Support information:

As can be seen from XRD, the fresh and reclaimed mesoporous Ta_3W_7 oxide (stearic acid) was no significant change in the surface species, only the crystal size of the regenerated catalyst became larger.

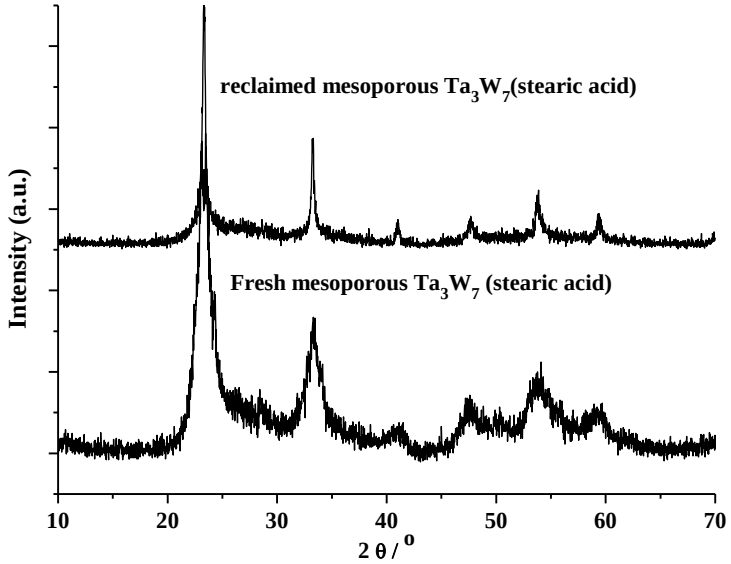
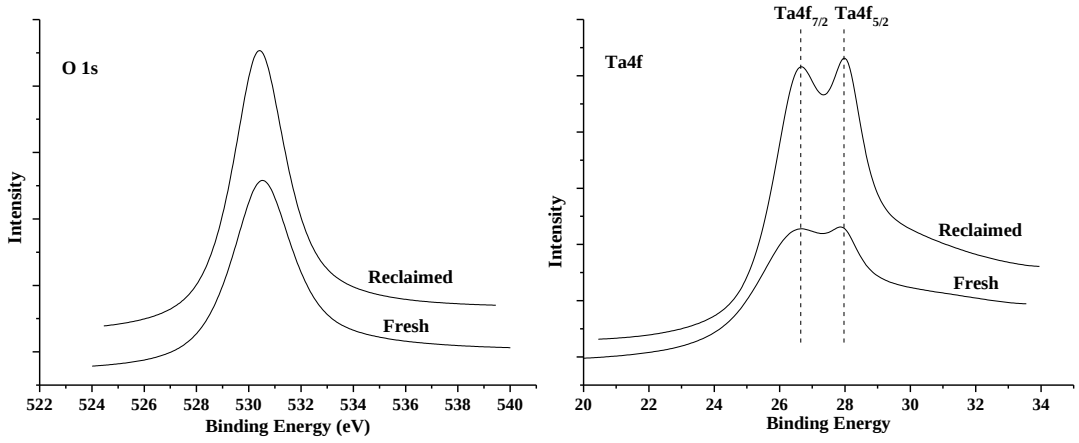


Fig.S1. Wide-angle diffraction patterns of fresh mesoporous Ta_3W_7 oxide(stearic acid) and reclaimed mesoporous Ta_3W_7 oxide(stearic acid)

The results of XPS are shown in Fig.S2. It can be seen that the O1s, W4f and Ta4f binding energies of the XPS spectra of the the fresh and reclaimed mesoporous Ta_3W_7 oxide (stearic acid) are similar, and there is no obvious change.



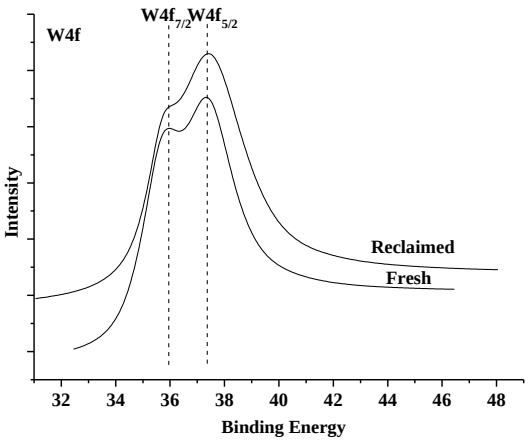


Fig.S2. O1s, Ta4f, and W4f XPS of Fresh mesoporous Ta_3W_7 oxide(stearic acid) and reclaimed mesoporous Ta_3W_7 oxide(stearic acid, 5 times)