Electronic Supplementary Material (ESI) for Green Chemistry.

Supporting Information

Designing bifunctional catalysts for urea electrolysis: Progress and perspectives

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Table S1. Summary of bifunctional catalysts for urea electrolysis.

Catalyst	Electrolyte	E_{10} (V)	Ref.
N-doped $FePS_3$	1 M KOH +0.33 M urea	1.26	Ionics, 2022, 28, 3927–3934.
Co_3O_4@NC/NiO	1 M KOH +0.3 M urea	1.31	*Adv. Sustainable Syst.* 2022, 6, 2200038.
Pt/D-NiCo LDH	1 M KOH +0.33 M urea	1.32	Journal of Power Sources, 2023, 558, 232563
P modified AuRh	1 M KOH +0.33 M urea	1.33	J. Mater. Chem. A, 2022,10, 3086-3092
Rh/NiV-LDH	1 M KOH +0.33 M urea	1.336	Science Bulletin, 2022, 67, 1763-1775
Ni-Co-B	1 M KOH +0.33 M urea	1.34	Journal of Colloid and Interface Science, 2021, 601, 317-325
NiFeRh-LDH	1 M KOH +0.33 M urea	1.35	Applied Catalysis B: Environmental, 2021, 284, 119740
$FeCoNiF_2$	1 M KOH +0.33 M urea	1.352	Inorg. Chem. 2023, 62, 26, 10298–10306
Ni–Mn–Se	1 M KOH +0.33 M urea	1.352	Chem. Commun., 2022,58, 3545-3548
CoO–Co_4N@NiFe-LDH	1 M KOH +0.33 M urea	1.355	ACS Sustainable Chem. Eng. 2021, 9, 42, 14180–14192
Feather-like NiCoP	1 M KOH +0.33 M urea	1.36	Ceramics International, 2023, 49, 659-668
Ni_3N/Mo_2N	1 M KOH +0.33 M urea	1.36	ACS Catal. 2023, 13, 7, 4091–4100
P-NiFe	1 M KOH +0.33 M urea	1.37	Sci Rep, 2021, 11, 22003
NiFeP/P-doped FeOOH	1 M KOH +0.33 M urea	1.37	Journal of Colloid and Interface Science, 2023, 631, 56-65
N-doped NiFeOOH	1 M KOH +0.33 M urea	1.37	Chemical Engineering Journal, 2021, 414, 128753
NiP	1 M KOH +0.33 M urea	1.37	Ind. Eng. Chem. Res. 2021, 60, 3, 1185–1193
SnS	1 M KOH +0.33 M urea	1.37	Dalton Trans., 2021,50, 12723-12729
W-NiS_2/MoO_2	1 M KOH +0.33 M urea	1.372	Chemical Engineering Journal, 2022, 432, 134274
V-doped Co_3O_4	1 M KOH +0.33 M urea	1.39	Environmental Research, 2023, 236, 116818
Holey NiFe-LDH	1 M KOH +0.33 M urea	1.391	Journal of Colloid and Interface Science, 2022, 618, 141-148
Co_xMo_yCH	1 M KOH +0.33 M urea	1.40	Journal of Energy Chemistry, 2022, 70, 258-265
NiO/Ni_3S_2	1 M KOH +0.33 M urea	1.408	J. Phys. Chem. C 2022, 126, 42, 18067–18077

Ni–Se	1 M KOH +0.33 M urea	1.41	Journal of Alloys and Compounds, 2023, 937, 168460
Ru–Ni_3N@NC	1 M KOH +0.33 M urea	1.41	International Journal of Hydrogen Energy, 2022, 47, 25081-25089
Ni-Co-P/rGO	1 M KOH +0.33 M urea	1.419	Journal of Electroanalytical Chemistry, 2023, 942, 117528
$MoNiFeS_x$@$FeNi_3$	1 M KOH +0.33 M urea	1.43	Journal of Alloys and Compounds, 2022, 902, 163670
FeNi-MOF	1 M KOH +0.33 M urea	1.431	Journal of Power Sources, 2022, 520, 230882
NiMoSe	1 M KOH +0.33 M urea	1.44	International Journal of Hydrogen Energy 2021, 46, 37792-37801
Ni/NiO@CrO_x	1 M KOH +0.33 M urea	1.44	Journal of Colloid and Interface Science, 2023, 629, 501-510
NiFe LDH-$NiFeS_x$	1 M KOH +0.33 M urea	1.44	Energies 2023, 16(3), 1092
Ni/r-$Ni(OH)_2$@C	1 M KOH +0.33 M urea	1.45	Journal of Alloys and Compounds, 2023, 959, 170545
Mo-doped Ni_3S_2	1 M KOH +0.3 M urea	1.45	J. Mater. Chem. A, 2021,9, 3418-3426
$NiCo_2S_4$	1 M KOH +0.33 M urea	1.45	Nanoscale, 2021,13, 1680-1688
NiO/Ni_2P	1 M KOH +0.33 M urea	1.457	Journal of Colloid and Interface Science, 2022,615, 163-172
V-$FeNi_3N$/Ni_3N	1 M KOH +0.33 M urea	1.46	ACS Appl. Mater. Interfaces 2021, 13, 48, 57392–57402
$Fe_{11.1\%}$–Ni_3S_2	1 M KOH +0.33 M urea	1.46	J. Mater. Chem. A, 2018,6, 4346-4353
$Ni_{1.6}Co_{0.4}P$/C	1 M KOH +0.33 M urea	1.47	Nanoscale, 2020,12, 16123-16135
$Ni(OH)_2$	1 M KOH +0.33 M urea	1.47	Electrochimica Acta, 2023, 440, 141726
Ni_9S_8/CuS/Cu_2O	1 M KOH +0.33 M urea	1.47	International Journal of Hydrogen Energy, 2021, 46, 20950-20960
Ni-NiO	1 M KOH +0.33 M urea	1.48	Mater. Adv., 2021, 2, 2104-2111
P-modified $NiMoO_{4-x}$	1 M KOH +0.33 M urea	1.48	Journal of Colloid and Interface Science, 2023, 629, 297-309
Fe-doped Ni_3S_2	1 M KOH +0.33 M urea	1.49	ACS Appl. Energy Mater. 2022, 5, 1, 1183–1192
NiFeCo LDH	1 M KOH +0.33 M urea	1.49	ACS Sustainable Chem. Eng. 2019, 7, 11, 10035–10043
$NiCo_2S_4$ NS	1 M KOH +0.33 M urea	1.49	ACS Sustainable Chem. Eng. 2018, 6, 4, 5011–5020
NiTe/rGO	1 M KOH +0.33 M urea	1.5	ACS Appl. Energy Mater. 2019, 2, 5, 3363–3372
Se/$NiSe_2$	1 M KOH	1.5	Journal of Colloid and Interface Science, 2023,

	+0.33 M urea		630, 844-854
Ce-Ni_2P	1 M KOH +0.3 M urea	1.51	Journal of Alloys and Compounds, 2022, 912, 165234
Ni–Co_9S_8	1 M KOH +0.33 M urea	1.52	Electrochimica Acta, 2020, 338, 135883
Ni_5P_4@NiO_x	1 M KOH +0.33 M urea	1.53	Fuel, 2022, 315, 123279
NiF_3/Ni_2P	1 M KOH +0.33 M urea	1.54	Chemical Engineering Journal, 2022, 427, 130865
NiMo@ZnO	1 M KOH +0.33 M urea	1.549	Journal of Alloys and Compounds, 2020, 844, 155382
Co_8FeS_8@CoFe–MOF	1 M KOH +0.33 M urea	1.55	Journal of Colloid and Interface Science, 2023, 634, 630-641
$FeNi_2S_4$/CoFe	1 M KOH +0.33 M urea	1.56	International Journal of Hydrogen Energy, 2023, 48, 5080-5094
MoO_2/S-$NiMoO_4$	1 M KOH +0.33 M urea	1.574	Applied Surface Science, 2022, 600, 154116
CoS_2	1 M KOH +0.3 M urea	1.59	Electrochimica Acta, 2017, 246, 776-782
Ni/C	1 M KOH +0.33 M urea	1.60	ACS Appl. Mater. Interfaces, 2018, 10, 5, 4750–4756
CoS_2/MoS_2	1 M KOH +0.5 M urea	1.29	Adv. Energy Mater. 2018, 8, 1801775
P-$CoS_x(OH)_y$	1 M KOH +0.5 M urea	1.3	J. Mater. Chem. A, 2021,9, 5664-5674
ZnS@Co_9S_8@Ni_3S_2	1 M KOH +0.5 M urea	1.314	Green Energy & Environment, 2023, 8, 798-811
Fe-$Co_{0.85}$Se/FeCo LDH	1 M KOH +0.5 M urea	1.32	Adv. Funct. Mater. 2023, 33, 2212811.
Ni/W_5N_4	1 M KOH +0.5 M urea	1.33	Applied Catalysis B: Environmental, 2023, 323, 122168
$NiMoO_4$–$Ni(OH)_2$	1 M KOH +0.5 M urea	1.341	International Journal of Hydrogen Energy, 2020, 45, 21040-21050
NiFe-LDH/MWCNTs	1 M KOH +0.5 M urea	1.344	International Journal of Hydrogen Energy, 2020, 45, 14660-14668
Ni_3N/$Ni_{0.2}Mo_{0.8}N$	1 M KOH +0.5 M urea	1.348	Chemical Engineering Journal, 2021, 409, 128240
Mo–NiCoP@NiCoP/$Ni_XCo_YH_2PO_2$	1 M KOH +0.5 M urea	1.348	International Journal of Hydrogen Energy, 2022, 47, 10825-10836
NiCoP/CoP	1 M KOH +0.5 M urea	1.355	Mater. Chem. Front., 2022,6, 1681-1689
Ni_3S_2/Ni	1 M KOH +0.5 M urea	1.36	ACS Appl. Mater. Interfaces 2021, 13, 30, 35709–35718
Ni_3S_2–$NiMoO_4$	1 M KOH +0.5 M urea	1.36	ACS Appl. Mater. Interfaces 2022, 14, 41, 46481–46490
Hollow NiCoP Nanoprisms	1 M KOH +0.5	1.36	Small 2022, 18, 2205547

	M urea		
O-NiMoP	1 M KOH +0.5 M urea	1.36	Adv. Funct. Mater. 2021, 31, 2104951
Ni-NiO-MoNi	1 M KOH +0.5 M urea	1.37	ACS Sustainable Chem. Eng. 2020, 8, 18, 7174–7181
Co-doped $Ni(OH)_2$	1 M KOH +0.5 M urea	1.37	Journal of Catalysis, 2020, 381, 454-461
$FeNi_3$-MoO_2	1 M KOH +0.5 M urea	1.37	ACS Appl. Mater. Interfaces 2021, 13, 14, 16355–16363
$Ni(OH)_2$/NiO-C/WO_3	1 M KOH +0.5 M urea	1.37	Chemical Engineering Journal, 2022, 433, 134497
Ni-Mo-S	1 M KOH +0.5 M urea	1.377	Journal of Alloys and Compounds, 2022, 899, 163346
Ni_3S_2-NiS	1 M KOH +0.5 M urea	1.378	ACS Sustainable Chem. Eng. 2021, 9, 46, 15582–15590
NiS_2/VS	1 M KOH +0.5 M urea	1.379	Journal of Alloys and Compounds, 2023, 945, 169290
$Cu_{0.5}Ni_{0.5}$ Alloy	1 M KOH +0.5 M urea	1.38	Small 2023, 19, 2300959.
Ni_2P/G	1 M KOH +0.5 M urea	1.39	J Mater Sci, 2021, 56, 17709–17720
$ZnCo_2O_4$	1 M KOH +0.5 M urea	1.39	Journal of Colloid and Interface Science, 2023, 643, 403-408
Mo–Co–S–Se	1 M KOH +0.5 M urea	1.4	ACS Sustainable Chem. Eng. 2019, 7, 19, 16577–16584
NiS@Ni_3S_2/$NiMoO_4$	1 M KOH +0.5 M urea	1.4	J. Mater. Chem. A, 2020,8, 18055-18063
N-Co_9S_8/Ni_3S_2	1 M KOH +0.5 M urea	1.4	Small 2023, 19, 2207425
$NiCoP_x$@NiFeCo-MOF	1 M KOH +0.5 M urea	1.4	Journal of Colloid and Interface Science, 2022, 628, 1008-1018
P-$CoNi_2S_4$	1 M KOH +0.5 M urea	1.402	Angew. Chem. Int. Ed. 2021, 60, 22885.
Ni_3N/rGO	1 M KOH +0.5 M urea	1.405	Nanomaterials 2019, 9(11), 1583
Mn-Doped $Ni(OH)_2$	1 M KOH +0.5 M urea	1.407	ACS EST Engg. 2022, 2, 5, 853–862
Cu-doped Ni_3S_2	1 M KOH +0.5 M urea	1.413	Applied Surface Science, 2022, 584, 152622
$Mo_{0.15}$-$FeCo_2P$	1 M KOH +0.5 M urea	1.415	International Journal of Hydrogen Energy, https://doi.org/10.1016/j.ijhydene.2023.06.240
V–Ni_3N	1 M KOH +0.5 M urea	1.416	J. Mater. Chem. A, 2021,9, 4159-4166
$Fe_xCo_{2-x}P$	1 M KOH +0.5 M urea	1.42	ChemSusChem 2019, 12, 4810.
Mo/Ni-P	1 M KOH +0.5	1.42	Journal of Colloid and Interface Science, 2022,

	M urea		622, 192-201
Leaf-like NiCoP	1 M KOH +0.5 M urea	1.42	J. Mater. Chem. A, 2019,7, 9078-9085
Fe-O-P	1 M KOH +0.5 M urea	1.43	Materials Research Bulletin, 2018, 100, 72-75
N,S-carbon/$MnFe_2O_4$	1 M KOH +0.5 M urea	1.43	Journal of Power Sources, 2021, 494, 229757
CoN/$Ni(OH)_2$	1 M KOH +0.5 M urea	1.43	Journal of Power Sources, 2020, 480, 229151
Ni_3S_2–Ni_3P	1 M KOH +0.5 M urea	1.43	ACS Appl. Mater. Interfaces 2021, 13, 23, 26948–26959
MoS_2/Ni_3S_2	1 M KOH +0.5 M urea	1.44	Journal of Colloid and Interface Science, 2022, 628, 446-455
MoO_2-MoO_3/Ni_2P	1 M KOH +0.5 M urea	1.44	Journal of Colloid and Interface Science, 2022, 614, 337-344
NiS/Ni_3S_4	1 M KOH +0.5 M urea	1.44	Journal of Colloid and Interface Science, 2022, 626, 848-857
$NiMoO_4$-MoS_2	1 M KOH +0.5 M urea	1.445	New J. Chem., 2022,46, 10280-10288
Ni/NiS/NiS_2@C(S, N)	1 M KOH +0.5 M urea	1.45	Colloids and Surfaces A: Physicochemical and Engineering Aspects, 2023, 671, 131659
FQD/CoNi-LDH	1 M KOH +0.5 M urea	1.45	Chemical Engineering Journal, 2020, 390, 124525
NiCoP/CoFeP	1 M KOH +0.5 M urea	1.46	International Journal of Hydrogen Energy, 2021, 46, 37872-37883
NiS/MoS_2	1 M KOH +0.5 M urea	1.46	Chemical Engineering Journal, 2022, 443, 136321
Ni_2P/Fe_2P	1 M KOH +0.5 M urea	1.47	Journal of Colloid and Interface Science, 2019, 541, 279-286
Ni@N-doped carbon dots	1 M KOH +0.5 M urea	1.47	Mater. Chem. Front., 2023, 7, 3340-3348
Ni-S-Se	1 M KOH +0.5 M urea	1.47	Nano Energy, 2021, 81, 105605
Ni/NiO@NCS	1 M KOH +0.5 M urea	1.475	Nano Res. 2022, 15, 7124–7133
CoS_x/Co-MOF	1 M KOH +0.5 M urea	1.48	Inorg. Chem. Front., 2020,7, 2602-2610
Cu_2S@Ni_3Se_2	1 M KOH +0.5 M urea	1.48	Journal of Colloid and Interface Science 2021, 592, 13-21
$CoSe_2$	1 M KOH +0.5 M urea	1.49	Journal of Power Sources, 2021, 491, 229592
Co–Ni/Se	1 M KOH +0.5 M urea	1.49	Inorg. Chem. Front., 2021,8, 2788-2797
Mn-Ni_2P/NiFe LDH	1 M KOH +0.5 M urea	1.494	Chem. Commun., 2023,59, 8743-8746
Ni_2P/Fe_2P	1 M KOH +0.5	1.5	ACS Sustainable Chem. Eng. 2020, 8, 42,

	M urea		16037–16045
Ni_3S_2/MWCNTs	1 M KOH +0.5 M urea	1.509	J. Electrochem. Soc. 2020, 167 126514
CoMn/$CoMn_2O_4$	1 M KOH +0.5 M urea	1.51	Adv. Funct. Mater. 2020, 30, 2000556.
MnS/ZnS	1 M KOH +0.5 M urea	1.51	Renewable Energy, 2022, 193, 715-724
Ni/Mo_2C	1 M KOH +0.5 M urea	1.51	Journal of Catalysis, 2022, 405, 606-613
Ni_3S_2/$Cr(OH)_3$-Ti_3C_2	1 M KOH +0.5 M urea	1.52	Nanoscale, https://doi.org/10.1039/D3NR02524A
CrP/CoP	1 M KOH +0.5 M urea	1.52	International Journal of Hydrogen Energy, 2023, 48, 7655-7669
FeP_4@Ni-Co-P	1 M KOH +0.5 M urea	1.52	Nano Research, 2022, 15, 1916–1925
Ni terephthalate	1 M KOH +0.5 M urea	1.52	Chemical Engineering Journal, 2020, 395, 125166
Co/Co-Mo oxides	1 M KOH +0.5 M urea	1.525	Journal of Colloid and Interface Science, 2022, 612, 413-423
Fe_7Se_8@Fe_2O_3	1 M KOH +0.5 M urea	1.55	International Journal of Hydrogen Energy, 2022, 47, 35203-35214
NiMoS	1 M KOH +0.5 M urea	1.59	Nano Research, 2018, 11, 988–996
Ni-Mo alloy	1 M KOH +0.1 M urea	1.43	Nano Energy, 2019, 60, 894-902
CoP/C	1 M KOH +0.1 M urea	1.4	Applied Surface Science, 2020, 506, 144977
$NiMoO_4$@NiFeP	1 M KOH +0.2 M urea	1.3	Inorg. Chem. 2023, 62, 12, 4960–4970
Mo–Ni_2P@NiO/NC	1 M KOH +0.2 M urea	1.496	New J. Chem., 2023,47, 12620-12627
NiS/MoS_2	1 M KOH +0.4 M urea	1.42	Journal of Solid State Chemistry, 2020, 292, 121644
MoS_2/Ni_3S_2	1 M KOH +0.33 M urea	1.45 (20)	Chem. Commun., 2018,54, 5181-5184
Ni_3S_2	1 M KOH +0.33 M urea	1.49 (20)	Catalysis Today, 2020, 355, 596-601
Ni–S@N-Doped Carbon	1 M KOH +0.33 M urea	1.5 (20)	ACS Appl. Mater. Interfaces 2021, 13, 3, 3937–3948
NiCoP Nanosheets	1 M KOH +0.33 M urea	1.25 (20)	ChemistrySelect, 2017, 2, 10285.
Co-doped Ni-P-O	1 M KOH +0.33 M urea	1.481 (20)	Journal of Alloys and Compounds, 2022, 914, 165362
$CoNi_2S_4$	1 M KOH +0.5 M urea	1.42 (20)	Applied Surface Science, 2023, 638, 158058
CoNiP@C	1 M KOH +0.5	1.43 (20)	Chemical Engineering Journal, 2022, 450,

	M urea		138225
Ni_5P_4/NCF	1 M KOH +0.33 M urea	1.67 (40)	Applied Surface Science, 2023, 624, 157173
NiVMnN	1 M KOH +0.33 M urea	1.61 (50)	Inorg. Chem., 2023, 62, 8, 3349–3357
Ni/$NiMoO_x$	1 M KOH +0.33 M urea	1.589 (50)	Journal of Colloid and Interface Science, 2023, 629, 1012-1020
CoNiOP	1 M KOH +0.33 M urea	1.42 (50)	Journal of Colloid and Interface Science, 2022, 607, 546-555
Ni_2P	1 M KOH +0.5 M urea	1.35 (50)	J. Mater. Chem. A, 2017,5, 3208-3213
Ni, N-codoped $NiMoO_4$	1 M KOH +0.5 M urea	1.533 (50)	Electrochimica Acta, 2021, 391, 138931
$Co_2Mo_3O_8$	1 M KOH +0.5 M urea	1.5 (50)	Nano Energy, 2021, 87, 106217
MoS_2/Ni_3S_2/NiFe-LDH	1 M KOH +0.5 M urea	1.343 (50)	International Journal of Hydrogen Energy, 2020, 45, 23-35
NiP_2/ZnP_4	1 M KOH +0.5 M urea	1.69 (50)	International Journal of Hydrogen Energy, 2021, 46, 38247-38257
hollow NiCoP Nanosheets	1 M KOH +0.5 M urea	1.43 (50)	Colloids and Surfaces A: Physicochemical and Engineering Aspects, 2022, 651, 129695
Ru-modified NiFe MOF	1 M KOH +0.33 M urea	1.47 (100)	Journal of Colloid and Interface Science, 2022, 605, 779-789
Ni_2P@Ni-MOF	1 M KOH +0.33 M urea	1.65 (100)	Sci. Rep., 2021, 11, 21414
Ni_2P/NiCoP	1 M KOH +0.33 M urea	1.41 (100)	Journal of Colloid and Interface Science, 2022, 608, 2932-2941
Ni-MoN	1 M KOH +0.33 M urea	1.54 (100)	Journal of Colloid and Interface Science, 2023, 634, 730-736
P-Ni@$CoMoO_4$	1 M KOH +0.33 M urea	1.5 (100)	Journal of Colloid and Interface Science, 2023, 636, 425-434
Co_3Mo_3N	1 M KOH +0.33 M urea	1.481 (100)	International Journal of Hydrogen Energy, 2022, 47, 11447-11455
$MoNi_4/MoO_x$	1 M KOH +0.33 M urea	1.5 (100)	Electrochimica Acta, 2020, 350, 136382
Defective $CoFe_2O_4$	1 M KOH +0.33 M urea	1.6 (100)	Chemical Engineering Journal, 2022, 432, 134275
Ni_2P/CoP/P,F-doped C	1 M KOH +0.5 M urea	1.57 (100)	Journal of Power Sources, 2022, 548, 232065
Fe_2P@NixP	1 M KOH +0.5 M urea	1.538 (100)	Chemical Engineering Journal, 2021, 417, 128067
Mn-doped NiS_x/NiO/Ni_3N	1 M KOH +0.5 M urea	1.7 (100)	Applied Surface Science, 2023, 619, 156789
$Ni_2P/Ni_{0.96}S$	1 M KOH +0.5 M urea	1.453 (100)	ACS Appl. Mater. Interfaces 2020, 12, 2, 2225–2233
CoP@Ni_3S_2	1 M KOH +0.5	1.574	Applied Surface Science, 2022,

	M urea	(100)	586, 152736
Ni_2P@N-doped carbon	1 M KOH +0.5 M urea	1.59 (100)	International Journal of Hydrogen Energy, 2022, 47, 28730-28739
Fe-doped Ni_3S_2	1 M KOH +0.5 M urea	1.57 (100)	Adv. Energy Mater. 2022, 12, 2201913.
CoN	1 M KOH +0.5 M urea	1.698 (100)	J Chem Sci, 2019, 131, 101
MoP@NiCo-LDH	1 M KOH +0.5 M urea	1.405 (100)	J. Mater. Chem. A, 2020,8, 18106-18116
$Mo_{0.2}Ni_{0.8}N/CeO_2$	1 M KOH +0.5 M urea	1.672 (100)	International Journal of Hydrogen Energy, https://doi.org/10.1016/j.ijhydene.2023.05.143
Ru-doped Co_2P/N-doped carbon	1 M KOH +0.5 M urea	1.58 (100)	Chemical Engineering Journal, 2021, 408, 127308
Co_2C/MoN	1 M KOH +0.5 M urea	1.646 (100)	International Journal of Hydrogen Energy, 2022, 47, 34715-34726
$NiMoO_4/Ni_3S_4/MoS_2$	1 M KOH +0.5 M urea	1.66 (100)	Applied Surface Science, 2023, 608, 155166
Ni@C–V_2O_3	1 M KOH +0.5 M urea	1.54 (100)	ACS Appl. Mater. Interfaces 2020, 12, 34, 38061–38069
NiCo-ZLDH	1 M KOH +0.5 M urea	1.948 (100)	Green Energy & Environment, https://doi.org/10.1016/j.gee.2022.05.001
Flower-like Ni_3N	1 M KOH +0.5 M urea	1.51 (100)	International Journal of Hydrogen Energy 2020, 45, 14199-14207
Ni_3N nanospheres	1 M KOH +0.5 M urea	1.42 (100)	ACS Appl. Mater. Interfaces 2019, 11, 14, 13168–13175
Ni_3S_2@$CoMoS_4$/NiFeOOH	1 M KOH +0.5 M urea	1.66 (100)	International Journal of Hydrogen Energy 2021, 46, 24078-24093
$Ni_2P/CoSe_2$	1 M KOH +0.5 M urea	1.607 (100)	International Journal of Hydrogen Energy 2022, 47, 29593-29603
P-doped NiCoZn LDH	1 M KOH +0.5 M urea	1.479 (100)	International Journal of Hydrogen Energy, 2021, 46, 25321-25331
Ni_2P@$Ni(OH)_2$	1 M KOH +0.5 M urea	1.55 (100)	ChemCatChem, 2022, 14, e202201047.
Ni_2Se_3–$CuSe_x$	1 M KOH +0.5 M urea	1.49 (100)	ChemSusChem, 2022, 15, e202201656.
Ni_3S_2–$NiMoO_4$	1 M KOH +0.5 M urea	1.61 (500)	ACS Appl. Mater. Interfaces, 2022, 14, 41, 46481–46490
$Ni_{12}P_5$/Ni-Pi	1 M KOH +0.5 M urea	1.662 (500)	ACS Sustainable Chem. Eng. 2020, 8, 19, 7463–7471
Ru/P dual-doped $NiMoO_4$	1 M KOH +0.5 M urea (seawater)	1.73 (500)	Applied Catalysis B: Environmental, 2023, 320, 121977