

### Electronic supplementary information

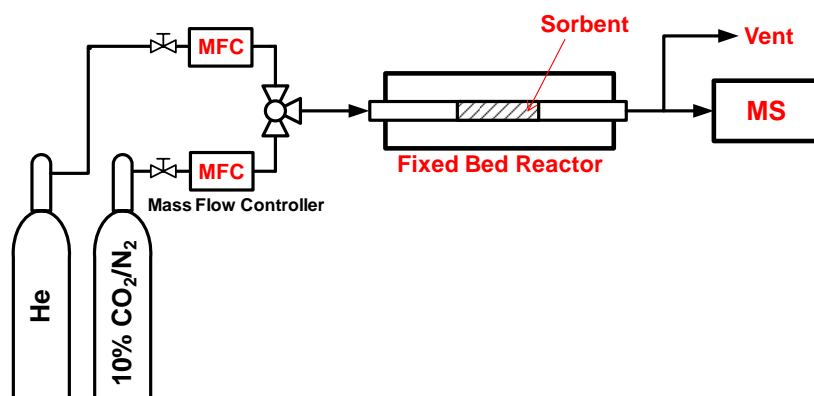
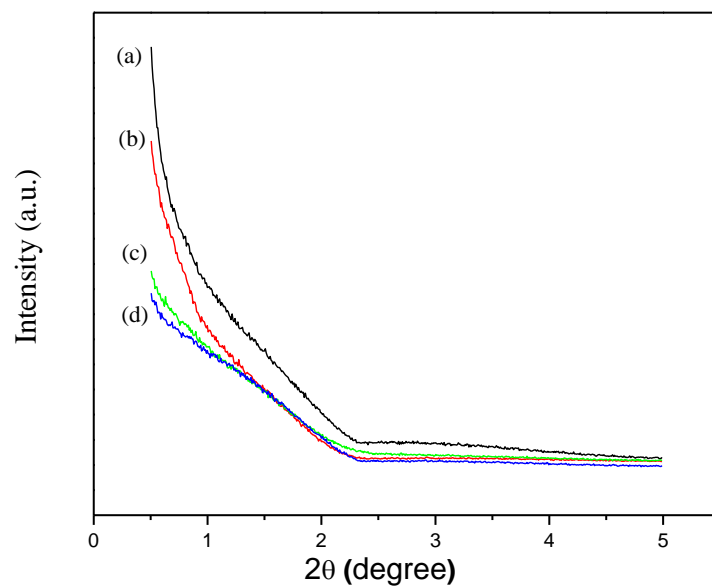


Figure S1. Schematic of the fixed-bed reactor system

(A)



(B)

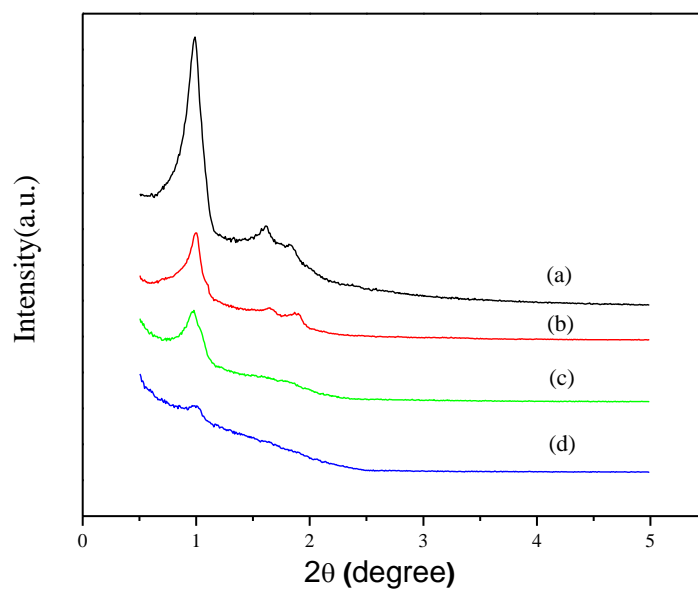


Figure S2. (A) Small angle XRD patterns of (a) C8-Ti, (b) C8-Ti-10, (c) C8-Ti-30, (d) C8-Ti-50 and (B) Small angle XRD patterns of (a) SBA-15, (b) SBA-15-10, (c) SBA-15-30, (d) SBA-15-50,.

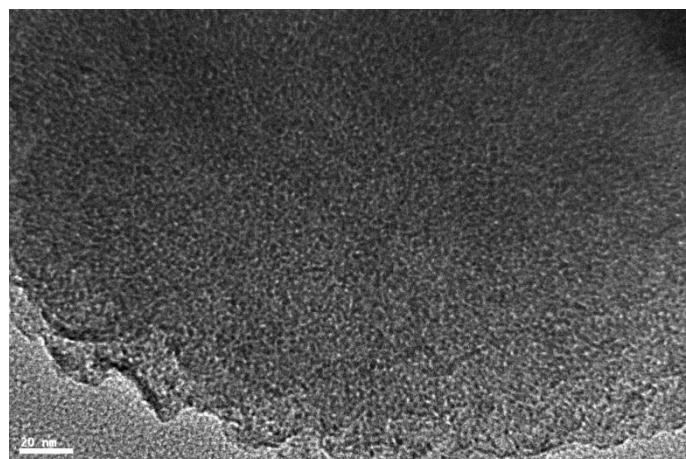
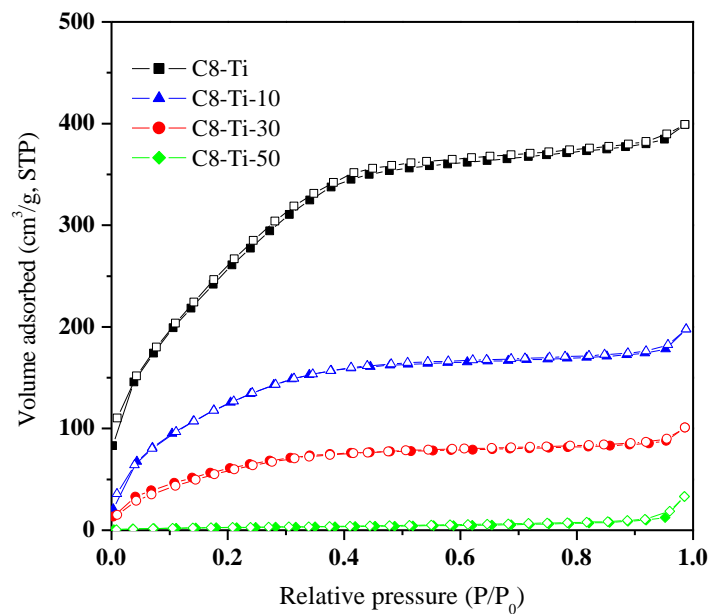


Figure S3. TEM image of C8-Ti

(A)



(B)

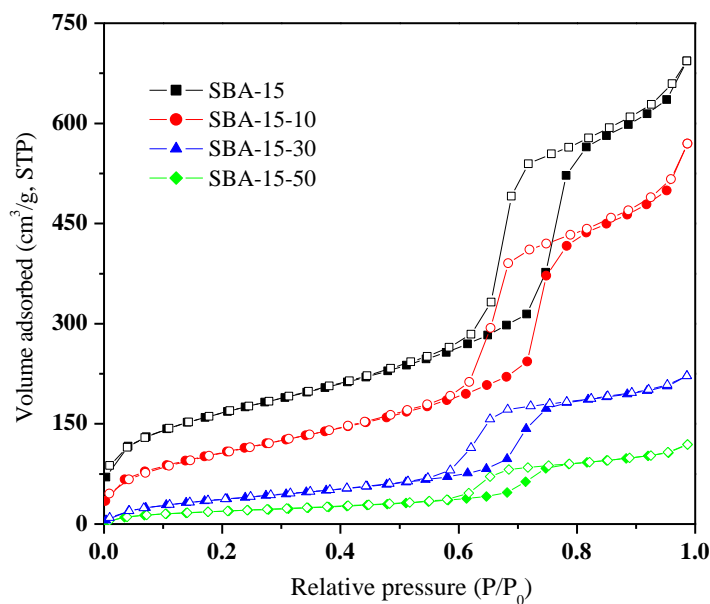


Figure S4. Nitrogen adsorption-desorption isotherms of (A) C8-Ti, C8-Ti-10, C8-Ti-30, C8-Ti-50 and (B) SBA-15, SBA-15-10, SBA-15-30, SBA-15-50. Filled and empty symbols represent adsorption and desorption branches, respectively.

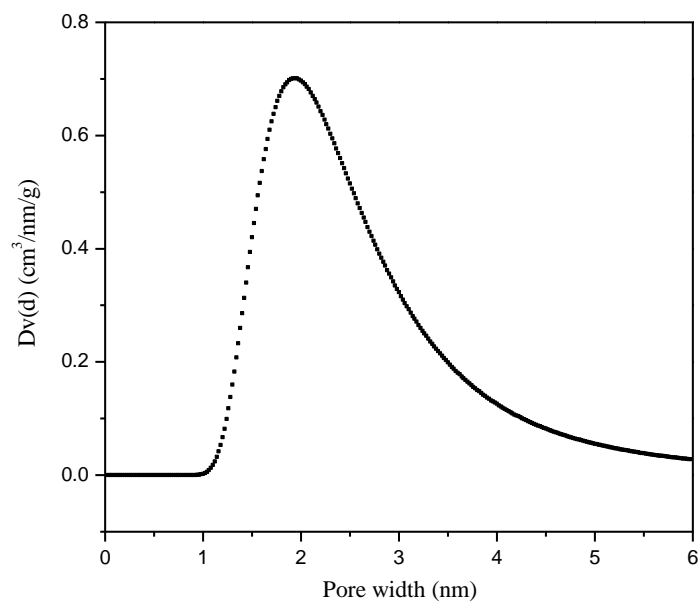


Figure S5. DA pore size distributions obtained from N<sub>2</sub> physisorption for C8-Ti.

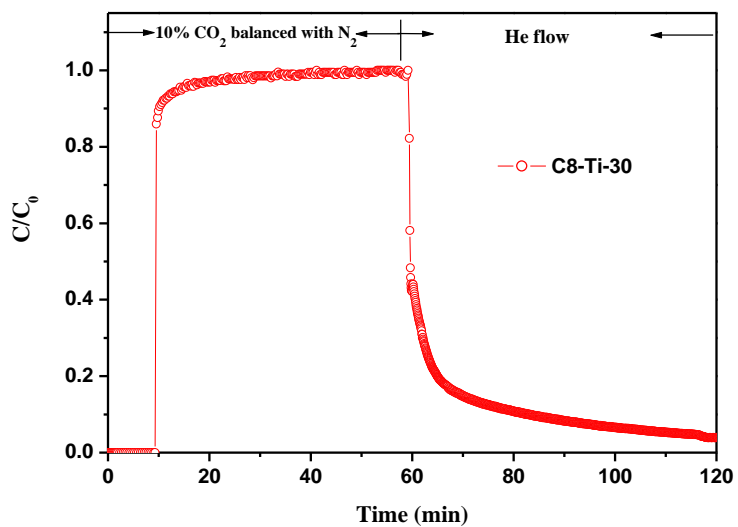


Figure S6. CO<sub>2</sub> adsorption/desorption performance of C8-Ti-30 under 10% (v/v) of CO<sub>2</sub> in N<sub>2</sub> at 75°C.