

Electronic Supplementary Information

Enhanced methanol oxidation and CO tolerance using oxygen-passivated molybdenum phosphide/carbon supported Pt catalysts

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Table S1 Electrochemical impedance spectroscopy (EIS) technique fitting results on the Pt-MoP/C-x and commercial Pt/C (10 wt.%) catalysts.

Sample	R_s (Ω)	R_{ct} (Ω)	Iteration	Chi-squared (%)
Pt-MoP/C-0	1.738	204.16	4	3.32
Pt-MoP/C-1	1.192	70.84	4	1.02
Pt-MoP/C-2	1.093	17.87	4	4.06
Pt-MoP/C-3	1.012	37.47	4	7.15
Pt-MoP/C-4	0.948	57.83	4	1.96
10 wt.% Pt/C	0.417	10.21	4	0.43

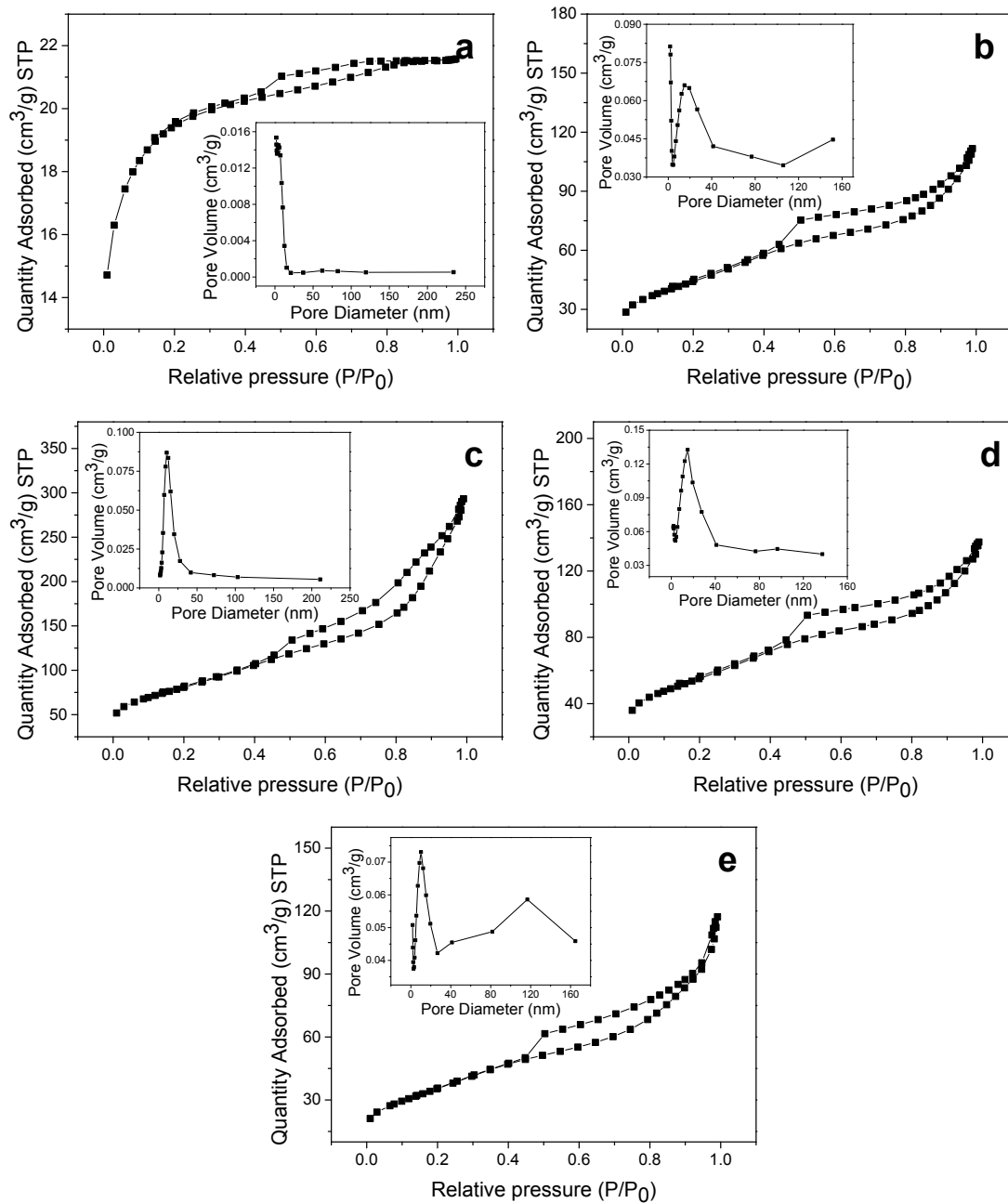


Fig. S1 N₂ adsorption/desorption isotherms and pore size distributions (inset) for the MoP/C-x (x=0, 1, 2, 3 and 4) composites.

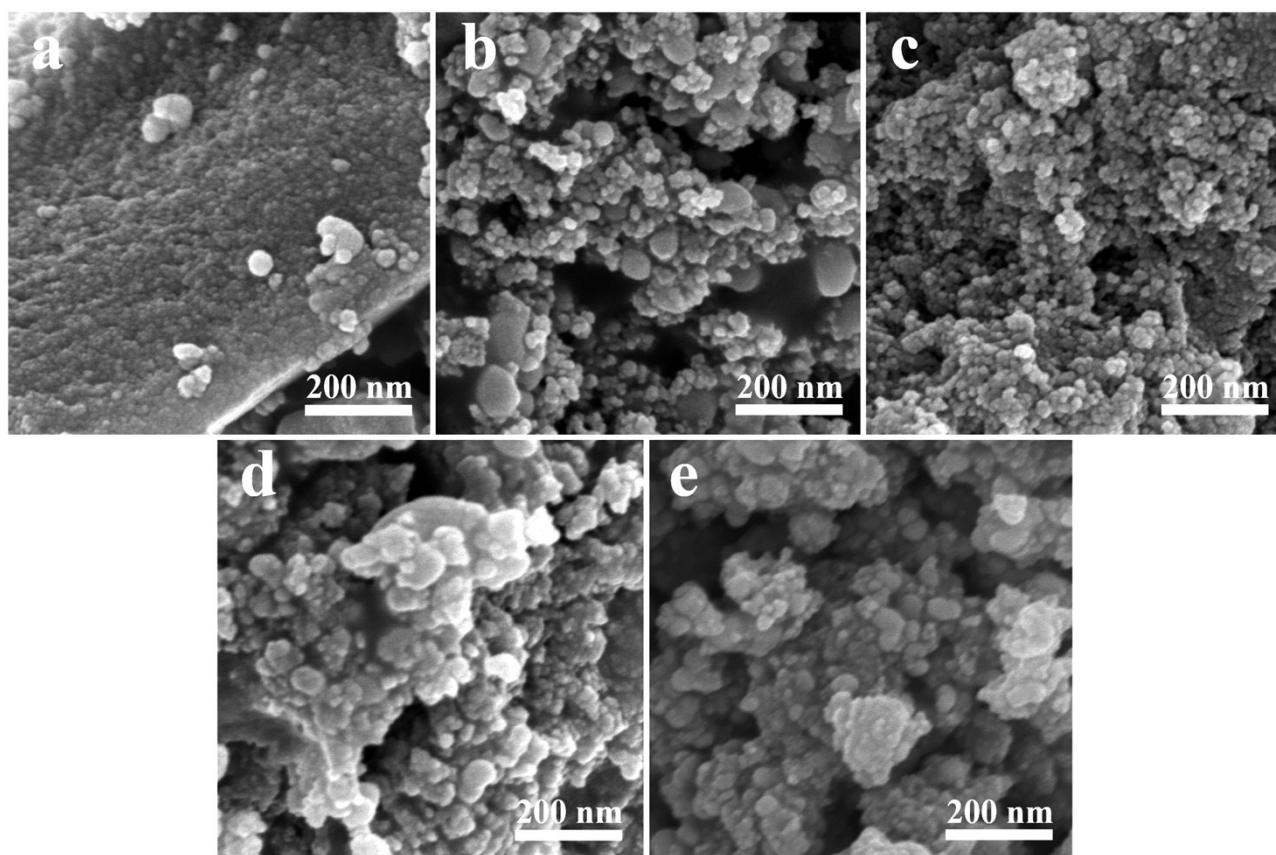


Fig. S2 SEM images of MoP/C-x ($x=0, 1, 2, 3$ and 4) composites.

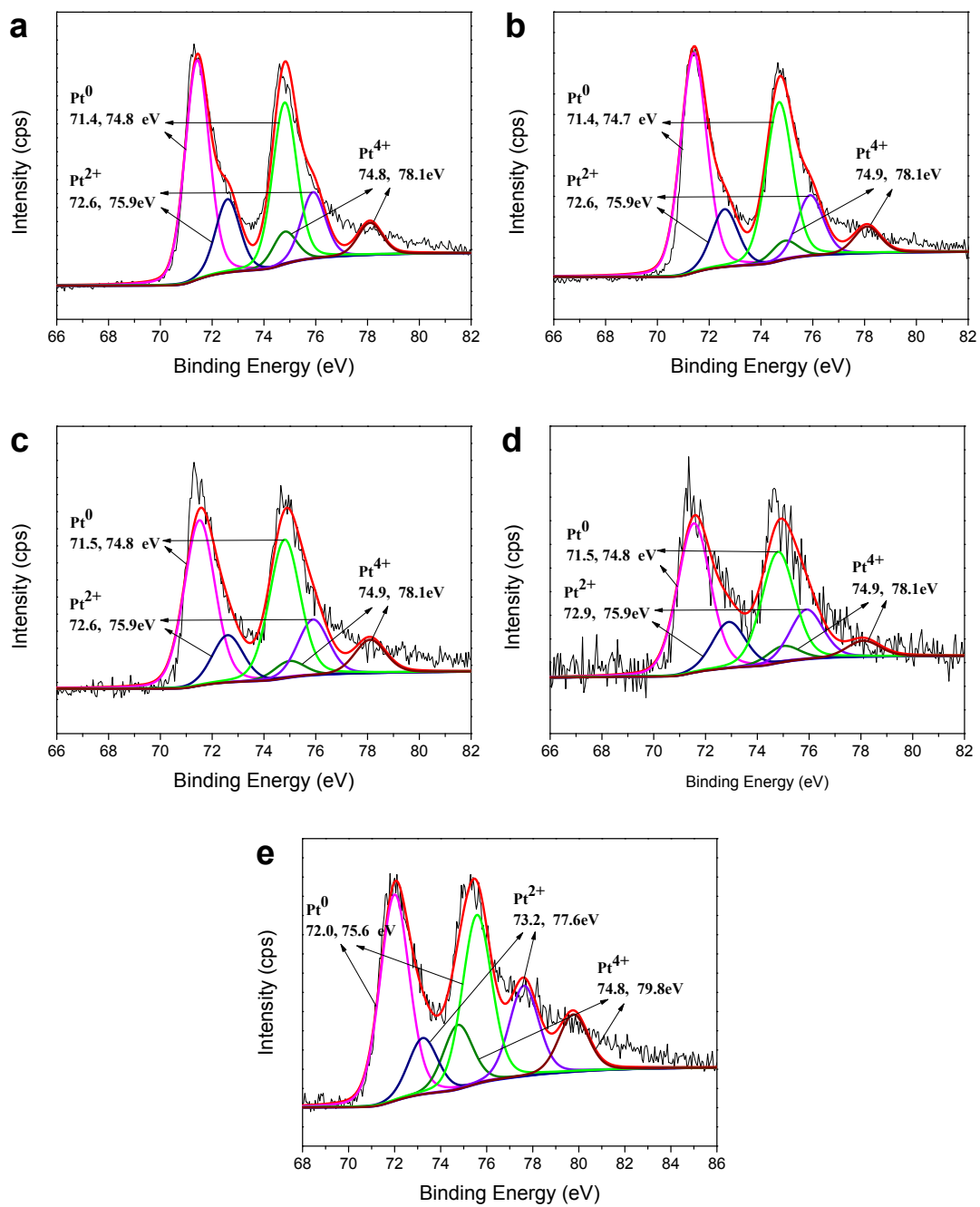


Fig. S3 XPS spectra of Pt 4f for Pt-MoP/C-x (x=0, 1, 3 and 4) and Pt/C.

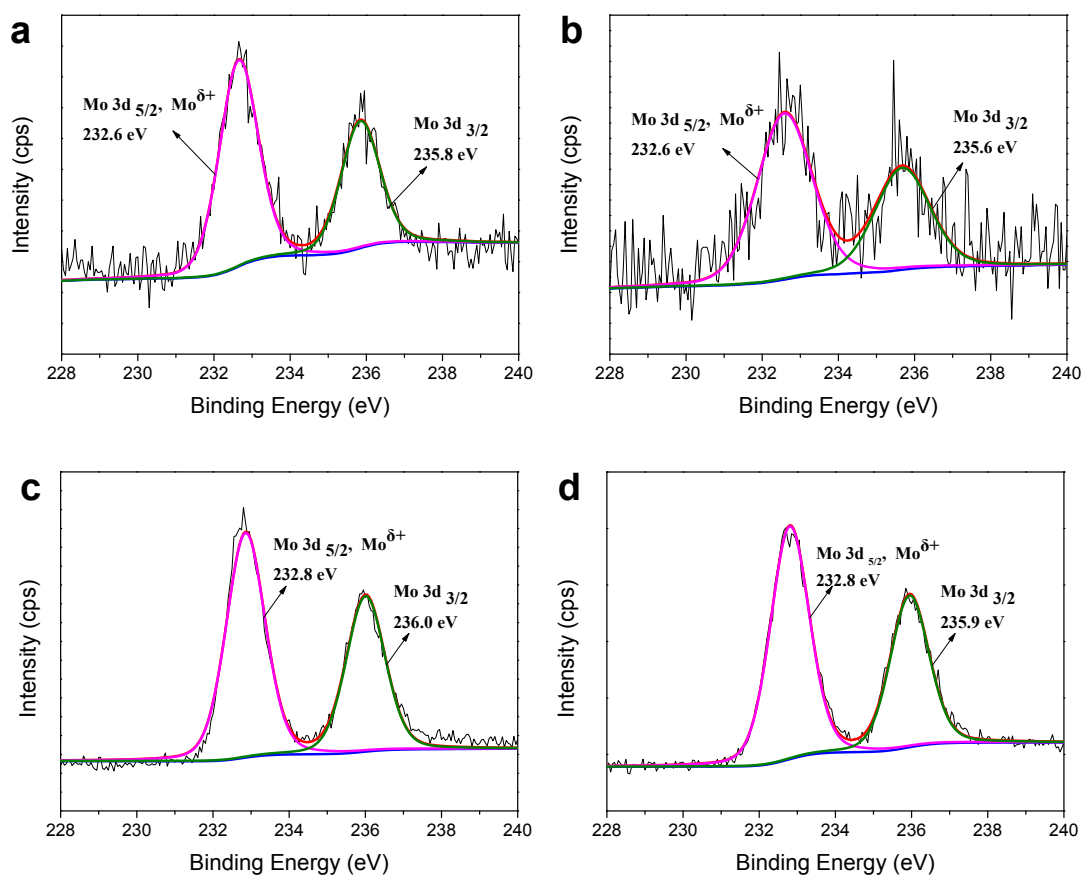


Fig. S4 XPS spectra of Mo 3d for Pt-MoP/C-x ($x=0, 1, 3$ and 4).

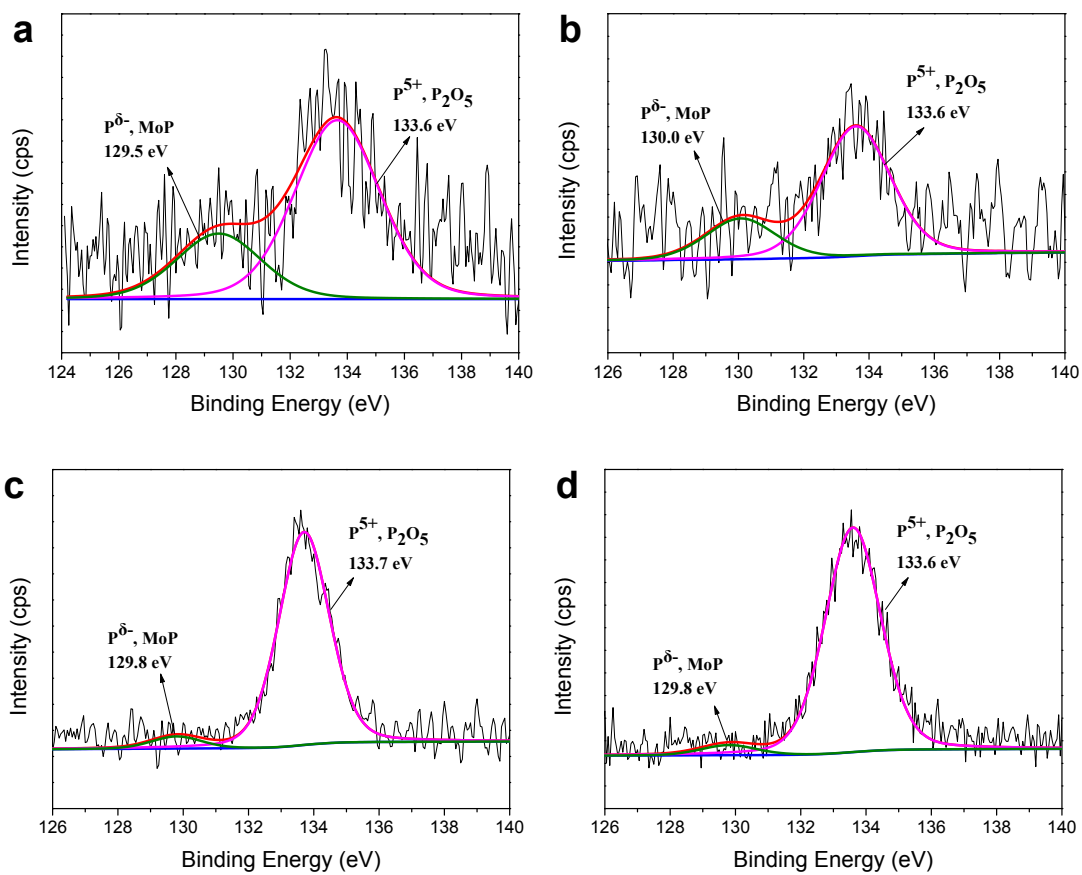


Fig. S5 XPS spectra of P 2p for Pt-MoP/C-x (x=0, 1, 3 and 4).

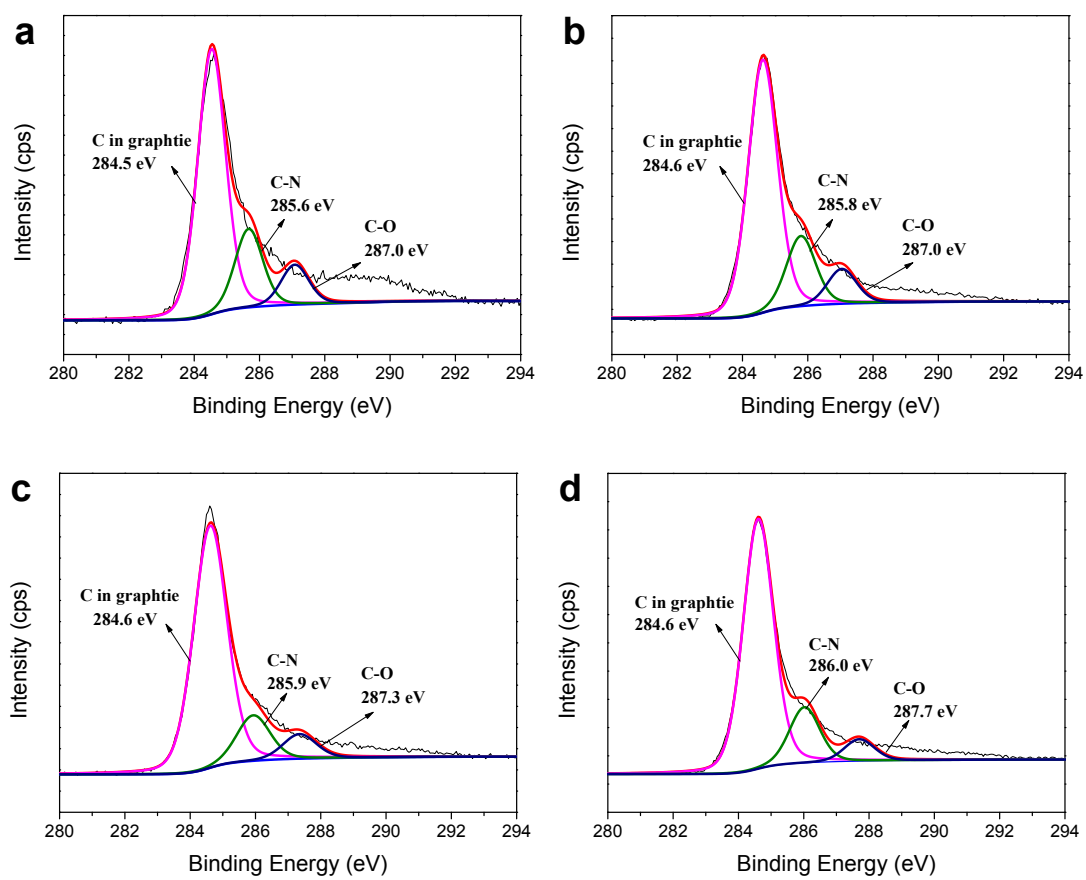


Fig. S6 XPS spectra of C 1s for Pt-MoP/C-x (x=0, 1, 3 and 4).

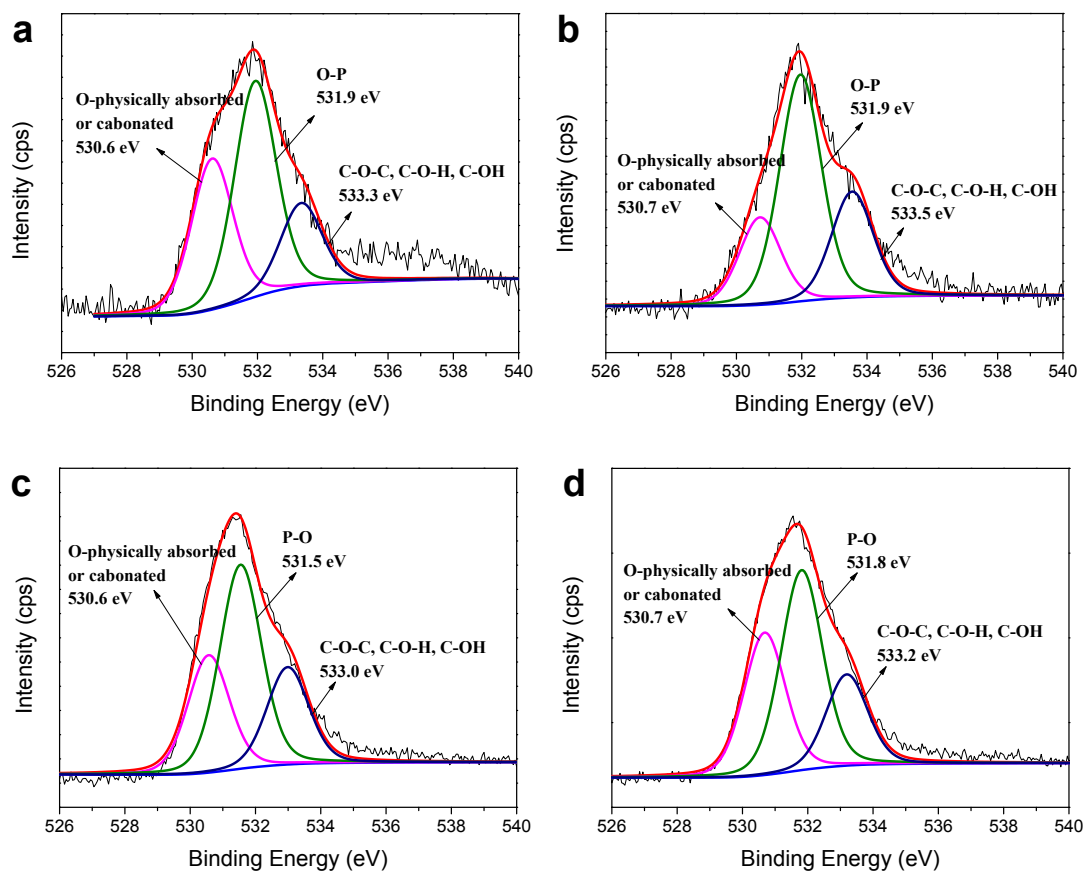


Fig. S7 XPS spectra of O 1s for Pt-MoP/C-x (x=0, 1, 3 and 4).

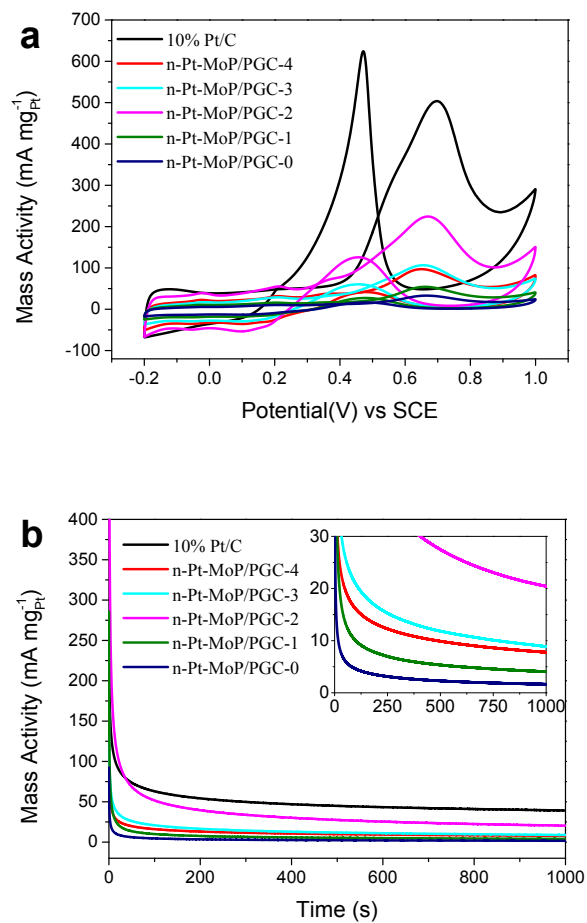


Fig. S8 CV curves (a) and CA curves (b) of n-Pt-MoP/C and Pt/C catalysts in methanolic acidic medium.

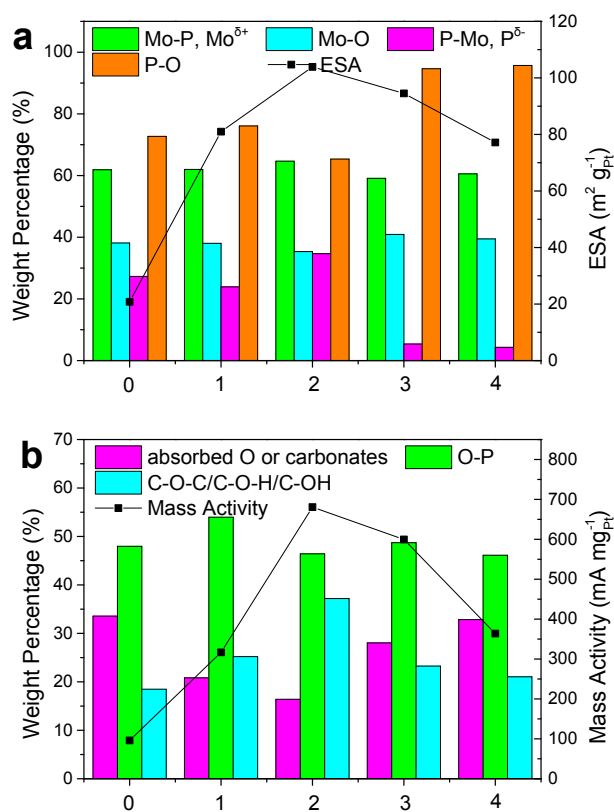


Fig. S9 The relationship between the Mo and P species of Pt-MoP/C-x (x=0, 1, 2, 3 and 4) and ESA (a); and relationship between the O-species of Pt-MoP/C and mass activity (b).