

## Supplementary Information

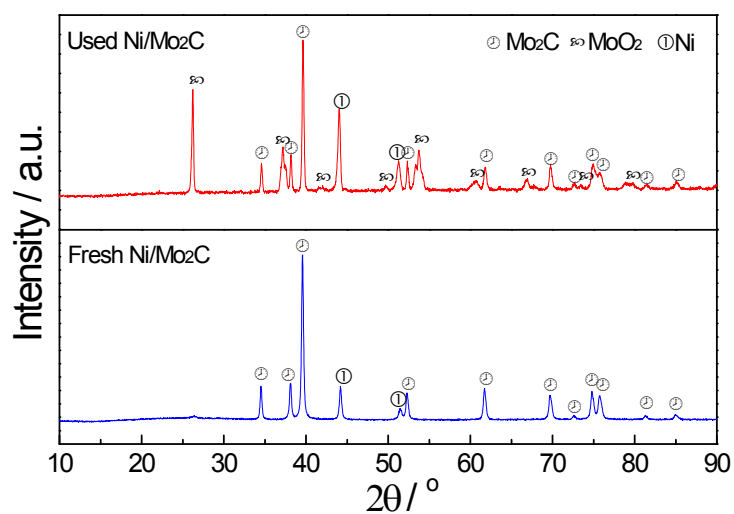


Fig. S1 XRD patterns of fresh and used Ni/Mo<sub>2</sub>C catalysts.

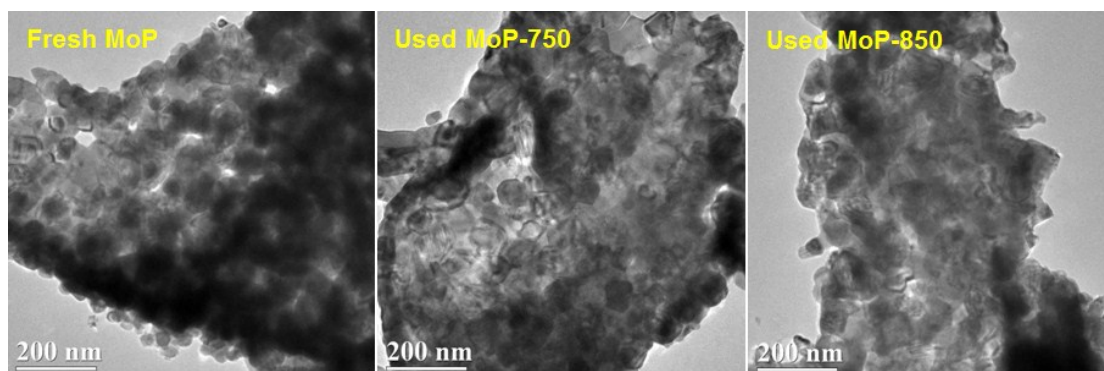


Fig. S2 TEM images of fresh MoP, used MoP in DRM with WHSV of 9000 cm<sup>3</sup> g<sup>-1</sup> h<sup>-1</sup> at 750 °C for 36 h and used MoP in DRM with WHSV of 21000 cm<sup>3</sup> g<sup>-1</sup> h<sup>-1</sup> at 850 °C for 33 h.

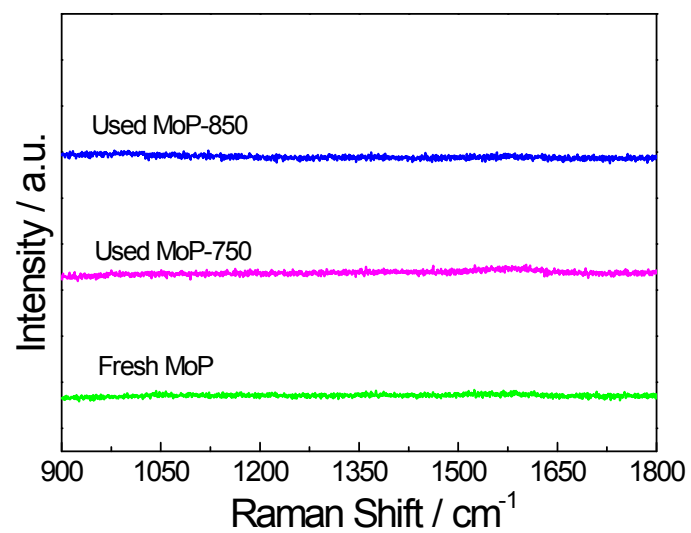


Fig. S3 Raman spectra of fresh MoP, used MoP-750 and used MoP-850 samples.