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Ultra-highly-active methanol oxidation electrocatalyzed by a flexible integrated Pt-Zn array electrode

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Table S1. Actual contents of elements in different catalysts as determined by EDS, XPS and ICP-MS.

Catalysts	Designed ratio	EDS	XPS	ICP
Pt_4Zn_1/CC	80.00/20.00	92.42/7.58	89.87/10.13	97.76/2.24
Pt_7Zn_1/CC	87.50/12.50	94.01/5.99	91.58/8.42	99.34/0.66
Pt_9Zn_1/CC	90.00/10.00	97.55/2.45	94.98/5.02	99.77/0.23

Table S2. Electrochemical data of catalysts.

Samples	Electrolyte	Scan rate ($mV\ s^{-1}$)	Specific activity ($mA\ cm^{-2}$)	Mass activity ($A \cdot mg_{Pt}^{-1}$)	Reference
Pt/B_4C	H_2SO_4	50	63	—	[1]
$Pt_{99}Ni_1$/TiN NTs@NC	H_2SO_4	50	—	0.67	[2]
$Pt/TiO_2/Ti$	H_2SO_4	50	5.7	—	[3]
$Pt_{84}Fe_{16}$ UNWs	H_2SO_4	50	0.95	0.45	[4]
CoAuPdPt(II)	KOH	50	—	4.9	[5]
AgPtM	KOH	50	—	2.69	[6]
PtNiCu	H_2SO_4	50	—	0.87	[7]
$Pt_{0.8}Ru_{0.2}$ NDs/C	KOH	50	11.5	6.1	[8]
PtRuFe NWs/C	H_2SO_4	50	—	1.01	[9]
PtZn NWs	H_2SO_4	50	3.48	1.01	[10]
$ZNC\subset PtZn_{\delta}/C$	H_2SO_4	50	1.60	1.54	[11]
L10-PtZn/PC-acid	H_2SO_4	50	2.23	1.13	[12]
Pt_3Zn(AA)	H_2SO_4	50	1.65	1.25	[13]
Pt_1Fe_2/C	KOH	50	—	5.40	[14]
PtFeCo/Co-$NCNT_a$	H_2SO_4	50	4.22	1.63	[15]
PtZn/MWNT-E	H_2SO_4	50	1.03	0.61	[16]
PtSnZn/C	H_2SO_4	50	0.99	0.32	[17]
Pt_3Ir NA/CC	H_2SO_4	50	4.6	1.91	[18]
Pt_7Zn_1/CC	H_2SO_4	50	310.36	2.48	This work
Pt_7Zn_1/CC	KOH	50	905.99	5.89	This work

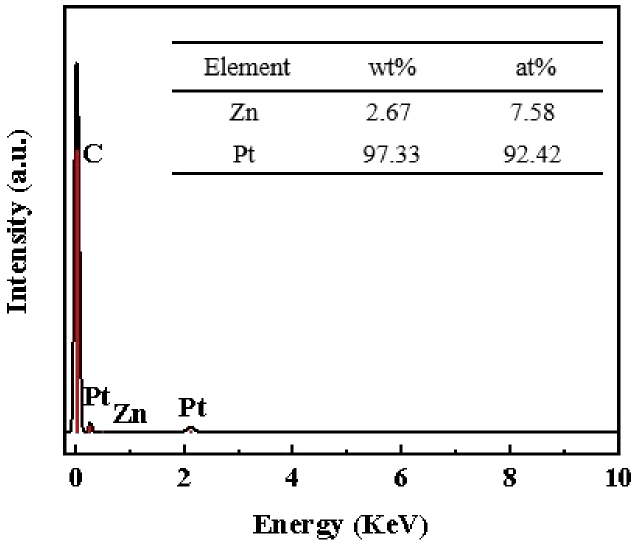

Figure S1. EDS spectrum of prepared Pt_4Zn_1/CC.

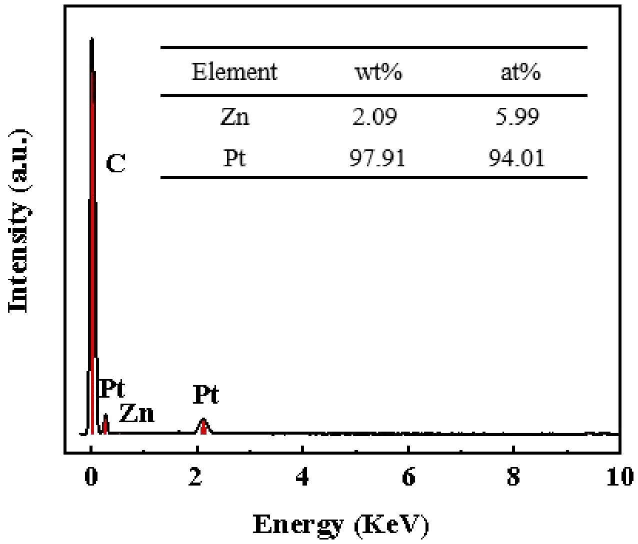

Figure S2. EDS spectrum of prepared Pt_7Zn_1/CC.

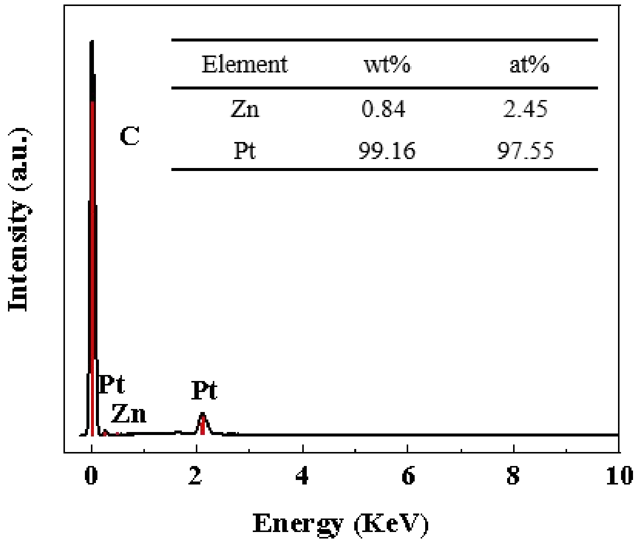

Figure S3. EDS spectrum of prepared Pt_9Zn_1/CC.

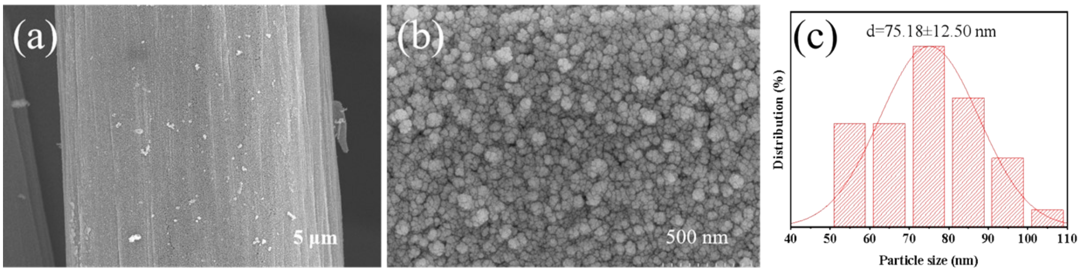

Figure S4. SEM images of Pt/CC

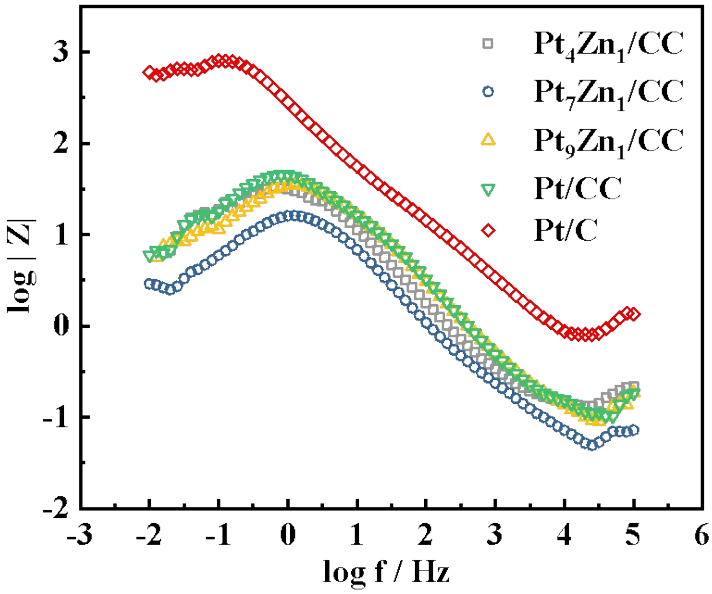

Figure S5. Bode absolute impedance of of Pt-Zn/CC, Pt/CC and Pt/C.

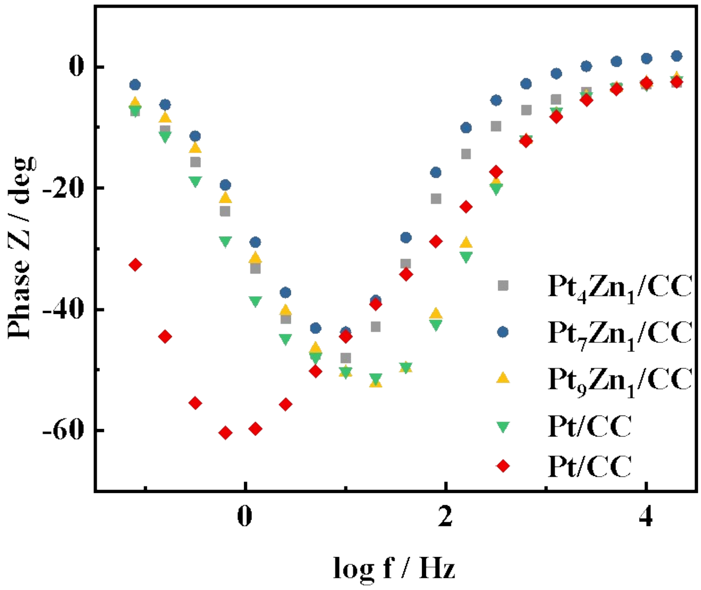

Figure S6. Bode phase angle plots of of Pt-Zn/CC, Pt/CC and Pt/C.

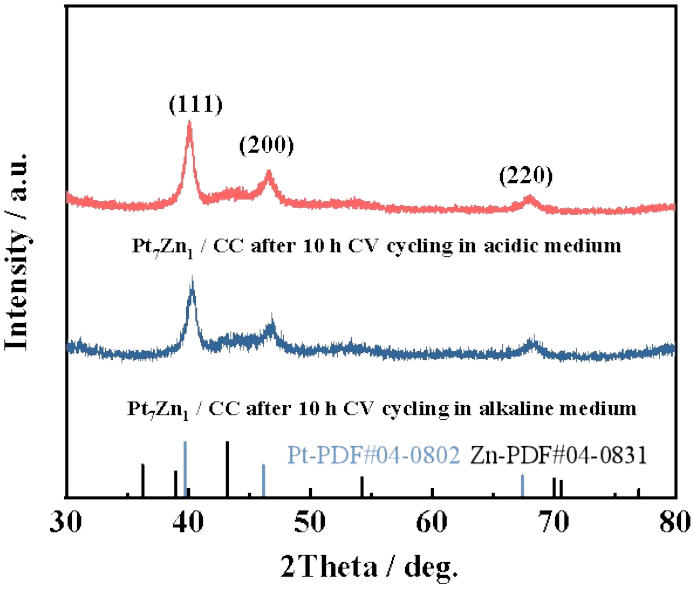

Figure S7. XRD patterns of Pt_7Zn_1/CC after MOR.

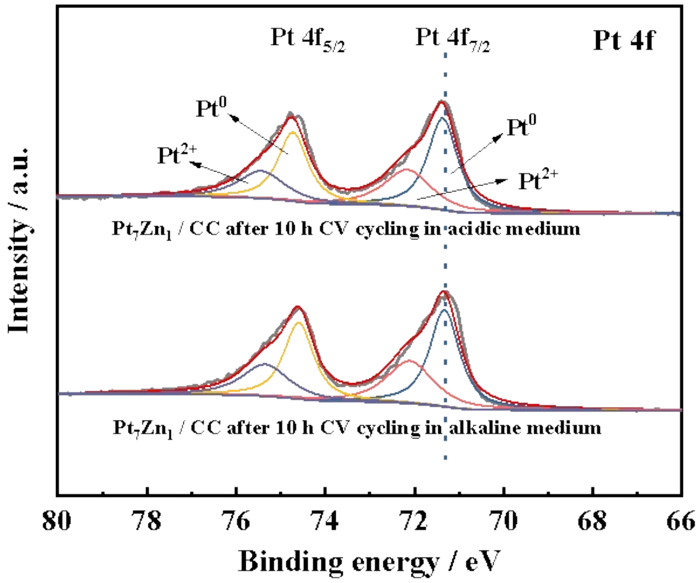

Figure S8. Pt 4f high-resolution XPS spectra of of Pt_7Zn_1/CC after MOR.

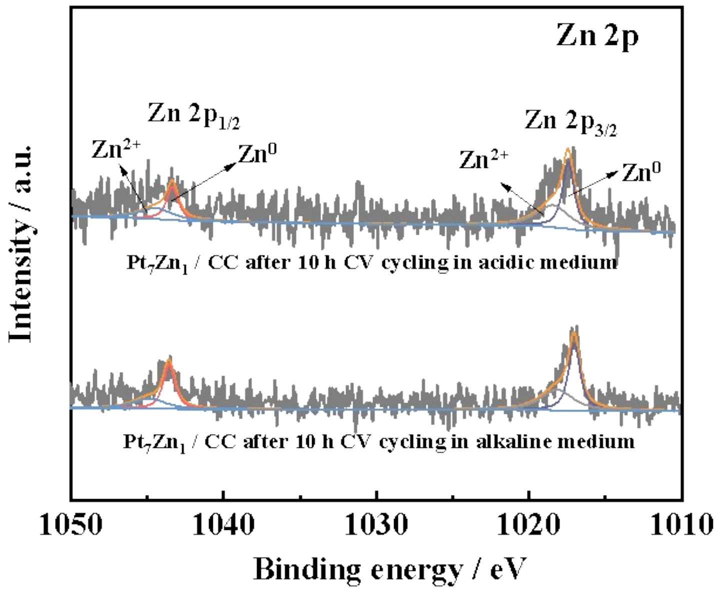

Figure S9. Zn 2p high-resolution XPS spectra of of Pt_7Zn_1/CC after MOR.

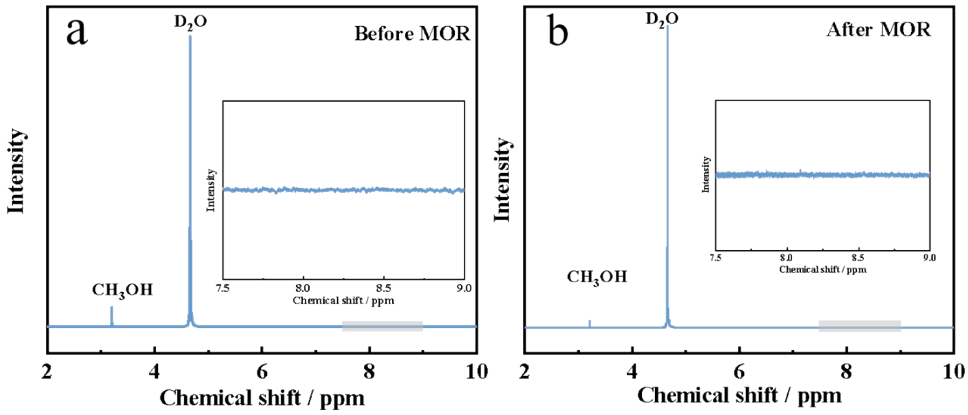

Figure S10. ^{1}H nuclear magnetic resonance spectra after the MOR test in acidic media.

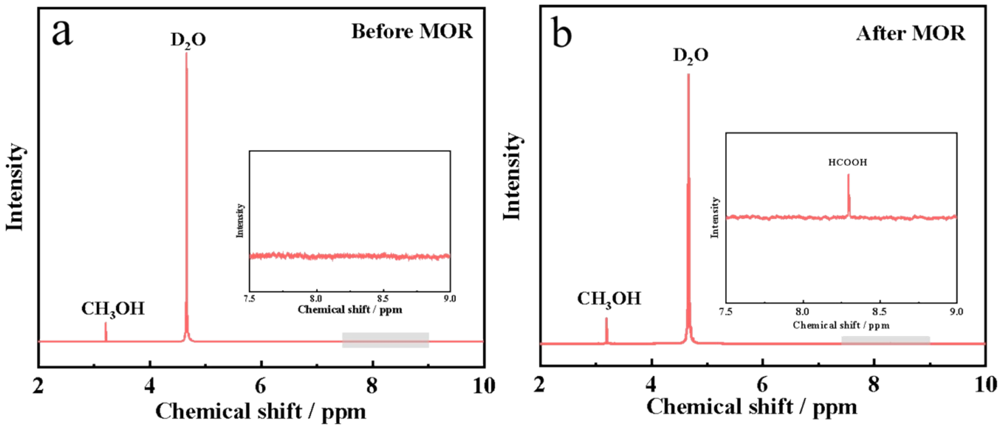

Figure S11. ^{1}H nuclear magnetic resonance spectra after the MOR test in alkaline media.

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