

Electronic Supplementary Information (ESI) available:

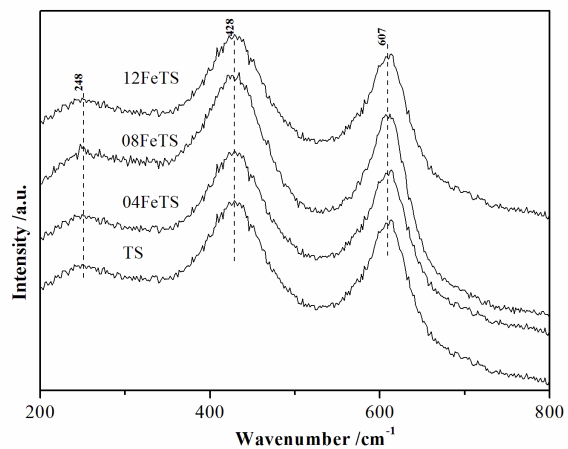
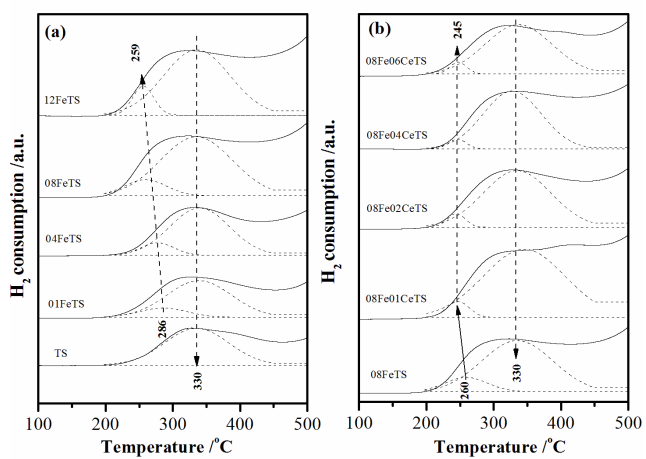


Figure S1. Raman spectra of  $x\text{FeTS}$  samples ( $x = 0, 04, 08, 12$ )



5 **Figure S2**  $\text{H}_2$ -TPR profiles of (a)  $x\text{FeTS}$  (b)  $08\text{Fe}_y\text{CeTS}$  catalysts ( $x = 0, 01, 04, 08, 12$ ;  $y = 0, 01, 02, 04, 06$ )