Supporting Information

Interface Effect of Mixed Phase Pt/ZrO_2 Catalyst for HCHO Oxidation at Ambient Temperature

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Table S1 Physical-chemical properties of the ZrO_2 Supports.

samples	Surface area (m^2/g)	Total pore volume (cm^3/g)	Pore diameter (nm)	Zr $3d_{5/2}$ (eV)	O_{ads}/O_{latt}
ZrO_2-M	81.5	0.25	3.4/17.5	182.0	0.6
ZrO_2-U	76.1	0.14	5.6	181.9	2.11
ZrO_2-N	105.0	0.74	4.3	181.9	2.71
ZrO_2-K	87.3	0.15	4.9	181.9	2.88

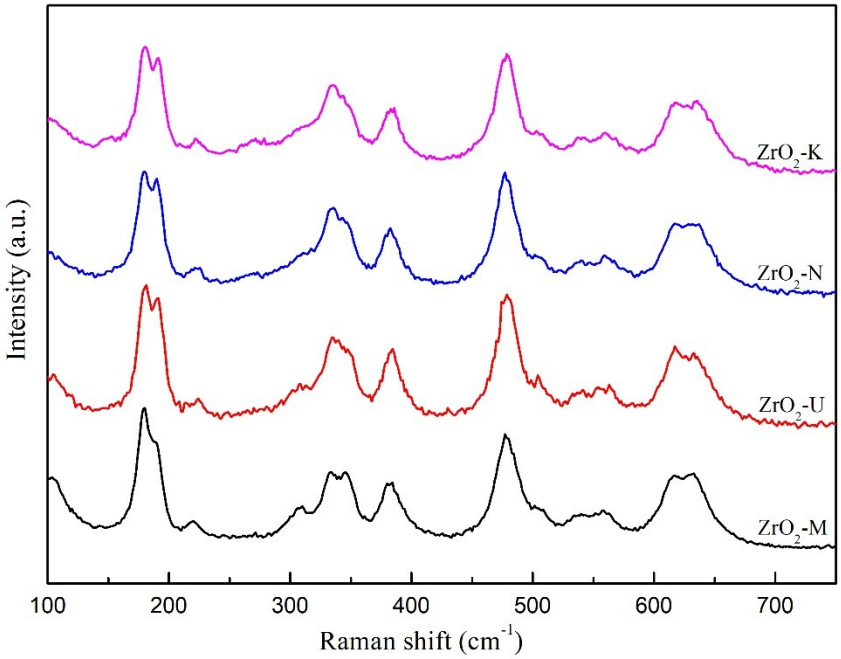


Fig. S1 Raman spectra of the as-prepared ZrO_2 suppots.

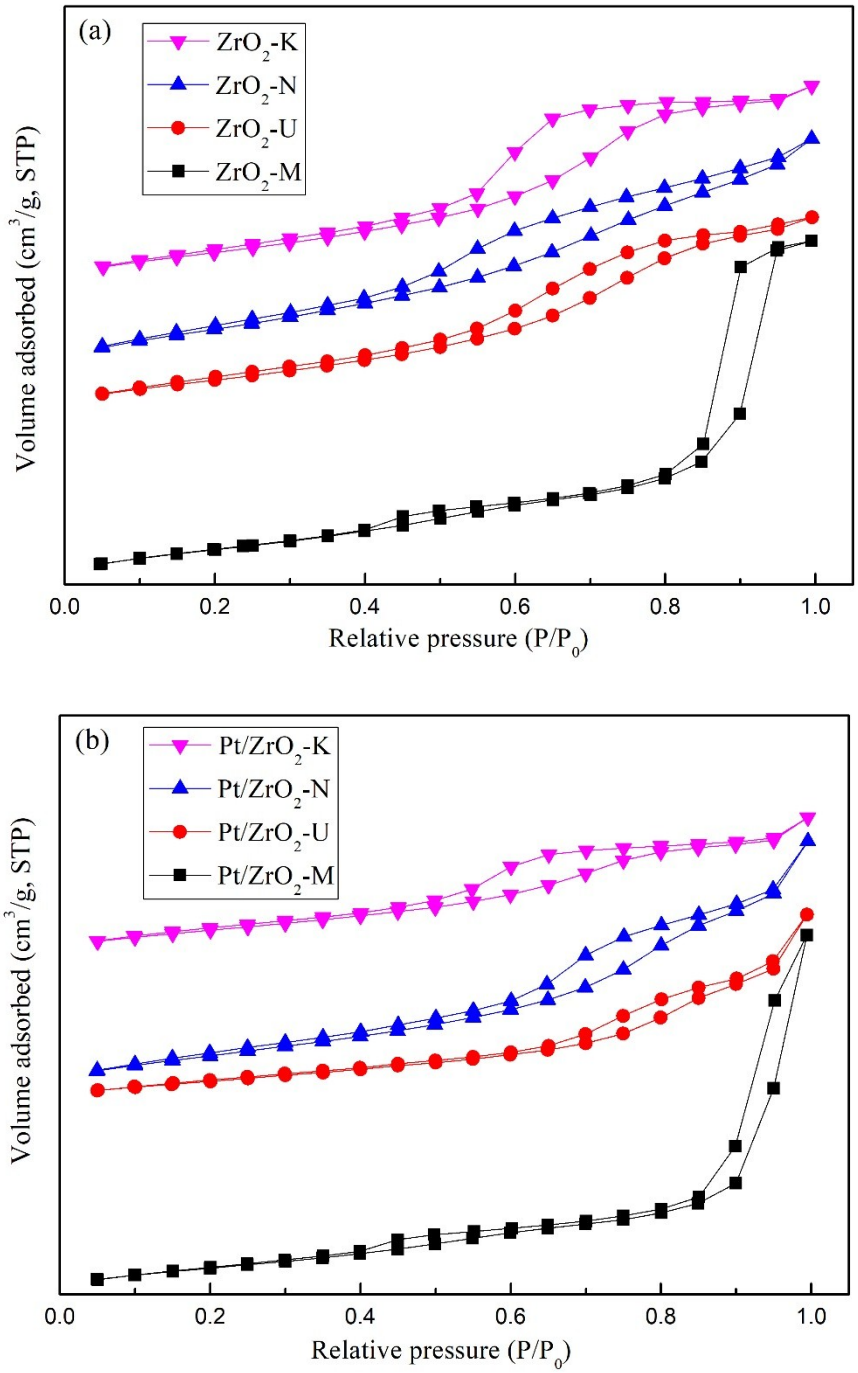


Fig. S2 Nitrogen adsorption-desorption isotherms of ZrO_2 suppots (a) and Pt/ZrO_2 catalysts (b).

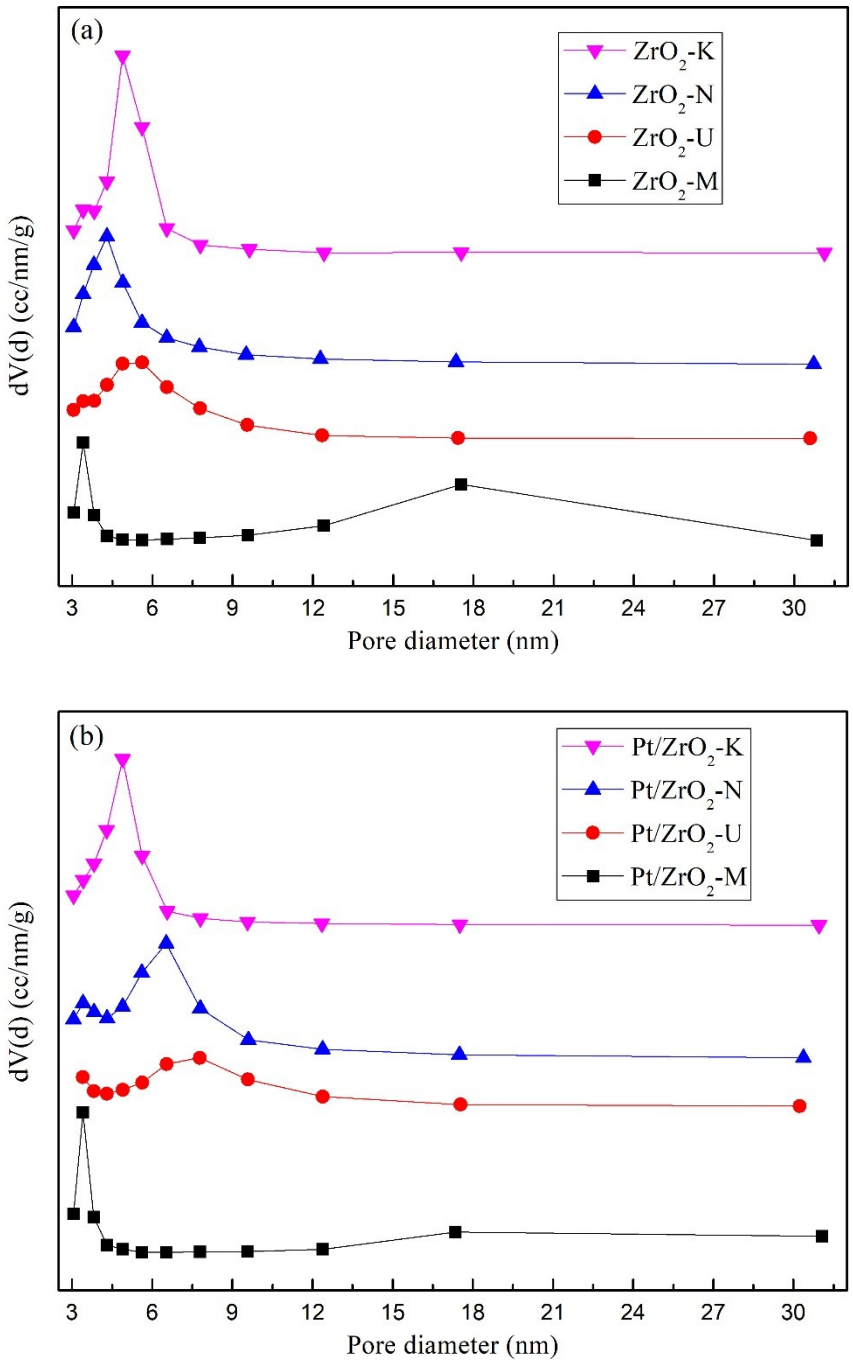


Fig. S3 Pore-size distribution curves of ZrO_2 suppots (a) and Pt/ZrO_2 catalysts (b).

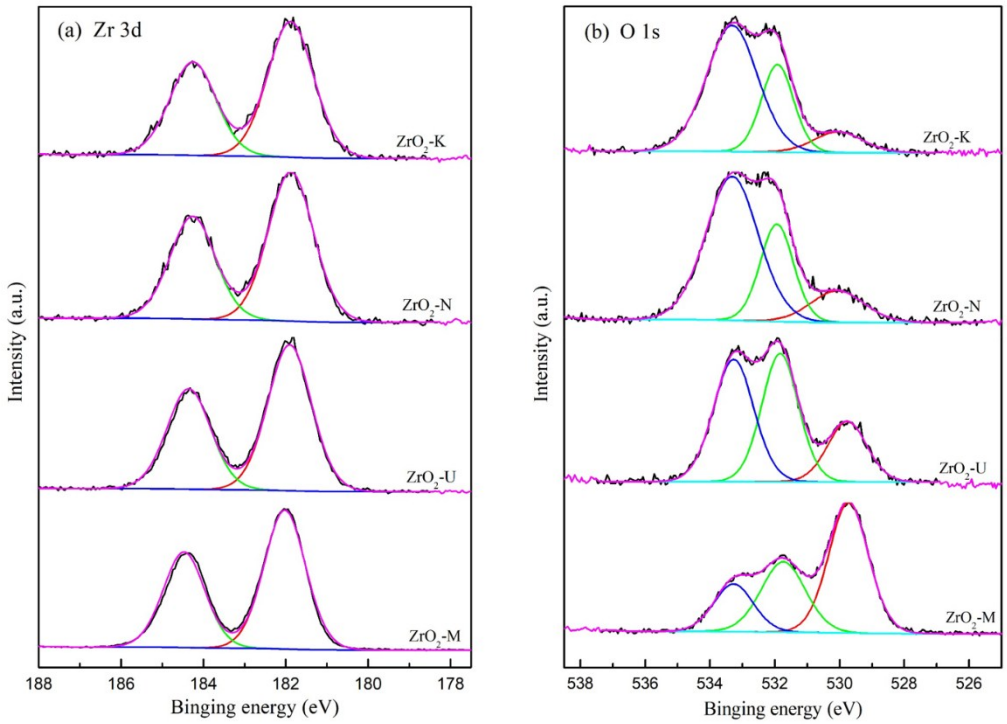


Fig. S4 XPS spectra of ZrO_2 supports: (a) Zr 3d and (b) O 1s.

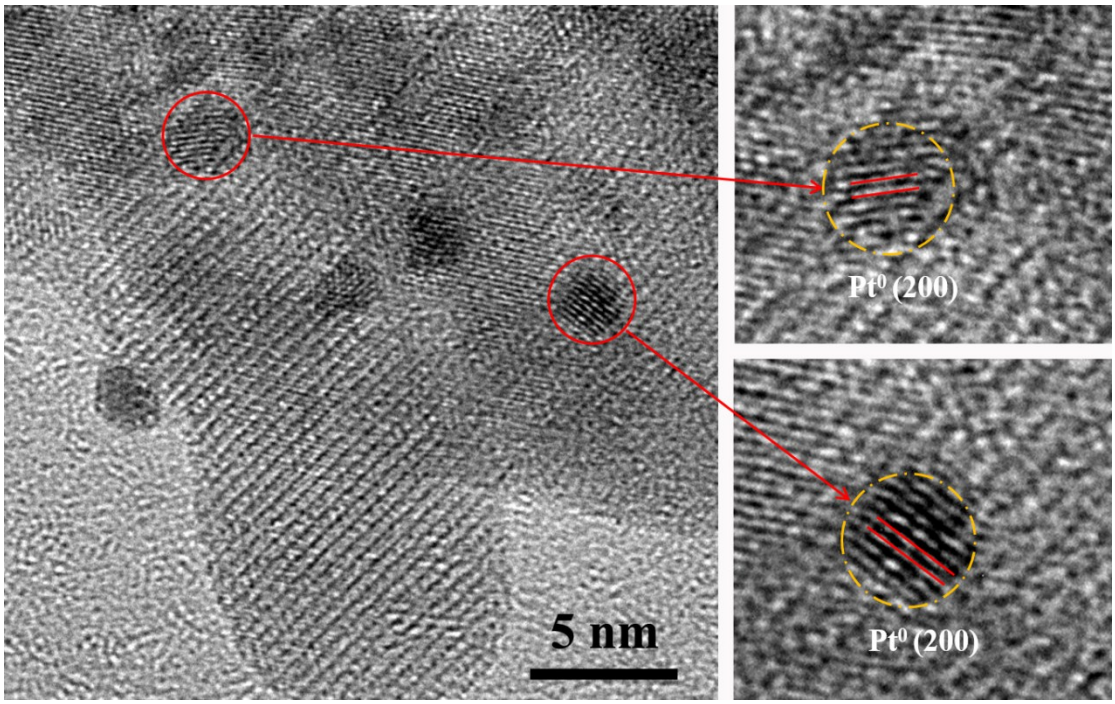


Fig. S5 HRTEM images for Pt/ZrO_2-M catalyst with pure monoclinic phase.

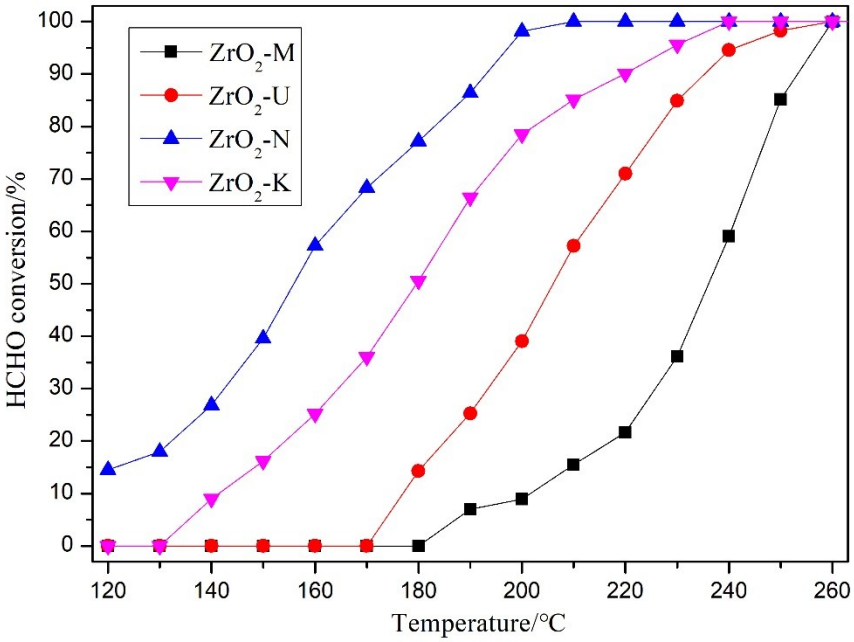
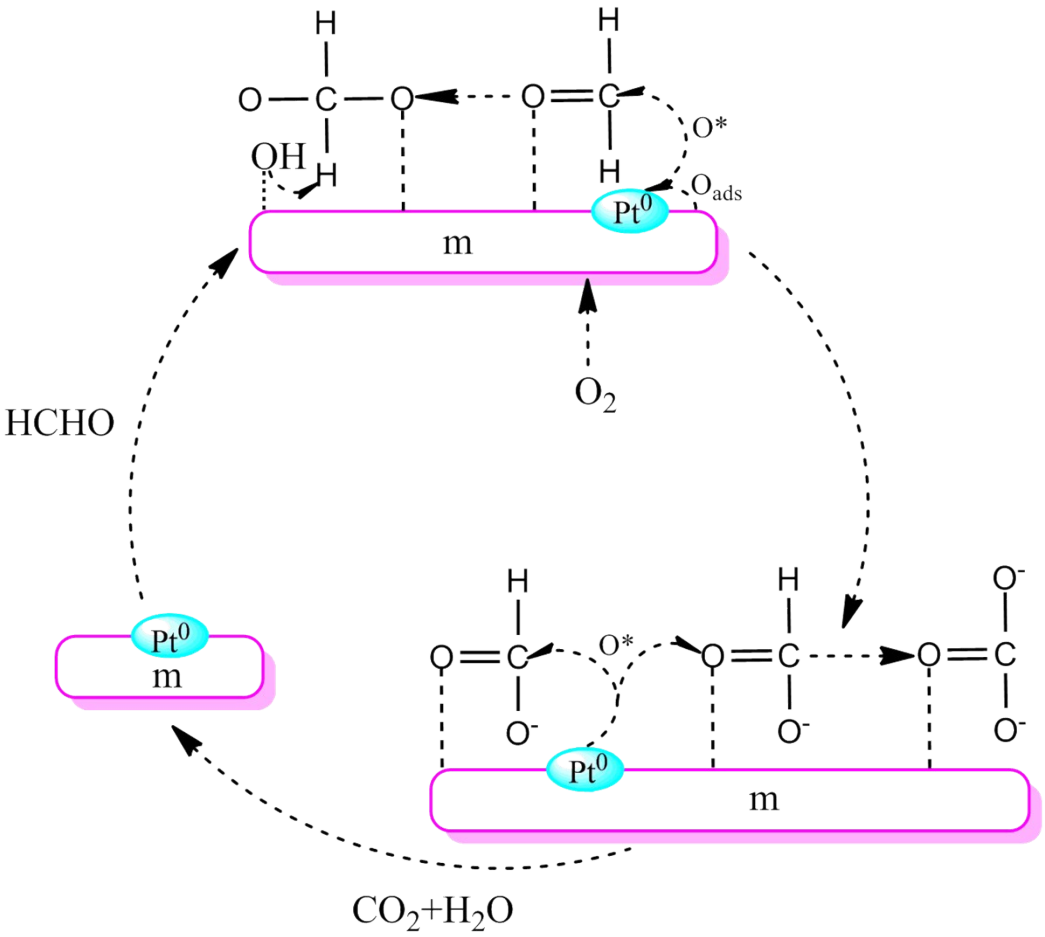


Fig. S6 HCHO conversion over ZrO_2 supports. Reaction conditions: 100 ppm of HCHO, 20% O_2, WHSV = 60,000 mL g_{cat}^{-1} h^{-1}.



Scheme S1 The proposed catalytic mechanism of Pt/ZrO_2-M catalyst for HCHO catalytic oxidation.