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Electronic Supplementary Information

Highly-Efficient OER catalyst enabled by In-situ Generated Manganese Spinel on Polyaniline with Strongly Coordination

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Table S1. The mass loading of Mn_3O_4/NF, PANI/NF, Mn_3O_4/PANI/NF and RuO_2/NF.

Catalyst	Mn_3O_4/NF	PANI/NF	Mn_3O_4/PANI/NF	RuO_2/NF
Mass loading (mg cm^{-2})	1.472	1.481	1.492	1.488

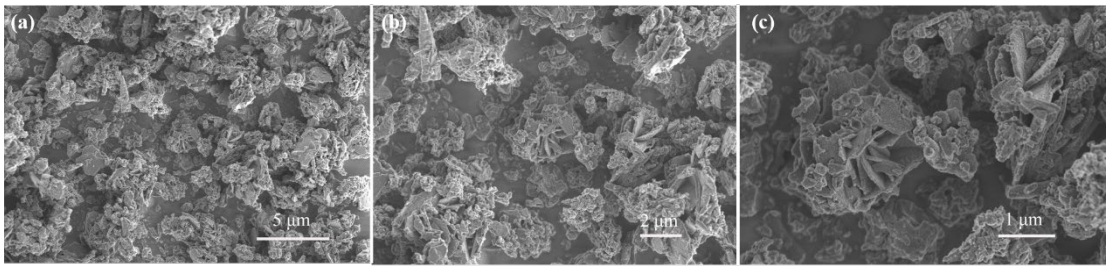

Figure S1. SEM images of PANI fibers.

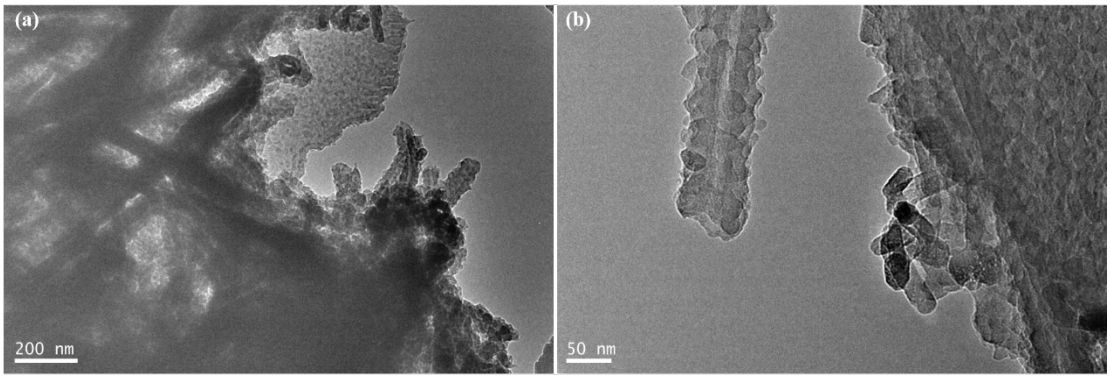

Figure S2. TEM images of Mn_3O_4/PANI nanocomposites

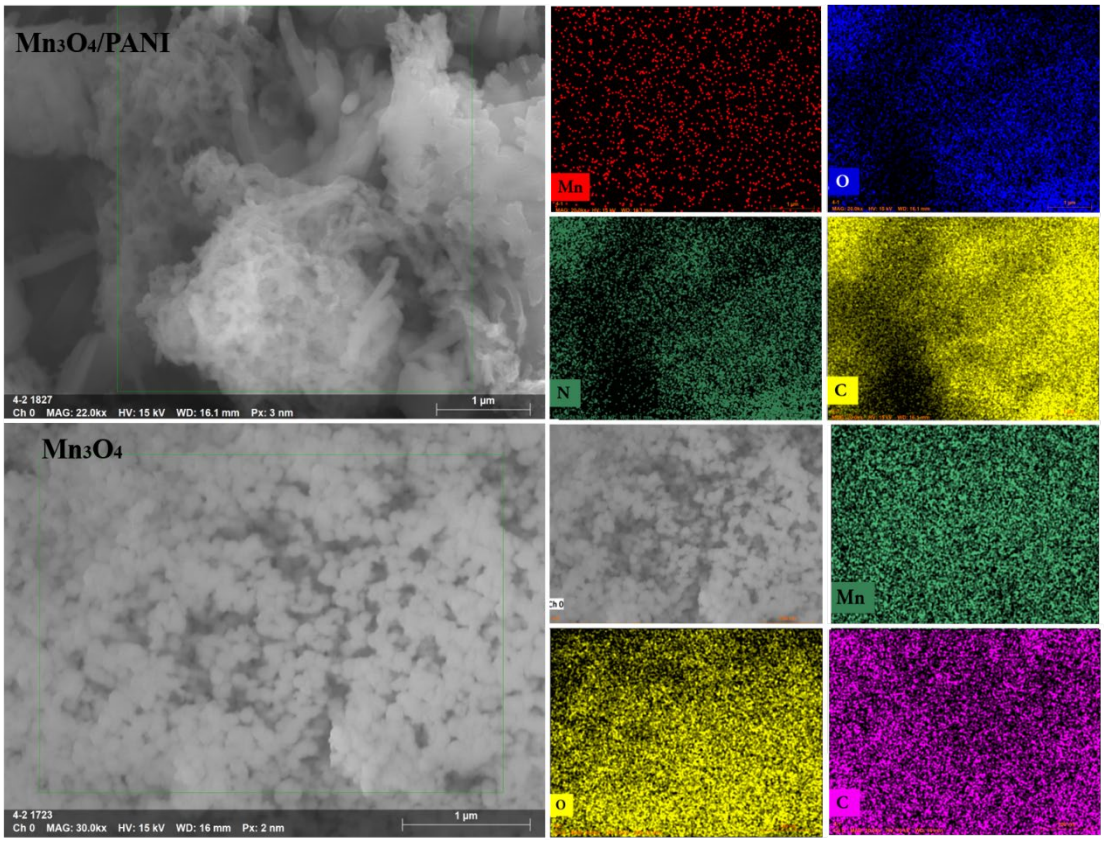

Figure S3. Element mapping image of Mn_3O_4/PANI nanocomposites and Mn_3O_4 nanoparticles

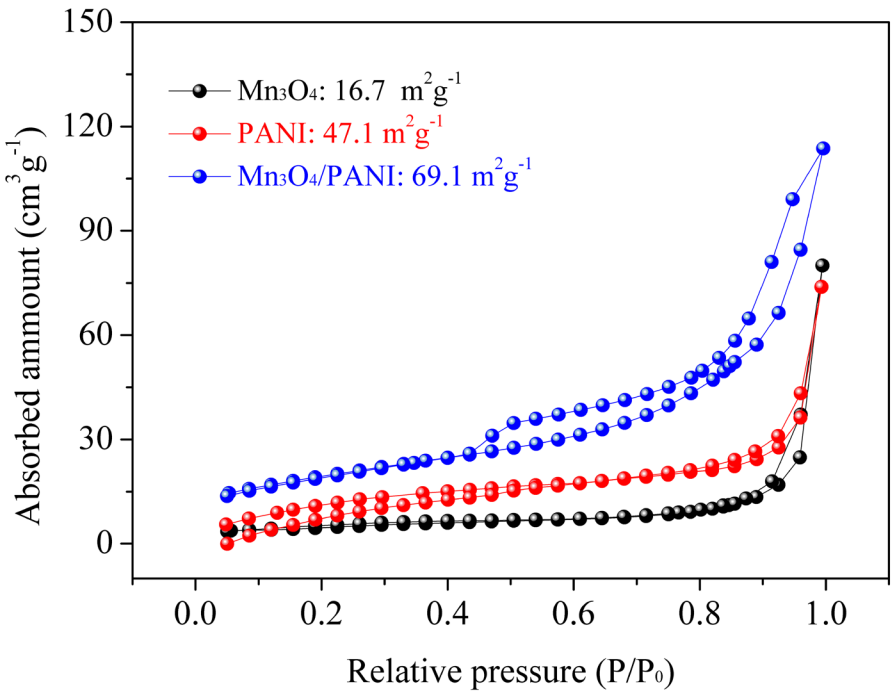

Figure S4. N_2 adsorption-desorption isotherms of the pristine Mn_3O_4 nanoparticles, PANI fibers and Mn_3O_4/PANI nanocomposites.

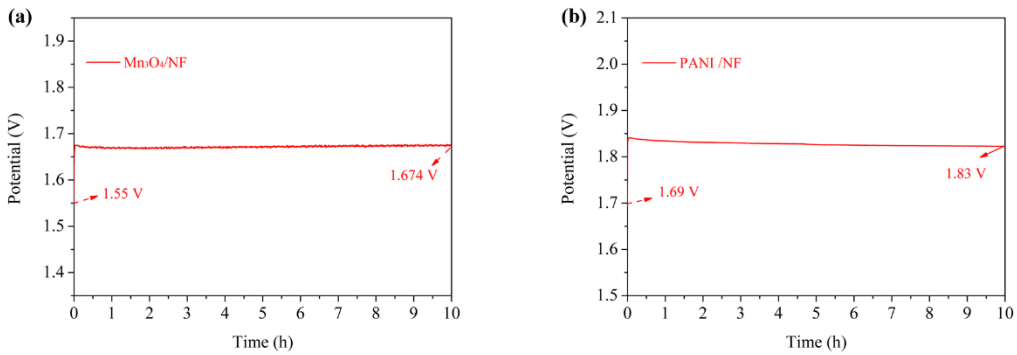

Figure S5. The chronoamperometry curves of Mn_3O_4/NF and PANI/NF for OER at 10 mA cm^{-2}.

Table S2. Comparison of Mn_3O_4/PANI/NF with Mn_3O_4-based and PANI-based electrocatalysts in alkaline media.

Catalysts	Overpotential (mV)/ Current density (10 mA/cm^2)	Tafel slope (mV/dec)	Reference
Mn_3O_4/PANI/NF	262	59.1	This work
NiO/MnO_2@PANI	345	42	[1]
Mn_3O_4@CS/CP	290	98	[2]
Mn_3O_4/SnO_2/ Co_3O_4	254	70.1	[3]
Mn_3O_4/ $CoMoO_4$-CoxOy	310	81	[4]
Mn_3O_4/NF	270	86	[5]
Mn_3O_4	370	85.6	[6]
Mn_3O_4	340	63	[7]
$MnNiO_3$/Mn_3O_4	274	50	[8]
Ni-Mn_3O_4	235	165	[9]
Mn@Cox$Mn_{3-x}O_4$	246	46	[10]
$CoFe_2O_4$ /PANI-MWCNTs	314	30.69	[11]
$NiCo_2O_4$–P-G	320	76	[12]
Co/PANI HNSs	291	54	[13]
Ni_2P@NPC@CC	280	62.4	[14]
$CuCo_2S_4$/PANI/NF	291	68	[15]
NF@NC-$CoFe_2O_4$/C	240	45	[16]
CVN-PANI/CC	263	64.1	[17]
NiSe–PANI	303	145.4	[18]
PANI/ZIF-67	330	37	[19]
$NiCo_2O_4$/PANI	400	153	[20]

Table S3. Comparison of Mn_3O_4/PANI/NF with recently reported representative electrocatalysts in alkaline media.

Catalysts	Overpotential (mV)/at 10 mA/cm^2	Tafel slope (mV/dec)	Reference
Mn_3O_4/PANI/NF	262	59.1	This work
$CoS_{1.97}$-CeO_2	264	49	[21]ADV MATER 2021, 33 (42), 2102593
$NiS_{0.5}Se_{0.5}$	257	61	[22] ADV MATER 2020, 32 (40), 2000231
$Ni_{60}Fe_{30}Mn_{10}$	≈350	62	[23]ENERG ENVIRON SCI 2016, 9 (2), 540-549
$Co_{2.25}Fe_{0.75}O_4$	350	50	[24]J MATER CHEM A 2021
$Ni_{0.65}Ga_{0.30}Fe_{0.05}$	200	42	[25]J MATER CHEM A 2021, 9 (10), 6223-6231
$Fe_{90}Nb_{10}$	340	40~50	[26]J MATER CHEM A 2020, 8 (46), 24598-24607
$Ni_{0.85}Fe_{0.15}PS$/NF	251	34	[27]J MATER CHEM A 2020, 8 (44), 23580-23589
$(Fe_{0.25}Ni0_{.75})_{12}P_5$@PPC	131	37	[28]J MATER CHEM A 2021, 9 (16), 10289-10296
$Fe_{0.4}Co_{0.6}Se_2$	270	36	[29]ENERG ENVIRON SCI 2021, 14 (1), 365-373
S-(Ni,Fe)OOH	300	48.9	[30]ENERG ENVIRON SCI 2020, 13 (10), 3439-3446
NiFe BTC-GNPs	220	51	[31]ENERG ENVIRON SCI 2020, 13 (10), 3447-3458
FeNi@NC	280	70	[32]ENERG ENVIRON SCI 2016, 9 (1), 123-129
Co/b-Mo_2C@N-CNTs	356	67	[33]ANGEW CHEM INT EDIT 2019, 58 (15), 4923-4928
NCN-1000-5	320	88	[34]ENERG ENVIRON SCI 2019, 12 (1), 322-333
G-$Ni_{0.5}Fe_{0.5}$	280	43	[35]ADV ENERGY MATER 2020, 10 (1), 1903215
Ni/Mo_2C-NCNFs	288	78.4	[36]ADV ENERGY MATER 2019, 9 (10), 1803185
$CoVO_x$-300	330	46	[37] APPL CATAL B-ENVIRON 2021, 282, 119571
Co_3ZnC/Co	366	81	[38]APPL CATAL B-ENVIRON 2016,4(23),9204-9212

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