

Supporting information

Immobilization of Polyoxometalate-based Ionic Liquid on Carboxymethyl Cellulose for Epoxidation of olefins

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BET surface areas were measured at the temperature of liquid nitrogen using a NOVA 4200e Analyzer. Scanning electron microscope (SEM) images were obtained on a JSM-6360LV microscope.

Table S1 BET surface area of two immobilized catalysts

Catalysts	BET surface area (m ² /g)
PEG-PW ₁₁ /H-CMC	14.8
PEG-PW ₁₁ -CMC	11.1

Table S2 The epoxidation of various substrates over catalyst PEG-PW₁₁^a

Entries	Substrates	Reaction time / h	Conversion / %	Selectivity / %
1	Cis-cyclooctene	2	95	≥99
2	Cyclohexene	2	70	35
3	Styrene	6	45	60
4	3-methyl-2-butene-1-ol	0.5	90	≥99
5	limonene	2	70	88

a) Reaction conditions: 2 μmol PEG-PW₁₁, 0.91 mmol substrate, 0.93 mmol H₂O₂, 2 mL ethyl acetate, reaction temperature 60 °C.

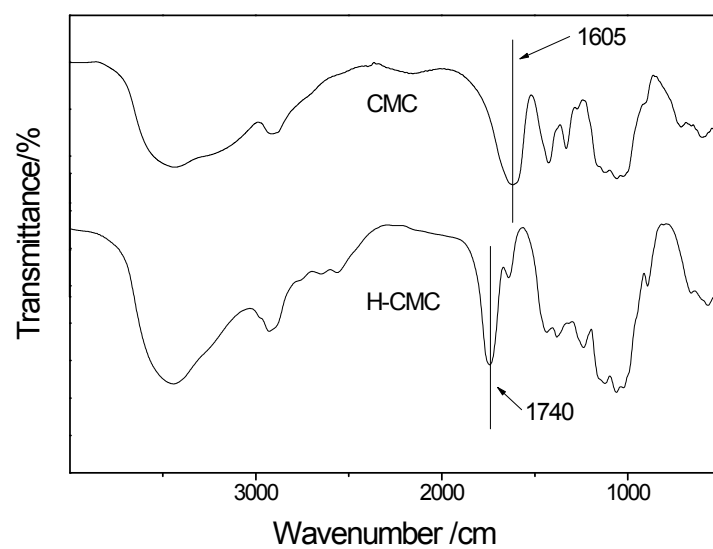


Fig. S1 FT-IR spectra of CMC and H-CMC

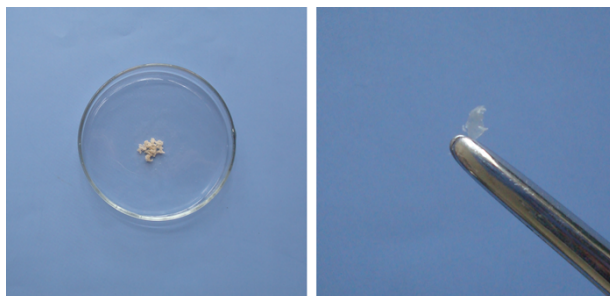


Fig. S2 Pictures of the fresh PEG-PW₁₁/H-CMC(left) and PEG-PW₁₁-CMC(right) catalysts.

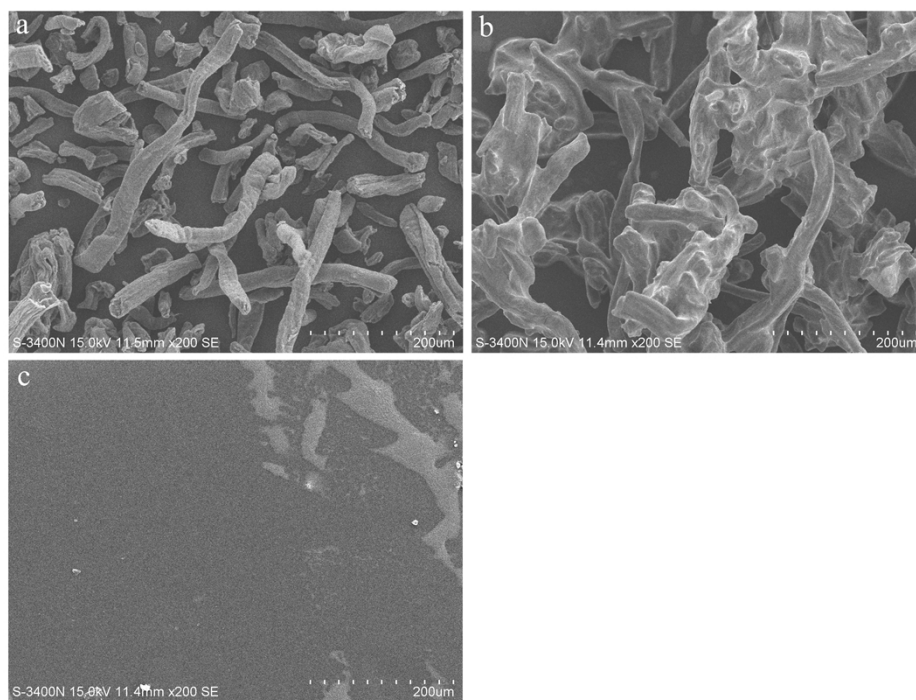


Fig. S3 SEM images of H-CMC(a), PEG-PW₁₁/H-CMC(b) and PEG-PW₁₁-CMC(c)

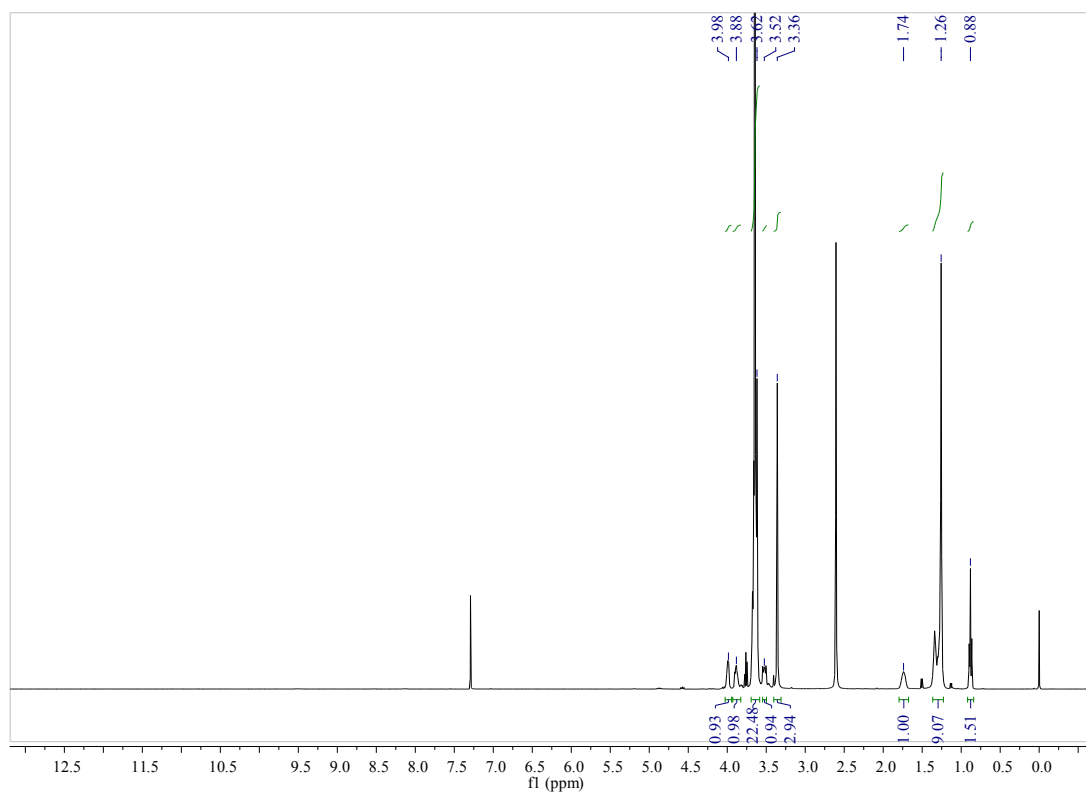


Fig. S4 ^1H NMR spectra of **2**

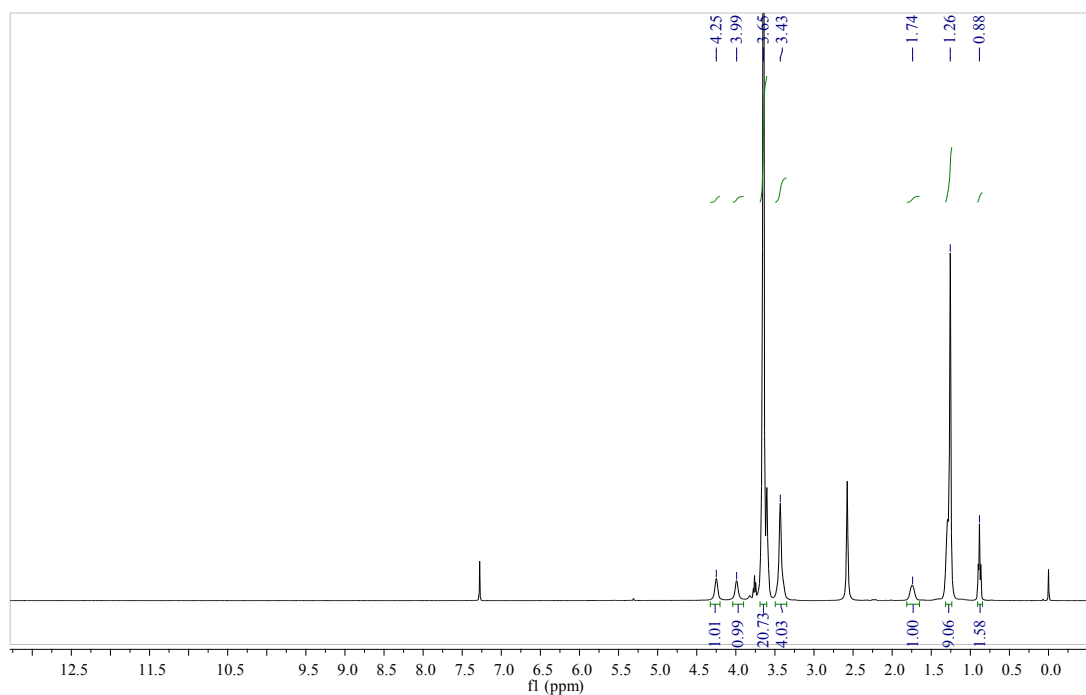


Fig. S5 ^1H NMR spectra of PEG-PW₁₁