022, 24, 29112-29119.	2.8	1
706	Co/N-doped carbon nanosphere derived from adenine-based metal organic framework enabled high-efficiency electrocatalytic nitrate reduction to ammonia. Chemical Communications, 0, , .	4.1	12
707	Synergistic effect of diatomic Moâ€B site confined in graphene-like C2N enables electrocatalytic nitrogen reduction via novel mechanism. Journal of Chemical Physics, 2022, 157, .	3.0	6
708	Nanoreactor Based on Cyclodextrin for Direct Electrocatalyzed Ammonia Synthesis. ACS Nano, 2022, 16, 18398-18407.	14.6	16
709	Advanced In Situ Characterization Techniques for Direct Observation of Gasâ€Involved Electrochemical Reactions. Energy and Environmental Materials, 2023, 6, .	12.8	8
710	High-entropy alloy catalysts: Fundamental aspects, promises towards electrochemical NH3 production, and lessons to learn from deep neural networks. Nano Energy, 2023, 105, 108027.	16.0	10
711	Single-layer MoS2 with adjacent Mo sites for efficient electrocatalytic nitrogen fixation via spin-delocalized electrons effect. Applied Catalysis B: Environmental, 2023, 323, 122186.	20.2	5
712	Excluding false positives: A perspective toward credible ammonia quantification in nitrogen reduction reaction. Chinese Journal of Catalysis, 2023, 44, 50-66.	14.0	9
713	Theoretical and experimental progress of metal electrocatalysts for the nitrogen reduction reaction. Materials Chemistry Frontiers, 2023, 7, 643-661.	5.9	9
714	Theoretical insight into electrocatalytic nitrogen fixation on transition-metal decorated melon-based carbon nitride. Molecular Catalysis, 2023, 535, 112862.	2.0	1
715	Theoretical exploration of the nitrogen fixation mechanism of two-dimensional dual-metal TM<sub>1</sub>TM<sub>2</sub>@C<sub>9</sub>N<sub>4</sub> electrocatalysts. Nanoscale Horizons, 2023, 8, 211-223.	8.0	10
716	Implantation of iron into copper: an effective strategy for facilitating electrocatalytic nitrogen reduction reaction. Materials Today Energy, 2023, 31, 101215.	4.7	6
717	When nitrogen reduction meets single-atom catalysts. Progress in Materials Science, 2023, 132, 101044.	32.8	14
718	Selectivity of Mo N C sites for electrocatalytic N2 reduction: A function of the single atom position on the surface and local carbon topologies. Applied Surface Science, 2023, 612, 155908.	6.1	3
719	First principles screening of transition metal single-atom catalysts for nitrogen reduction reaction. Applied Surface Science, 2023, 612, 155916.	6.1	12
720	Prevailing surface reactions in the plasma-catalytic ammonia synthesis with Ru/CeO2 and Ru/Ti-CeO2. Chemical Engineering Journal, 2023, 455, 140691.	12.7	6
721	Preâ€Adsorbed Hâ€Assisted N<sub>2</sub> Activation on Singleâ€Atom Cadmiumâ€O<sub>5</sub> Decorated In<sub>2</sub>O<sub>3</sub> for Efficient NH<sub>3</sub> Electrosynthesis. Advanced Functional Materials, 2023, 33, .	14.9	17
722	Coupling Fe and Mo single atoms on hierarchical N-doped carbon nanotubes enhances electrochemical nitrogen reduction reaction performance. Nano Research, 2023, 16, 5743-5749.	10.4	4

#	ARTICLE	IF	CITATIONS
723	Recent progress in carbon-based electrochemical catalysts: From structure design to potential applications. , 2023, 2, e9120047.		33
724	Quantification Methodology of Ammonia Produced from Electrocatalytic and Photocatalytic Nitrogen/Nitrate Reduction. Energies, 2023, 16, 27.	3.1	4
725	Photoelectrochemistry-driven ambient nitrogen reduction to ammonia: Materialsâ€™ design insights. Catalysis Today, 2023, 423, 113979.	4.4	0
726	Design of ammonia oxidation electrocatalysts for efficient direct ammonia fuel cells. EnergyChem, 2023, 5, 100093.	19.1	6
727	2D, Metalâ€Free Electrocatalysts for the Nitrogen Reduction Reaction. Advanced Functional Materials, 2023, 33, .	14.9	17
728	Hydrogen storage in liquid hydrogen carriers: recent activities and new trends. Progress in Energy, 2023, 5, 012004.	10.9	9
729	Boosting the interlayer-confined nitrate reduction reaction by in situ electrochemical potassium ion intercalation. Science China Materials, 2023, 66, 1352-1361.	6.3	4
730	Enhanced Ammonia Synthesis by Mo <sup>2+</sup> -Rich Graphene-Based Nanocomposite. Nano LIFE, 0, , .	0.9	0
731	Dynamic Coordination Structure Evolutions of Atomically Dispersed Metal Catalysts for Electrocatalytic Reactions. Advanced Materials Interfaces, 2023, 10, .	3.7	8
732	Designing a Built-In Electric Field for Efficient Energy Electrocatalysis. ACS Nano, 2022, 16, 19959-19979.	14.6	82
733	Recent Progress in Computational Design of Single-Atom/Cluster Catalysts for Electrochemical and Solar-Driven N <sub>2</sub> Fixation. ACS Catalysis, 2022, 12, 15541-15575.	11.2	27
734	Selective Electrochemical Conversion of N <sub>2</sub> to NH <sub>3</sub> in Neutral Media Using B, N-Containing Carbon with a Nanotubular Morphology. ACS Applied Materials & Interfaces, 2023, 15, 4033-4043.	8.0	7
735	Hierarchical Nanospheres with Polycrystalline Ir&Cu and Amorphous Cu <sub>2</sub> O toward Energyâ€Efficient Nitrate Electrolysis to Ammonia. Small, 2023, 19, .	10.0	15
736	Electrocatalysis Mechanism and Structureâ€Activity Relationship of Atomically Dispersed Metalâ€Nitrogenâ€Carbon Catalysts for Electrocatalytic Reactions. Small Methods, 2023, 7, .	8.6	7
737	Long distance bimetallic site in crystal with relay metal-N-N-metal mechanism and new descriptors for electrocatalytic nitrogen reduction reaction. Applied Catalysis A: General, 2023, 652, 119030.	4.3	5
738	Prediction of Three-Metal Cluster Catalysts on Two-Dimensional W <sub>2</sub> N <sub>3</sub> Support with Integrated Descriptors for Electrocatalytic Nitrogen Reduction. ACS Nano, 2023, 17, 1522-1532.	14.6	15
739	Dinitrogen reduction using ruthenium coordinated by nitrogenâ€doped graphene and cobalt complex coordinated by anionic PNP pincer ligand as catalysts and Frustrated Lewis Pair as a coâ€catalyst: Density Functional Theory studies. Applied Organometallic Chemistry, 2023, 37, .	3.5	2
740	Knowledgeâ€Driven Design and Labâ€Based Evaluation of Bâ€doped TiO <sub>2</sub> Photocatalysts for Ammonia Synthesis. Advanced Energy Materials, 2023, 13, .	19.5	23



#	ARTICLE	IF	CITATIONS
741	Enhanced Catalytic Activity of Bimetallic Ordered Catalysts for Nitrogen Reduction Reaction by Perturbation of Scaling Relations. ACS Catalysis, 2023, 13, 2190-2201.	11.2	15
742	Energy-efficient electrochemical ammonia production from dilute nitrate solution. Energy and Environmental Science, 2023, 16, 663-672.	30.8	41
743	Effect of valence state on electrochemical nitrate reduction to ammonia in molybdenum catalysts. Chemical Engineering Journal, 2023, 459, 141601.	12.7	11
744	Recent progress in research and design concepts for the characterization, testing, and photocatalysts for nitrogen reduction reaction. , 2023, 5, .		33
745	Advances in ambient selective electrohydrogenation of nitrogen to ammonia: strategies to strengthen nitrogen chemisorption. Journal of Materials Chemistry A, 2023, 11, 3871-3887.	10.3	4
746	pâ€d Orbital Hybridization Engineered Singleâ€Atom Catalyst for Electrocatalytic Ammonia Synthesis. Energy and Environmental Materials, 0, , .	12.8	7
747	Interfacially Engineered Nanoporous Cu/MnO<i>x</i> Hybrids for Highly Efficient Electrochemical Ammonia Synthesis via Nitrate Reduction. Small, 2023, 19, .	10.0	18
748	Boosting Electroreduction Kinetics of Nitrogen to Ammonia via Atomically Dispersed Sn Protuberance. Angewandte Chemie, 0, , .	2.0	0
749	The role of overlayers nitride electro-materials for N2 reduction to ammonia. Frontiers in Catalysis, 0, 2, .	3.9	2
750	Complementary Design in Multicomponent Electrocatalysts for Electrochemical Nitrogen Reduction: Beyond the Leverage in Activity and Selectivity. Angewandte Chemie, 0, , .	2.0	0
751	Spiers Memorial Lecture: Catalytic activation of molecular nitrogen for green ammonia synthesis: introduction and current status. Faraday Discussions, 0, 243, 9-26.	3.2	8
752	Highly efficient electrochemical ammonia synthesis using superhydrophobic nanoporous silver. Inorganic Chemistry Frontiers, 2023, 10, 2978-2986.	6.0	3
753	Low Temperature Ammonia Synthesis from Atomic N and Water on Rutile TiO<sub>2</sub>(110). Chinese Journal of Chemical Physics, 0, , .	1.3	0
754	The Application of Transition Metal Sulfide Nanomaterials and Their Composite Nanomaterials in the Electrocatalytic Reduction of CO2: A Review. Applied Sciences (Switzerland), 2023, 13, 3023.	2.5	4
755	Modulating the electronic structure of MoS3 catalyst via heteroatom doping for Electrocatalytic nitrogen reduction reaction: A theoretical study. Molecular Catalysis, 2023, 541, 113117.	2.0	0
756	Built-in electric field-assisted W-C3/X-C3 van der Waals heterogeneous single-atom catalysts for enhanced electrocatalytic nitrogen reduction. Applied Surface Science, 2023, 619, 156790.	6.1	4
757	Electronic metal-support interaction via defective-induced platinum modified BiOBr for photocatalytic N2 fixation. Applied Catalysis B: Environmental, 2023, 327, 122462.	20.2	32
758	Fe2P nanoparticle-decorated porous biochar for high-efficiency electrosynthesis of ammonia from toxic nitrite. Surfaces and Interfaces, 2023, 38, 102818.	3.0	5

#	ARTICLE	IF	CITATIONS
759	Rational design of bimetallic MXene solid solution with High-Performance electrocatalytic N <sub>2</sub> reduction. Journal of Colloid and Interface Science, 2023, 640, 67-77.	9.4	3
760	Co-N bond promotes the H* pathway for the electrocatalytic reduction of nitrate (NO <sub>3</sub> RR) to ammonia. Journal of Environmental Chemical Engineering, 2023, 11, 109718.	6.7	5
761	Recent developments in heterogeneous electrocatalysts for ambient nitrogen reduction to ammonia: Activity, challenges, and future perspectives. Renewable and Sustainable Energy Reviews, 2023, 176, 113197.	16.4	50
762	Synergistic double-atom catalysts of metal-boron anchored on g-C <sub>3</sub> N <sub>4</sub> for electrochemical nitrogen reduction: Mechanistic insight and catalyst screening. Journal of Energy Chemistry, 2023, 80, 350-360.	12.9	13
763	Recent progress in Pd based electrocatalysts for electrochemical nitrogen reduction to ammonia. Journal of Electroanalytical Chemistry, 2023, 931, 117174.	3.8	5
764	Complementary Design in Multicomponent Electrocatalysts for Electrochemical Nitrogen Reduction: Beyond the Leverage in Activity and Selectivity. Angewandte Chemie - International Edition, 2023, 62, .	13.8	20
765	Recent research progress of electrocatalytic reduction technology for nitrate wastewater: A review. Journal of Environmental Chemical Engineering, 2023, 11, 109418.	6.7	23
766	TiO <sub>2</sub> /CeO <sub>2</sub> Frame with Enriched Oxygen Vacancies and Hetero-Interfaces for Efficient Electrochemical N <sub>2</sub> Reduction. ChemCatChem, 2023, 15, .	3.7	2
767	Boosting Electroreduction Kinetics of Nitrogen to Ammonia via Atomically Dispersed Sn Protuberance. Angewandte Chemie - International Edition, 2023, 62, .	13.8	8
768	Selective NO <sub>x</sub> Electroreduction to Ammonia on Isolated Ru Sites. ACS Nano, 2023, 17, 3483-3491.	14.6	20
769	Comprehensive understanding and rational regulation of microenvironment for gas-involved electrochemical reactions. , 2023, 5, .		4
770	Electrocatalytic ammonia synthesis on Fe@MXene catalyst as cathode of intermediate-temperature proton-conducting solid oxide cell. International Journal of Hydrogen Energy, 2023, 48, 17677-17688.	7.1	3
771	Application of Nickel Foam in Electrochemical Systems: A Review. Journal of Electronic Materials, 2023, 52, 2264-2291.	2.2	5
772	Insights into the electronic structure coupling effect of dual-metal atomic electrocatalytic platform for efficient clean energy conversion. Chemical Engineering Journal, 2023, 461, 141911.	12.7	11
773	Promoting electrochemical ammonia synthesis by synergized performances of Mo <sub>2</sub> C-Mo <sub>2</sub> N heterostructure. Frontiers in Chemistry, 0, 11, .	3.6	8
774	Electrocatalytic Nitrogen Reduction Reaction (NRR). Resonance - Journal of Science Education, 2023, 28, 279-291.	0.3	3
775	Crystal defect engineering of Bi <sub>2</sub> Te <sub>3</sub> nanosheets by Ce doping for efficient electrocatalytic nitrogen reduction. Nano Research, 2023, 16, 6544-6551.	10.4	7
776	Review on Electrochemical Reduction of Nitrogen by Graphdiyne-Based Catalysts: Recent Advances and Outlook. Energy & Fuels, 2023, 37, 3501-3522.	5.1	5

#	ARTICLE	IF	CITATIONS
777	Electrochemical C–N coupling of CO <sub>2</sub> and nitrogenous small molecules for the electrosynthesis of organonitrogen compounds. Chemical Society Reviews, 2023, 52, 2193-2237.	38.1	47
778	Robust Copper-Based Nanosponge Architecture Decorated by Ruthenium with Enhanced Electrocatalytic Performance for Ambient Nitrogen Reduction to Ammonia. ACS Applied Materials & Interfaces, 2023, 15, 11703-11712.	8.0	5
779	Prospect of Ru(edta) complexes in nitrogen cycle electrocatalysis: a mini review. Inorganic Chemistry Frontiers, 2023, 10, 1958-1964.	6.0	4
780	Electrocatalytic reduction of N <sub>2</sub> on FeRu dual-atom catalyst anchored in N-doped phosphorene. Molecular Catalysis, 2023, 539, 113032.	2.0	1
781	Controllable Exfoliation of MOF-Derived Van Der Waals Superstructure into Ultrathin 2D B/N Co-Doped Porous Carbon Nanosheets: A Superior Catalyst for Ambient Ammonia Electrosynthesis. Small, 2023, 19, .	10.0	12
782	The transition metal doped B cluster (TM <sub>4</sub> B <sub>18</sub> ) as catalysis for nitrogen fixation. Molecular Catalysis, 2023, 539, 113031.	2.0	1
783	Single-atom catalyst application in distributed renewable energy conversion and storage. SusMat, 2023, 3, 160-179.	14.9	15
784	Recent Advances on Transition-Metal-Based Layered Double Hydroxides Nanosheets for Electrocatalytic Energy Conversion. Advanced Science, 2023, 10, .	11.2	30
785	Electronic State and Microenvironment Modulation of Metal Nanoparticles Stabilized by MOFs for Boosting Electrocatalytic Nitrogen Reduction. Advanced Materials, 0, , 2210669.	21.0	33
786	Main-group indium single-atom catalysts for electrocatalytic NO reduction to NH <sub>3</sub> . Journal of Materials Chemistry A, 2023, 11, 6814-6819.	10.3	31
787	A comparative study of the potential of [Os{(NHCH <sub>2</sub> CH <sub>2</sub> ) <sub>3</sub> X}] catalysts (X = ¼N, P) for the reduction of dinitrogen to ammonia and hydrazine using FLP as a co-catalyst by density functional theory. Applied Organometallic Chemistry, 2023, 37, .	3.5	0
788	Importance of Adatom on Pure Iron Catalyst Towards Electrocatalytic N <sub>2</sub> Reduction Reaction. Chemistry - an Asian Journal, 0, , .	3.3	0
789	Amorphous NiB <sub>2</sub> for electroreduction of NO to NH <sub>3</sub> . Journal of Materials Chemistry A, 2023, 11, 7409-7414.	10.3	23
790	PdMoCu Trimetalenes for Nitrate Electroreduction to Ammonia. Journal of Physical Chemistry C, 2023, 127, 5262-5270.	3.1	1
791	Defective TiO <sub>2</sub> for High-Performance Electrocatalytic NO Reduction toward Ambient NH <sub>3</sub> Production. Small, 2023, 19, .	10.0	17
792	Engineering Catalytically Active Sites by Sculpting Artificial Edges on MoS <sub>2</sub> Basal Plane for Dinitrogen Reduction at a Low Overpotential. Small, 2023, 19, .	10.0	3
793	Accelerating ammonia synthesis in a membraneless flow electrolyzer through coupling ambient dinitrogen oxidation and water splitting. IScience, 2023, 26, 106407.	4.1	1
794	Graphitic carbon nitride (g-C <sub>3</sub> N <sub>4</sub> ) based heterogeneous single atom catalysts: synthesis, characterisation and catalytic applications. Journal of Materials Chemistry A, 2023, 11, 8599-8646.	10.3	18

#	ARTICLE	IF	CITATIONS
795	Highly Selective N <sub>2</sub> Electroreduction to NH <sub>3</sub> Using a Boronâ€Vacancyâ€Rich Diatomic NbI <sub>2</sub> B Catalyst. Small, 2023, 19, .	10.0	10
796	Progress of electrochemical synthesis of nitric acid: catalyst design, mechanistic insights, protocol and challenges. Journal of Materials Chemistry A, 2023, 11, 10125-10148.	10.3	12
797	Lithium-mediated electrochemical dinitrogen reduction reaction. , 2023, 1, 563-581.		9
798	Cyclic NH <sub>3</sub> adsorption-desorption characteristics of Cu-based metal halides as Ammonia Separation and Storage Procedure. Journal of the Energy Institute, 2023, 109, 101250.	5.3	1
799	Design of material regulatory mechanism for electrocatalytic converting NO/NO <sub>3</sub> <sup>-</sup> to NH <sub>3</sub> progress. Natural Sciences, 2023, 3, .	2.1	9
800	New directions of technologies pointing the way to a sustainable global society. Sustainable Futures, 2023, 5, 100114.	3.2	14
801	Efficient asymmetrical siliconâ€metal dimer electrocatalysts for the nitrogen reduction reaction. Physical Chemistry Chemical Physics, 2023, 25, 13126-13135.	2.8	3
802	Grave-to-cradle upcycling of harmful algal biomass into atomically dispersed iron catalyst for efficient ammonia electrosynthesis from nitrate. Applied Catalysis B: Environmental, 2023, 332, 122778.	20.2	7
803	Exploring the origin of the high electro-catalytic activity for nitrate-to-ammonia conversion on electrodeposited Ni/Ru hydroxide hybrids. Inorganic Chemistry Frontiers, 2023, 10, 3058-3064.	6.0	1
804	Review of Carbon Support Coordination Environments for Single Metal Atom Electrocatalysts (SACS). Advanced Materials, 2024, 36, .	21.0	13
805	Recent Advances in Metalâ€Organic Frameworkâ€Based Nanomaterials for Electrocatalytic Nitrogen Reduction. Small Methods, 2023, 7, .	8.6	5
806	Potential-Induced Synthesis and Structural Identification of Oxide-Derived Cu Electrocatalysts for Selective Nitrate Reduction to Ammonia. ACS Catalysis, 2023, 13, 7529-7537.	11.2	23
807	Electro- and Photocatalytic Conversion of N <sub>2</sub> to NH <sub>3</sub> by Chemically Modified Transition Metal Dichalcogenides, MoS <sub>2</sub> , and WS <sub>2</sub> . Journal of the Electrochemical Society, 2023, 170, 056501.	2.9	2
808	Enhancing Electrochemical Nitrate Reduction to Ammonia over Cu Nanosheets via Facet Tandem Catalysis. Angewandte Chemie, 2023, 135, .	2.0	1
809	Enhancing Electrochemical Nitrate Reduction to Ammonia over Cu Nanosheets via Facet Tandem Catalysis. Angewandte Chemie - International Edition, 2023, 62, .	13.8	38
810	Synthesis and catalytic applications of metal boride ceramics. , 2023, , 57-105.		0
811	P-doped FeCo <sub>2</sub> O <sub>4</sub> in-situ decorated on carbon cloth as robust electrocatalysts for reducing nitrate and nitrite to ammonia. Journal of Environmental Chemical Engineering, 2023, 11, 110122.	6.7	4
812	Recent advances in MXenes: a promising 2D material for photocatalysis. Materials Chemistry Frontiers, 2023, 7, 4184-4201.	5.9	6

#	ARTICLE	IF	CITATIONS
813	Electrosynthesis of $\alpha$ -Amino Acids from NO and other NO <sub>x</sub> species over CoFe alloy-decorated Self-standing Carbon Fiber Membranes. <i>Angewandte Chemie</i> , 2023, 135, .	2.0	2
814	Electrosynthesis of $\alpha$ -Amino Acids from NO and other NO <sub>x</sub> species over CoFe alloy-decorated Self-standing Carbon Fiber Membranes. <i>Angewandte Chemie - International Edition</i> , 2023, 62, .	13.8	18
815	Atomically dispersed metal catalysts towards nitrogen reduction for Ammonia: From homogeneous to heterogeneous. <i>Chemical Engineering Journal</i> , 2023, 468, 143776.	12.7	3
816	Tuning Catalyst Selectivity for Ammonia vs Hydrogen: An Investigation into the Coprecipitation of Mo and Fe Sulfides. <i>Inorganic Chemistry</i> , 2023, 62, 9379-9390.	4.0	2
817	Electrochemical Nitrogen Fixation for Green Ammonia: Recent Progress and Challenges. <i>Advanced Science</i> , 2023, 10, .	11.2	7
818	Structural optimization of carbon-based diatomic catalysts towards advanced electrocatalysis. <i>Coordination Chemistry Reviews</i> , 2023, 492, 215288.	18.8	31
819	Synergetic effect between non-metals and dual metal catalysts for nitrogen reduction reaction. <i>Inorganic Chemistry Frontiers</i> , 2023, 10, 4746-4753.	6.0	1
820	Cu/Cu <sup>+</sup> Synergetic Effect in Cu <sub>2</sub> O/Cu/CF Electrocatalysts for Efficient Nitrate Reduction to Ammonia. <i>ACS Sustainable Chemistry and Engineering</i> , 2023, 11, 9433-9441.	6.7	13
821	High efficiency carbon nanotubes-based single-atom catalysts for nitrogen reduction. <i>Scientific Reports</i> , 2023, 13, .	3.3	0
822	How thermal fluctuations influence the function of the FeMo cofactor in nitrogenase enzymes. <i>Chem Catalysis</i> , 2023, 3, 100662.	6.1	1
823	Accelerating the development of electrocatalysts for electrochemical nitrogen fixation through theoretical and computational approaches. <i>Materials Chemistry Frontiers</i> , 2023, 7, 4259-4280.	5.9	1
824	Carbon black supported manganese phthalocyanine: Efficient electrocatalyst for nitrogen reduction to ammonia. <i>Engineering Reports</i> , 2024, 6, .	1.7	3
825	Simultaneously Enhancing Adsorbed Hydrogen and Dinitrogen to Enable Efficient Electrochemical NH <sub>3</sub> Synthesis on Sm(OH) <sub>3</sub> . <i>Small Structures</i> , 2023, 4, .	12.0	7
826	Nanoarchitectonics of Metallene Materials for Electrocatalysis. <i>ACS Nano</i> , 2023, 17, 13017-13043.	14.6	34
827	Confinement effect induced efficient electro-catalytic reduction of dinitrogen in transition metal atom endohedral ultra-thin C <sub>4</sub> N <sub>3</sub> nanotubes. <i>Applied Surface Science</i> , 2023, 637, 157888.	6.1	1
828	Li <sup>+</sup> -ion bound crown ether functionalization enables dual promotion of dynamics and thermodynamics for ambient ammonia synthesis. <i>Journal of Energy Chemistry</i> , 2023, 85, 191-197.	12.9	2
829	Research progress in graphene based single atom catalysts in recent years. <i>Fuel Processing Technology</i> , 2023, 250, 107879.	7.2	4
830	The journey of iron-based electrocatalytic materials for nitrogen reduction reaction: from current status to future prospects. <i>Journal of Materials Chemistry A</i> , 2023, 11, 11048-11077.	10.3	3

#	ARTICLE	IF	CITATIONS
831	Atomic-level reactive sites for electrocatalytic nitrogen reduction to ammonia under ambient conditions. Coordination Chemistry Reviews, 2023, 489, 215196.	18.8	12
832	Overview of emerging catalytic materials for electrochemical green ammonia synthesis and process. , 2023, 5, .		3
833	Electrodeposited NiCoP on nickel foam as a self-supported cathode for highly selective electrochemical reduction of nitrate to ammonia. Separation and Purification Technology, 2023, 320, 124155.	7.9	19
834	Stability and activity of titanium oxynitride thin films for the electrocatalytic reduction of nitrogen to ammonia at different pH values. Physical Chemistry Chemical Physics, 2023, 25, 19540-19552.	2.8	0
835	Advancements in low-temperature NH <sub>3</sub> -SCR of NO <sub>x</sub> using Ba-based catalysts: a critical review of preparation, mechanisms, and challenges. Environmental Science and Pollution Research, 2023, 30, 84972-84998.	5.3	1
836	A simple approach to synthesize NiFe-LDH@Nb <sub>2</sub> C MXene for enhanced electrochemical nitrogen reduction reactions by a synergistic effect. Catalysis Science and Technology, 2023, 13, 4558-4567.	4.1	3
837	Interfacial Proton Supply/Filtration Regulates the Dynamics of Electrocatalytic Nitrogen Reduction Reaction: A Perspective. Advanced Functional Materials, 2023, 33, .	14.9	1
838	Hydrogen spillover in alkaline solutions for effective nitrogen fixation. Chemical Engineering Journal, 2023, 471, 144589.	12.7	1
839	Eliminating Concentration Polarization with Cationic Covalent Organic Polymer to Promote Effective Overpotential of Nitrogen Fixation. Angewandte Chemie, 2023, 135, .	2.0	1
840	Heterostructured Co/Co <sub>3</sub> O <sub>4</sub> anchored on N-doped carbon nanotubes as a highly efficient electrocatalyst for nitrate reduction to ammonia. Dalton Transactions, 2023, 52, 10869-10875.	3.3	1
841	NH <sub>3</sub> production from absorbed NO with synergistic catalysis of Pd/C and functionalized ionic liquids. Green Chemistry, 0, , .	9.0	0
842	Eliminating Concentration Polarization with Cationic Covalent Organic Polymer to Promote Effective Overpotential of Nitrogen Fixation. Angewandte Chemie - International Edition, 2023, 62, .	13.8	4
843	Doped MXenes—A new paradigm in 2D systems: Synthesis, properties and applications. Progress in Materials Science, 2023, 139, 101166.	32.8	3
844	Nanosheet arrays of iron oxide for enhanced ammonia synthesis via electrochemical nitrogen reduction for prospective algal membrane bioreactors. Chemosphere, 2023, 338, 139621.	8.2	0
845	Booming electrocatalysts for urea synthesis via nitrogen-integrated carbon dioxide reduction reaction. , 2023, 2, 100011.		3
846	Acid-Stable Ebonex for Continuous-Flow Nitrogen Electrofixation. Energy & Fuels, 2023, 37, 18216-18225.	5.1	2
847	Recent advances of ammonia synthesis under ambient conditions over metal-organic framework based electrocatalysts. Applied Catalysis B: Environmental, 2024, 340, 123161.	20.2	2
848	Unveiling the Mechanism of Nitrogen Fixation by Single-Atom Catalysts and Dual-Atom Catalysts Anchored on Defective Boron Nitride Nanotubes. Energy & Fuels, 0, , .	5.1	1



#	ARTICLE	IF	CITATIONS
849	Machine Learning Design of Single-Atom Catalysts for Nitrogen Fixation. ACS Applied Materials & Interfaces, 2023, 15, 40656-40664.	8.0	4
850	Recent advances of metal oxide catalysts for electrochemical NH <sub>3</sub> production from nitrogen-containing sources. Inorganic Chemistry Frontiers, 2023, 10, 5812-5838.	6.0	3
851	Triboelectric nanogenerator assisted synthesis and detection of chemical compounds. Journal of Materials Chemistry A, 2023, 11, 19244-19280.	10.3	2
852	Transition metals anchored on two-dimensional p-BN support with center-coordination scaling relationship descriptor for spontaneous visible-light-driven photocatalytic nitrogen reduction. Journal of Colloid and Interface Science, 2023, 652, 878-889.	9.4	2
853	Key Role of Local Chemistry in Lattice Nitrogen-Participated N <sub>2</sub> -to-NH <sub>3</sub> Electrocatalytic Cycle over Nitrides. Advanced Functional Materials, 2023, 33, .	14.9	3
854	Highly dispersed copper-iron nanoalloy enhanced electrocatalytic reduction coupled with plasma oxidation for ammonia synthesis from ubiquitous air and water. Nano Energy, 2023, 117, 108840.	16.0	5
855	Origins of Different Performances of the VS <sub>x</sub> (x = 2, 4) Materials in Electroreduction of Nitrogen. ACS Applied Energy Materials, 0, , .	5.1	0
856	Theoretical advances in understanding the active site microenvironment toward the electrocatalytic nitrogen reduction reaction in aqueous media. Current Opinion in Electrochemistry, 2023, 42, 101383.	4.8	1
857	Predicting Catalytic Activity of Fe-P Binary Compounds for Nitrogen Reduction Reactions from Quantifying the Activation Degree of N <sub>2</sub> . Journal of Physical Chemistry C, 2023, 127, 17742-17753.	3.1	3
858	d- and p-Block single-atom catalysts supported by BN nanocages toward electrochemical reactions of N <sub>2</sub> and O <sub>2</sub> . Physical Chemistry Chemical Physics, 2023, 25, 25761-25771.	2.8	0
859	Making chemicals from the air: the new frontier for hybrid electrosyntheses in artificial tree-like devices. Green Chemistry, 0, , .	9.0	0
860	Towards sustainable electrochemical ammonia synthesis. Journal of Materials Chemistry A, 2023, 11, 18626-18645.	10.3	4
861	Self-promoted ammonia selectivity for the electro-reduction of nitrogen on g-C <sub>3</sub> N <sub>4</sub> supported single metal catalysts: the machine learning model and physical insights. Inorganic Chemistry Frontiers, 0, , .	6.0	0
862	Paradigm in single-atom electrocatalysts for dinitrogen reduction to ammonia. Materials Chemistry Frontiers, 0, , .	5.9	0
863	Metal-Based Electrocatalysts for Selective Electrochemical Nitrogen Reduction to Ammonia. Nanomaterials, 2023, 13, 2580.	4.1	0
864	Metal-organic framework-based materials as key components in electrocatalytic oxidation and reduction reactions. Journal of Energy Chemistry, 2023, 87, 540-567.	12.9	9
865	A comprehensive review on electrochemical green ammonia synthesis: From conventional to distinctive strategies for efficient nitrogen fixation. Applied Energy, 2023, 352, 121960.	10.1	2
866	Roles of Heterojunction and Cu Vacancies in the Au@Cu <sub>2</sub> -Se for the Enhancement of Electrochemical Nitrogen Reduction Performance. ACS Applied Materials & Interfaces, 0, , .	8.0	3

#	ARTICLE	IF	CITATIONS
867	Copper Single-Atom Catalysts "A Rising Star for Energy Conversion and Environmental Purification: Synthesis, Modification, and Advanced Applications. Small, 2024, 20, .	10.0	0
868	Recent progress in electrocatalytic reduction of nitric oxide to ammonia. Molecular Catalysis, 2023, 549, 113531.	2.0	0
869	Periodic Defect Engineering of Iron-Nitrogen-Carbon Catalysts for Nitrate Electroreduction to Ammonia. Small, 2024, 20, .	10.0	1
870	Lithium-Mediated Photoelectrochemical Ammonia Synthesis with 95% Selectivity on Silicon Photocathode. ACS Energy Letters, 2023, 8, 4235-4241.	17.4	2
871	Unlocking Catalytic Potential: Exploring the Impact of Thermal Treatment on Enhanced Electrocatalysis of Nanomaterials. Angewandte Chemie - International Edition, 2024, 63, .	13.8	1
872	Mass transfer and electrochemical behavior of nitrate reduction to ammonia in electrocatalytic flow cell reactor. AIChE Journal, 2024, 70, .	3.6	0
873	DFT-assisted low-dimensional carbon-based electrocatalysts design and mechanism study: a review. Frontiers in Chemistry, 0, 11, .	3.6	0
874	Fabricating freestanding electrocatalyst with bismuth-iron dual active sites for efficient ammonia synthesis in neutral media. , 0, , .		4
875	Atomically Dispersed Sn Confined in FeS <sub>2</sub> for Nitrate-to-Ammonia Electroreduction. Advanced Functional Materials, 2024, 34, .	14.9	5
876	Recent Advances in Electrocatalytic Hydrogenation Reactions on Copper-Based Catalysts. Advanced Materials, 0, , .	21.0	1
877	Recent Developments of Dual Single-Atom Catalysts for Nitrogen Reduction Reaction. Chemistry - A European Journal, 2024, 30, .	3.3	0
878	Unlocking Catalytic Potential: Exploring the Impact of Thermal Treatment on Enhanced Electrocatalysis of Nanomaterials. Angewandte Chemie, 2024, 136, .	2.0	2
879	Fe-MOF Catalytic Nanoarchitectonic toward Electrochemical Ammonia Production. ACS Applied Materials & Interfaces, 2023, 15, 47294-47306.	8.0	0
880	Abiotic Transformations of Nitrogen mediated by Iron Sulfides and related species from Early Earth to Catalyst Design. Inorganic Chemistry Frontiers, 0, , .	6.0	0
881	Transition-Metal-Based Catalysts for Electrochemical Synthesis of Ammonia by Nitrogen Reduction Reaction: Advancing the Green Ammonia Economy. Chemistry - an Asian Journal, 0, , .	3.3	0
882	The Construction of Surface-Frustrated Lewis Pair Sites to Improve the Nitrogen Reduction Catalytic Activity of In <sub>2</sub> O <sub>3</sub> . Molecules, 2023, 28, 7130.	3.8	0
883	Efficient electrochemical nitrogen fixation at iron phosphide (Fe <sub>2</sub> P) catalyst in alkaline medium. Electrochimica Acta, 2023, 471, 143360.	5.2	1
884	Nitrogen Reduction to Ammonia on a Fe <sub>16</sub> Nanocluster: A Computational Study of Catalysis. Journal of Physical Chemistry A, 0, , .	2.5	0

#	ARTICLE	IF	CITATIONS
885	Ç³Ç±³ââ”RuæŽæ,CuââE°fèŠ,ââ”äé—â½“âç™,,äŽæ°â† âè£ç »âçfèç”µâE—â ççé...,ç>èçâŽçâæ°”. Science China Materials,		
886	Protecting and Enhancing the Photoelectrocatalytic Performance of InGaN Nanowires toward Nitrogen Reduction to Ammonia Synthesis. ACS Applied Energy Materials, 0, , .	5.1	0
887	Theoretical Screening, Regulation, and Prediction of Transition Metal Phthalocyanine Electrocatalysts for NO Reduction into NH<sub>3</sub>. Journal of Physical Chemistry C, 2023, 127, 21097-21105.	3.1	1
888	Ampere-Level Nitrate Electroreduction to Ammonia over Monodispersed Bi-Doped FeS<sub>2</sub>. ACS Nano, 2023, 17, 21328-21336.	14.6	15
889	Enroute to the Carbon-Neutrality Goals via the Targeted Development of Ammonia as a Potential Nitrogen-Based Energy Carrier. ACS Catalysis, 2023, 13, 14415-14453.	11.2	1
890	Modulating the coordination environment of active site structure for enhanced electrochemical nitrogen reduction: The mechanistic insight and an effective descriptor. Applied Surface Science, 2024, 644, 158799.	6.1	5
891	Research on the Applications of High Efficiency Iron and Nickel-Based Catalysts in Electrocatalytic Nitrogen Cycle. Advances in Analytical Chemistry, 2023, 13, 500-512.	0.1	0
892	Recent advances and challenges of nitrogen/nitrate electro catalytic reduction to ammonia synthesis. Frontiers in Energy, 0, , .	2.3	1
893	Yolk-shell composite oxides with binuclear Co(II) sites toward low-overpotential nitrate reduction to ammonia. Chemical Engineering Journal, 2023, 477, 146896.	12.7	2
894	Valueâ€Added Aqueous Metalâ€Redox Bicatalyst Batteries. Advanced Energy Materials, 0, , .	19.5	0
895	Defectsâ€Induced Singleâ€Atom Anchoring on Metalâ€Organic Frameworks for Highâ€Efficiency Photocatalytic Nitrogen Reduction. Angewandte Chemie - International Edition, 2024, 63, .	13.8	3
896	Recent advances in polyoxometalate-based materials and their derivatives for electrocatalysis and energy storage. Materials Chemistry Frontiers, 2024, 8, 732-768.	5.9	2
897	The electrocatalytic N<sub>2</sub> reduction activity of coreâ€shell iron nanoalloy catalysts: a density functional theory (DFT) study. Physical Chemistry Chemical Physics, 0, , .	2.8	0
898	Recent Progress on Phase Engineering of Nanomaterials. Chemical Reviews, 2023, 123, 13489-13692.	47.7	3
899	Design of Singleâ€Atom Catalysts for E lectrocatalytic Nitrogen Fixation. ChemSusChem, 2024, 17, .	6.8	2
900	Atomic interface regulation of rare-marth metal single atom catalysts for energy conversion. Nano Research, 2024, 17, 3493-3515.	10.4	1
901	Defectsâ€Induced Singleâ€Atom Anchoring on Metalâ€Organic Frameworks for Highâ€Efficiency Photocatalytic Nitrogen Reduction. Angewandte Chemie, 0, , .	2.0	0
902	One-step synthesized Nb<sub>2</sub>O<sub>5</sub>-decorated spinel-type (Ni,V,Mn)<sub>3</sub>O<sub>4</sub> nanoflowers for boosting electrocatalytic reduction of nitrogen into ammonia. Green Chemistry, 2023, 25, 10498-10512.	9.0	0

#	ARTICLE	IF	CITATIONS
903	Balanced NO <sub>x</sub> and Proton Adsorption for Efficient Electrocatalytic NO <sub>x</sub> to NH <sub>3</sub> Conversion. ACS Nano, 2023, 17, 23637-23648.	14.6	0
904	A Novel Bubble-based Microreactor for Enhanced Mass Transfer Dynamics toward Efficient Electrocatalytic Nitrogen Reduction. Small, 2024, 20, .	10.0	1
905	A Review of Studies on the Effect of Reaction Microenvironments on Electrochemical Reactions Involving Gases. Journal of Advances in Physical Chemistry, 2023, 12, 366-386.	0.1	0
906	Cu-Doped Fe <sub>2</sub> O <sub>3</sub> Nanorods for Enhanced Electrocatalytic Nitrogen Fixation to Ammonia. ACS Applied Nano Materials, 0, , .	5.0	0
907	An In situ Proton Filter Covalent Organic Framework Catalyst for Highly Efficient Aqueous Electrochemical Ammonia Production. Advanced Energy Materials, 2024, 14, .	19.5	1
908	Single-atom catalysts supported on a hybrid structure of boron nitride/graphene for efficient nitrogen fixation <i>via</i> synergistic interfacial interactions. Nanoscale, 0, , .	5.6	0
909	Recent advances in metal-free electrocatalysts for the hydrogen evolution reaction. Journal of Materials Chemistry A, 0, , .	10.3	0
910	Metal-Organic Framework (MOF)-Based Clean Energy Conversion: Recent Advances in Unlocking its Underlying Mechanisms. Small, 0, , .	10.0	0
911	Maximization of Hydrogen Peroxide Utilization in Proton Exchange Membrane H <sub>2</sub> O <sub>2</sub> Electrolyzer for Efficient Power-to-Hydrogen Conversion. Green Chemistry, 0, , .	9.0	0
912	Enhancing electrocatalytic ammonia synthesis through theoretical design of cluster catalysts supported on TiO <sub>2</sub> surface. Materials Today Energy, 2024, 39, 101466.	4.7	0
913	Interface coupling of Ni <sub>2</sub> P@Cu <sub>3</sub> P catalyst to facilitate highly-efficient electrochemical reduction of nitrate to ammonia. Applied Surface Science, 2024, 648, 159082.	6.1	3
914	Recent advances in electrocatalytic upgrading of nitric oxide and beyond. Applied Catalysis B: Environmental, 2024, 344, 123662.	20.2	2
915	Au Nanoparticle-Loaded UiO-66 Metal-Organic Framework for Efficient Photocatalytic N <sub>2</sub> Fixation. Processes, 2024, 12, 64.	2.8	0
916	Single Ru Atom Supported on B-Doped Graphyne as an Efficient Electrocatalyst for the Nitrogen Reduction Reaction. Catalysis Letters, 0, , .	2.6	0
917	Toward Next-Generation Heterogeneous Catalysts: Empowering Surface Reactivity Prediction with Machine Learning. Engineering, 2024, , .	6.7	0
918	Bridging Together Theoretical and Experimental Perspectives in Single-Atom Alloys for Electrochemical Ammonia Production. Small, 2024, 20, .	10.0	0
919	Exploring nitrogen reduction reaction mechanisms in electrocatalytic ammonia synthesis: A comprehensive review. Journal of Energy Chemistry, 2024, 92, 681-697.	12.9	0
920	Recent progress in amorphous nanomaterials for electrochemical synthesis of N-containing compounds. Chem Catalysis, 2024, , 100871.	6.1	0

#	ARTICLE	IF	CITATIONS
921	Black Phosphorene with Removable Aluminum Ion Protection for Enhanced Electrochemical Nitrogen Fixation. <i>Advanced Energy Materials</i> , 0, , .	19.5	0
922	Unveiling Cutting-Edge Developments in Electrocatalytic Nitrate-to-Ammonia Conversion. <i>Advanced Materials</i> , 2024, 36, .	21.0	3
923	Revealing Distance-Dependent Synergy between $\text{MnCo}_2\text{O}_4$ and $\text{Co-N}_4\text{C}$ in Boosting the Oxygen Reduction Reaction. <i>ACS Applied Materials &amp; Interfaces</i> , 2024, 16, 3388-3395.	8.0	0
924	Boosting Electrocatalytic Ammonia Synthesis via Synergistic Effect of Iron-Based Single Atoms and Clusters. <i>Nano Letters</i> , 2024, 24, 1197-1204.	9.1	0
925	Rapid synthesis of active Pt single atoms and Ru clusters on carbon black <i>via</i> a highly efficient microwave strategy for the hydrogen evolution reaction in acidic and alkaline media. <i>Journal of Materials Chemistry A</i> , 2024, 12, 4108-4122.	10.3	0
926	Predication of Selective Ring-opening Hydrogenolysis for Furfuryl Alcohol to Produce Pentanediol over Dual-atom Catalysts. <i>Chemical Research in Chinese Universities</i> , 2024, 40, 55-63.	2.6	0
927	High-efficient solar-driven nitrogen fixation by modulating the internal electric-field of MOFs via n-site-enhanced charge density difference in organic ligands. <i>Chemical Engineering Journal</i> , 2024, 482, 148853.	12.7	2
928	Examination the potential of Co doped nanocages ( $\text{Co-C}_{72}$ , $\text{Co-Si}_{72}$ and $\text{Co-Al}_{36}\text{N}_{36}$ ) as catalysts for $\text{N}_2$ reduction to $\text{NH}_3$ by theoretical methods. <i>Inorganic Chemistry Communication</i> , 2024, 162, 112080.	3.9	0
929	Regulation of the Fe/Ni ratio on the morphology of $\text{Fe Ni O}_4$ and the performance of nitrate reduction in ammonia synthesis. <i>Journal of Colloid and Interface Science</i> , 2024, 662, 39-47.	9.4	0
930	Highly efficient Ru-based Heusler alloys for nitrogen reduction reaction: Breaking scaling relations and regulating potential determining steps. <i>Applied Surface Science</i> , 2024, 655, 159686.	6.1	0
931	Ambient Electrochemical Ammonia Synthesis: From Theoretical Guidance to Catalyst Design. <i>Advanced Science</i> , 2024, 11, .	11.2	0
932	Fast and Sensitive Detection of Ammonia from Electrochemical Nitrogen Reduction Reactions by $^1\text{H}$ NMR with Radiation Damping. <i>Small Methods</i> , 0, , .	8.6	0
933	Ceramic-membrane cells for electrocatalytic ammonia synthesis. , 2024, , 65-109.		0
934	The current methods of ammonia synthesis by Haber-Bosch process. , 2024, , 1-32.		0
935	Leveraging Dual-Atom Catalysts for Electrocatalysis Revitalization: Exploring the Structure-Performance Correlation. <i>Advanced Energy Materials</i> , 0, , .	19.5	0
936	High throughput screening for electrocatalysts for nitrogen reduction reaction using metal-doped bilayer borophene: A combined approach of DFT and machine learning. <i>Molecular Catalysis</i> , 2024, 557, 113972.	2.0	0
937	Current Status and Perspectives of Dual-Atom Catalysts Towards Sustainable Energy Utilization. <i>Nano-Micro Letters</i> , 2024, 16, .	27.0	0
938	Recent advances of metal suboxide catalysts for carbon-neutral energy applications. , 2024, 2, 45-82.		0

#	ARTICLE	IF	CITATIONS
939	Supervised AI and Deep Neural Networks to Evaluate High-Entropy Alloys as Reduction Catalysts in Aqueous Environments. ACS Catalysis, 2024, 14, 3742-3755.	11.2	0
940	Multivalent Sulfur Vacancy-Rich NiCo <sub>2</sub> S <sub>4</sub> @MnO <sub>2</sub> Urchin-Like Heterostructures for Ambient Electrochemical N <sub>2</sub> Reduction to NH <sub>3</sub> . Small, 0, , .	10.0	0
941	Novel metal-free holey BC <sub>4</sub> N nanostructure for enhanced photoelectrocatalytic nitrogen reduction: insight from grand-canonical density functional theory. Science China Materials, 2024, 67, 1192-1201.	6.3	0
942	Coal-Fired Power Plants Using Ammonia for Flexibility Enhancement under Carbon Control Strategies: Status, Development, and Perspectives. Energy & Fuels, 2024, 38, 4946-4965.	5.1	0
943	Recent advances in 2D structured materials with defect-exploiting design strategies for electrocatalysis of nitrate to ammonia. , 0, 4, .		0
944	Lithium-mediated nitrogen reduction to ammonia via the catalytic solid-electrolyte interphase. Nature Catalysis, 2024, 7, 231-241.	34.4	0
945	Enhanced electrochemical reduction of N <sub>2</sub> to NH <sub>3</sub> by interfacial engineering of biomass-derived Fe, Mo-bimetallic composite. Electrochimica Acta, 2024, 484, 144096.	5.2	0
946	Two-Dimensional Layered Heterojunctions for Photoelectrocatalysis. ACS Nano, 2024, 18, 9245-9284.	14.6	0
947	â††â° æ³>â‡†½ç†è°âœ~æ°@è¿~âŽŸââ°”â¬â€-â‰‰,è®¼è@jă,çš,,â°”ç”~è¿â±•. Science China Materials, 2024, 67, 1111-1123	11.1	0
948	Advancements in Electrocatalytic Nitrogen Reduction: A Comprehensive Review of Single-Atom Catalysts for Sustainable Ammonia Synthesis. Small, 0, , .	10.0	0
949	Advances in regulating the electron spin effect toward electrocatalysis applications. EScience, 2024, , 100264.	41.6	0
950	Evolution of Metal Tellurides for Energy Storage/Conversion: From Synthesis to Applications. Small, 0, , .	10.0	0