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Supporting Information

Heteropoly Acid/Nitrogen Functionalized Onion-like Carbon Hybrid Catalyst for Ester Hydrolysis Reactions

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Preparation of HPA/oOLC

In a typical experiment, 1 g oOLC was firstly dispersed in 250 ml of deionized water under vigorous stirring. Then 150 ml aqueous solution of $H_3PW_{12}O_{40}$ was added to above oOLC dispersion dropwise. The mixed solution was then stirred for 6 h. The resulting sample was washed with deionized water to remove unbounded PWA and dried overnight at 80 °C. The obtained sample is denoted as PWA/oOLC.

Figures and Table

Sample	Atomic Percent(%) ^[a]		
	C	N	O
OLC	88.6	1.4	10.0
NOLC	92.0	4.5	3.5

[a] measured by XPS.

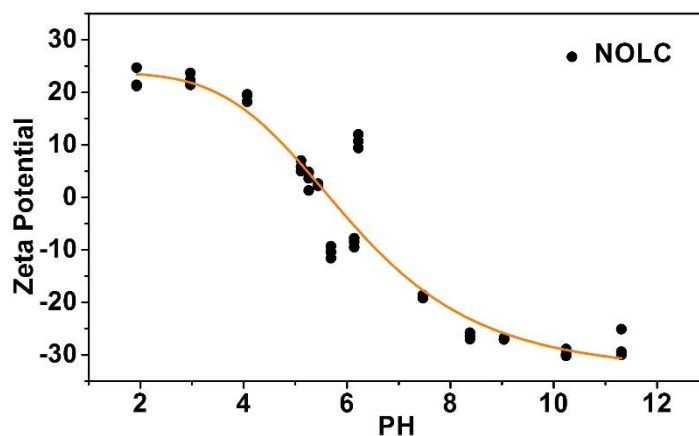


Figure S1. Zeta potential of NOLC as a function of pH.

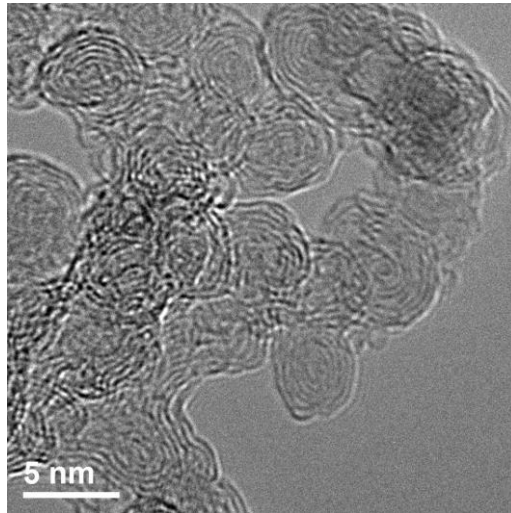


Figure S2. The TEM image of OLC.

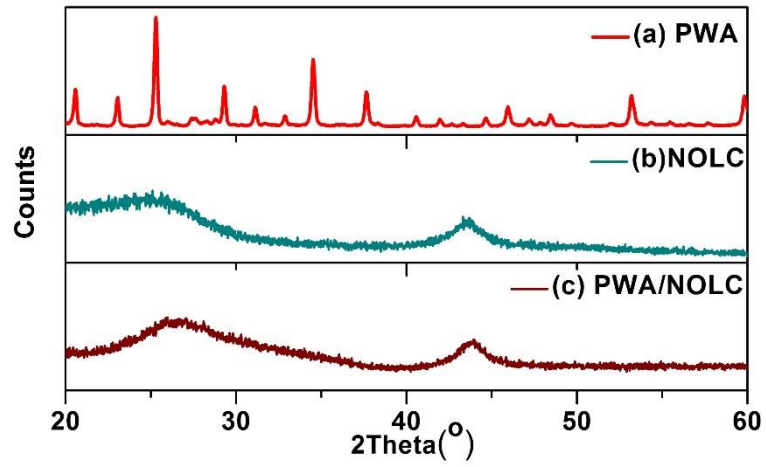


Figure S3. The XRD patterns of a) pure PWA, b) NOLC and c) PWA/NOLC.

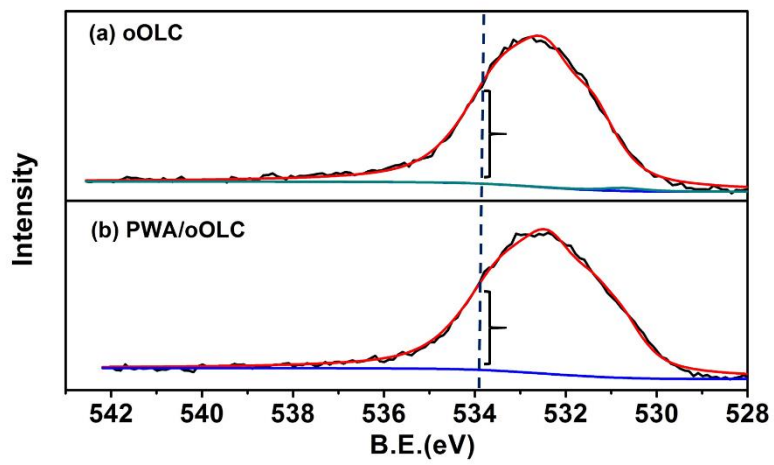


Figure S4. The O1s XPS of oOLC and PWA/oOLC.

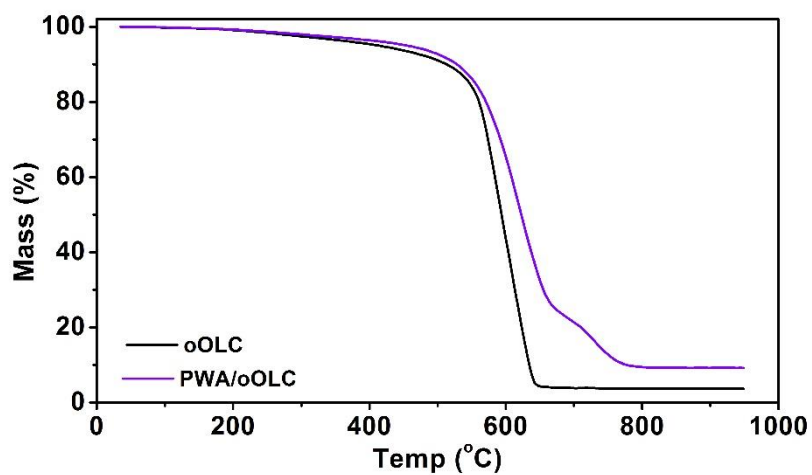


Figure S5. The TG curves of oOLC and PWA/oOLC.

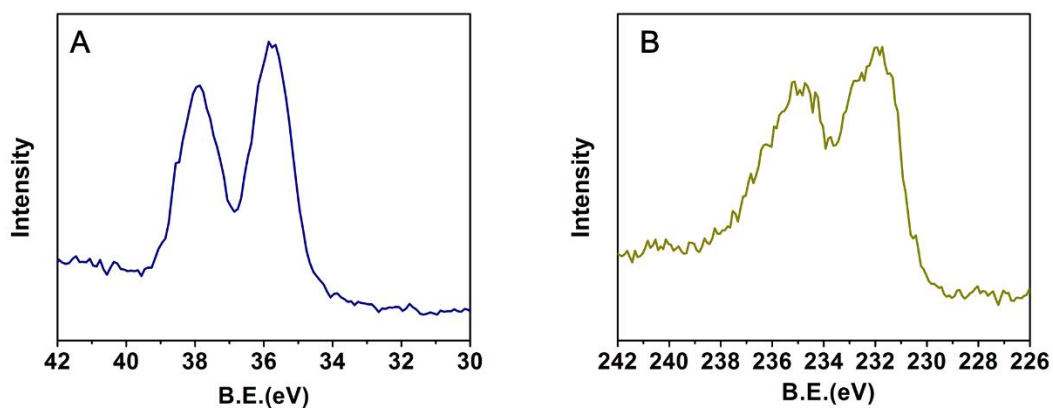


Figure S6. (A) The W4f XPS of SiWA/NOLC; (B) the Mo3d XPS of PMoA/NOLC.

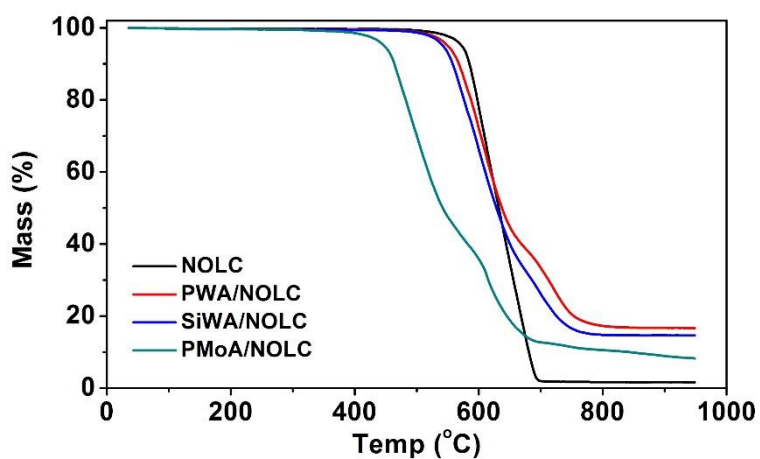


Figure S7. The TG curves of NOLC, PWA/NOLC, SiWA/NOLC and PMoA/NOLC.

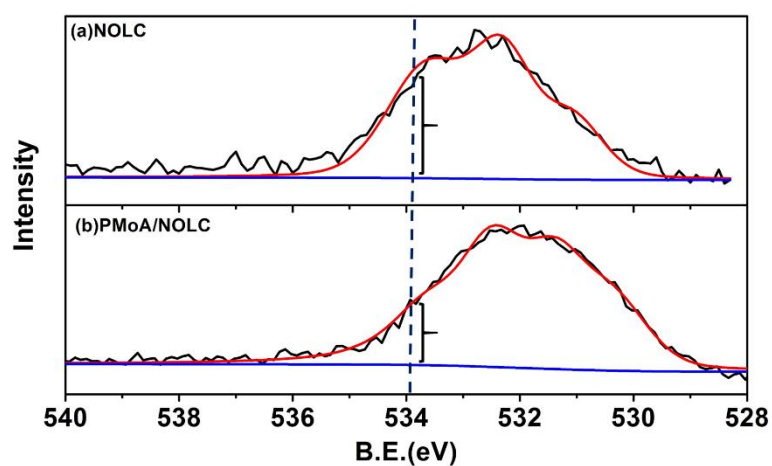


Figure S8. The O1s XPS of NOLC and PMoA/NOLC

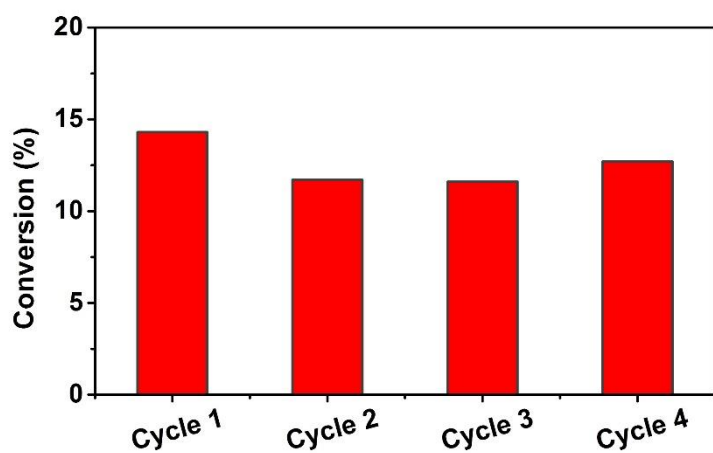


Figure S9. The reusability of PWA/NOLC.

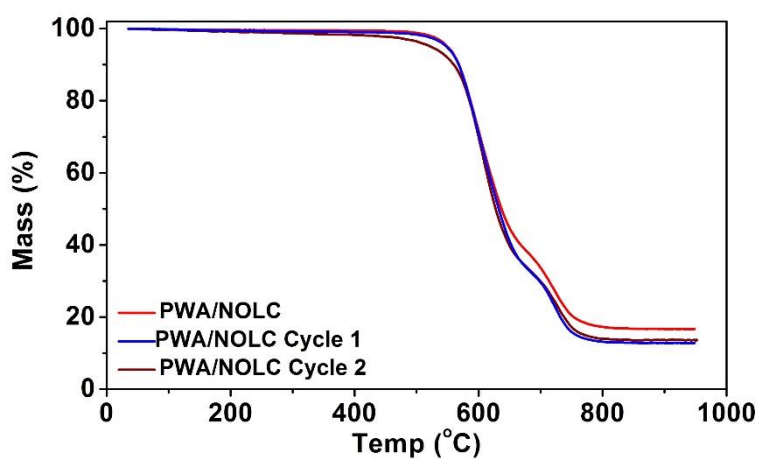


Figure S10. The TG curves of PWA/NOLC, PWA/NOLC Cycle 1 and PWA/NOLC Cycle 2.

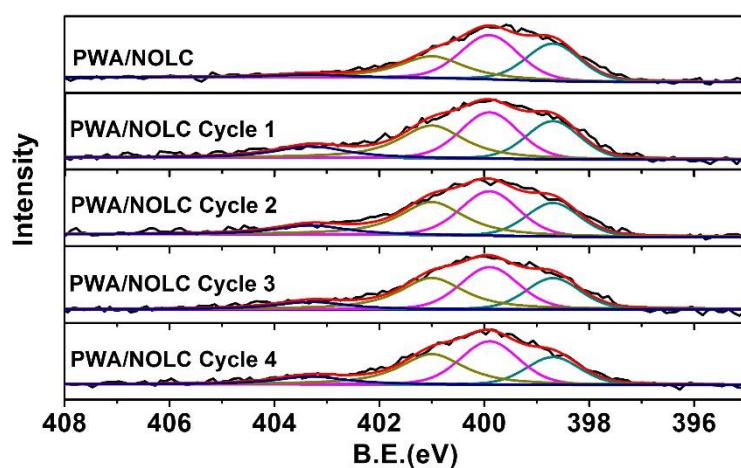


Figure S11. The N1s XPS of PWA/NOLC, PWA/NOLC Cycle 1, PWA/NOLC Cycle 2, PWA/NOLC Cycle 3 and PWA/NOLC Cycle 4.

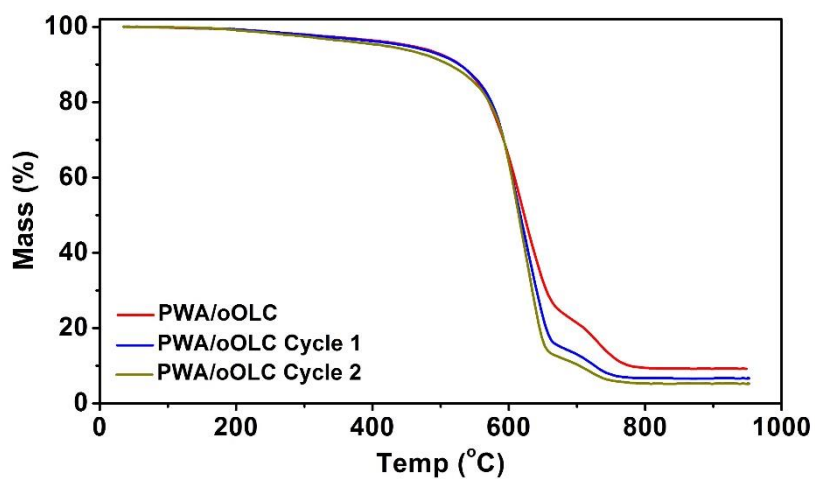


Figure S12. The TG curve of PWA/oOLC, PWA/oOLC Cycle 1 and PWA/oOLC Cycle 2.

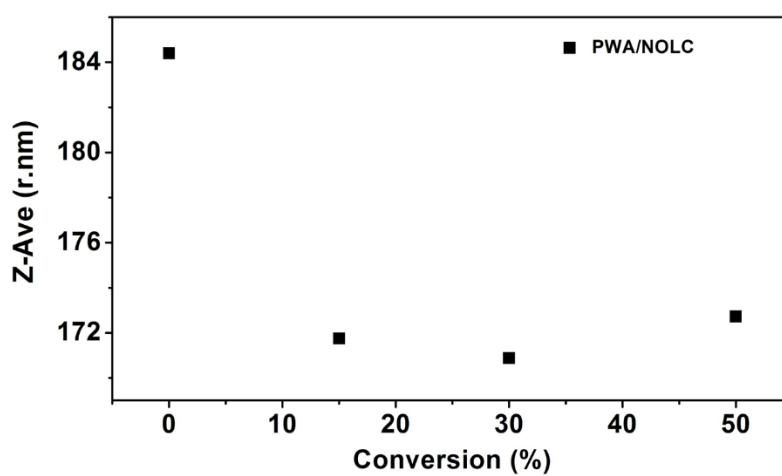


Figure S13. The average size of PWA/NOLC as function of EA conversion.