Electronic Supplementary information:

Fig. 1S SEM images of the mullite synthesized at 1200 °C for 5h, the amount of WO$_3$ catalyst is (A) molar ratio of WO$_3$/ACl$_3$=0, (B) molar ratio of WO$_3$/ACl$_3$=1:2.

Fig. 2S XRD pattern of mullite precursor calcined at 1000 °C for 5h.

Fig. 3S The analysis of EDX of rod-like precursor calcined at 1000 °C for 5h.