Supplementary information

Engineering of Structure Formula in N-doped Molybdenum Carbides Nanowires for Deoxygenation of Palmitic Acid

Xiaozhen Chen, Xiao Chen, Chuang Li, Changhai Liang*

Laboratory of Advanced Materials and Catalytic Engineering, School of Chemical Engineering, Dalian University of Technology, Dalian 116012, China. Email: changhai@dlut.edu.cn
Fig. S1 FTIR spectra of ammonium heptamolybdate (AHM), 3-amino-1,2,4-triazole (3atrz) and Mo-3atrz.
Fig. S2 The XRD pattern of the as-prepared samples obtained at different carburization parameters.
Fig. S3 XRD patterns of samples obtained via pyrolysing the Mo-3atrz precursor at (different temperature (450-500/10ºC) for 4 h in Ar/H₂ with a ramp rate of 5 ºC min⁻¹.
Fig. S4 N 1s XPS spectra of the as-prepared Mo$_x$CN$_y$ nanowires
Fig. S5 Comparison of the alkanes and hexadecane yields for palmitic acid conversion over Mo$_x$CN$_y$. at similar conversion (78~88 %). Reaction conditions: 300 °C and 4 MPa, 0.05 g catalyst.
**Fig. S6** Conversion of palmitic acid over Mo. PA conversion conditions: 0.05g Mo, 300 °C and 4 MPa.
**Fig. S7** Conversion of palmitic acid over Mo$_2$N obtained by nitriding MoO$_3$ in NH$_3$. PA conversion conditions: 0.05g Mo$_2$N, 300 ºC and 4MPa.