Electronic Supplementary Information for

Azo-bridged Covalent Porphyrinic Polymers (Azo-CPPs): Synthesis and CO_2 Capture properties†

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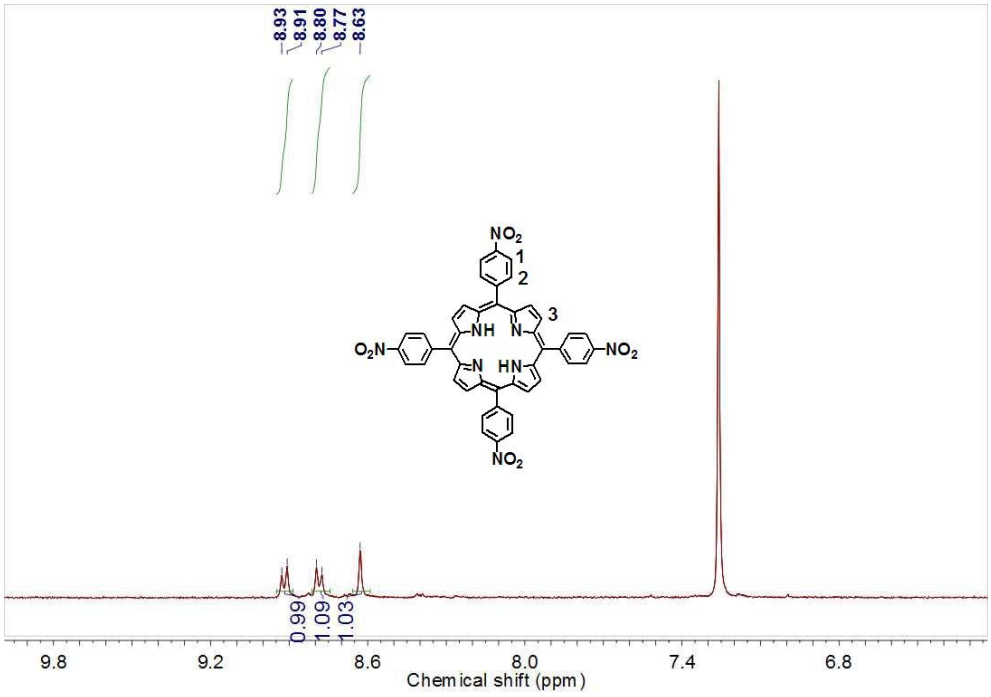


Fig. S1 ^{1}H NMR spectrum of $4NO_2TPP$ ($CDCl_3$, 400 MHz)

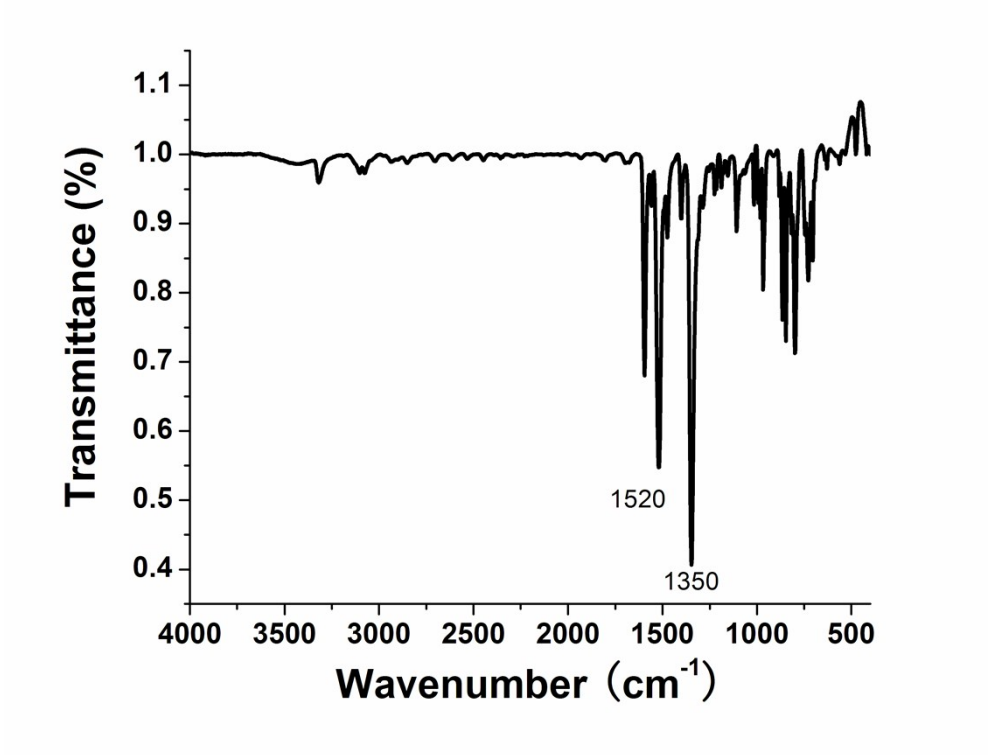


Fig. S2 FT-IR spectrum of $4NO_2TPP$ (KBr pellets)

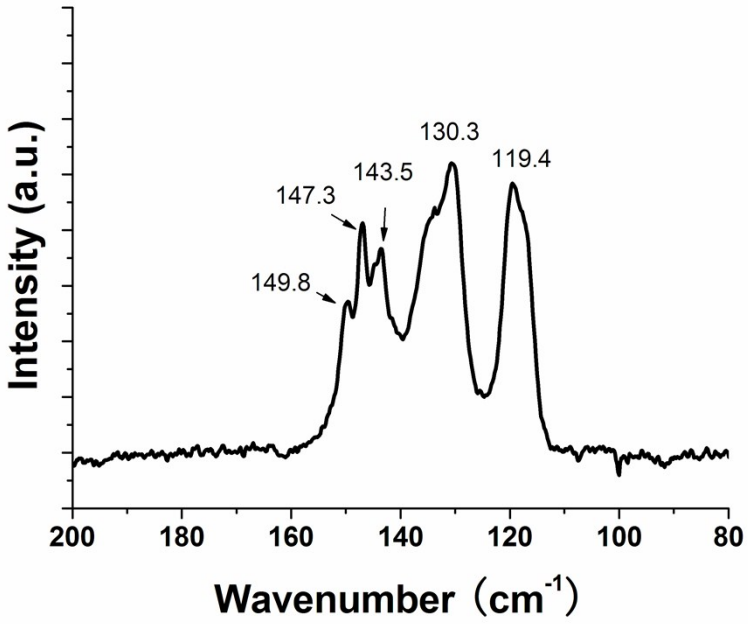


Fig. S3 Solid-state ^{13}C NMR spectrum of $4NO_2TPP$ (100 MHz)

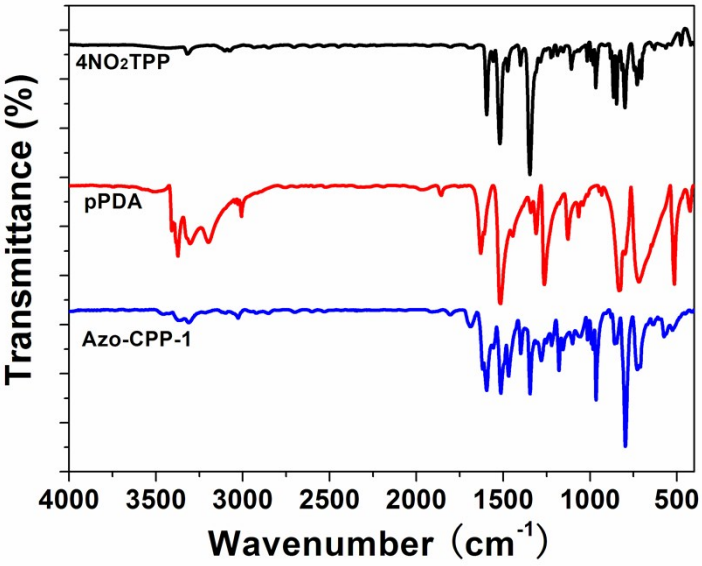


Fig. S4 FTIR spectra comparison of Azo-CPP-1 and the monomers (KBr pellets)

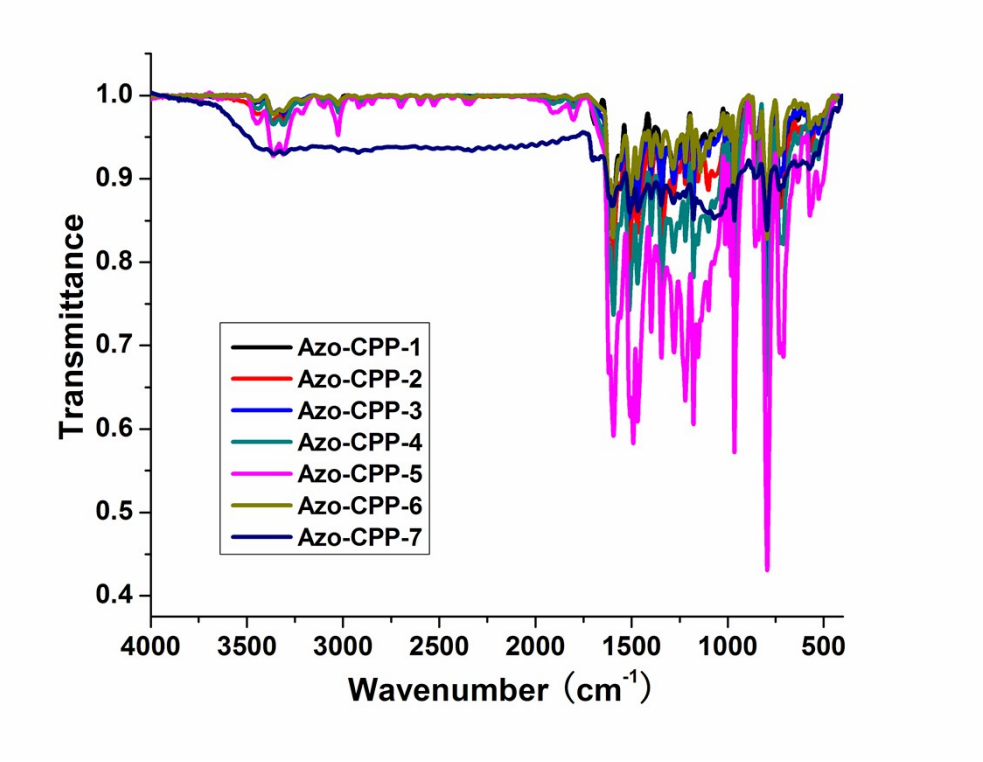


Fig. S5 FT-IR spectra of the Azo-CPPs. (KBr pellets)

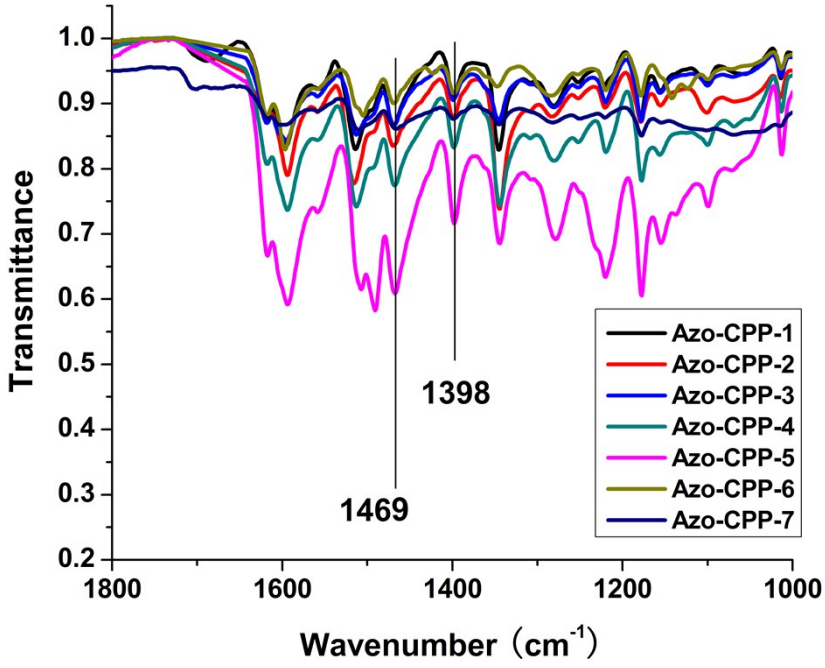


Fig. S6 FT-IR spectra of the Azo-CPPs, expanded between 1800 ~ 1000 cm^{-1}. (KBr pellets)

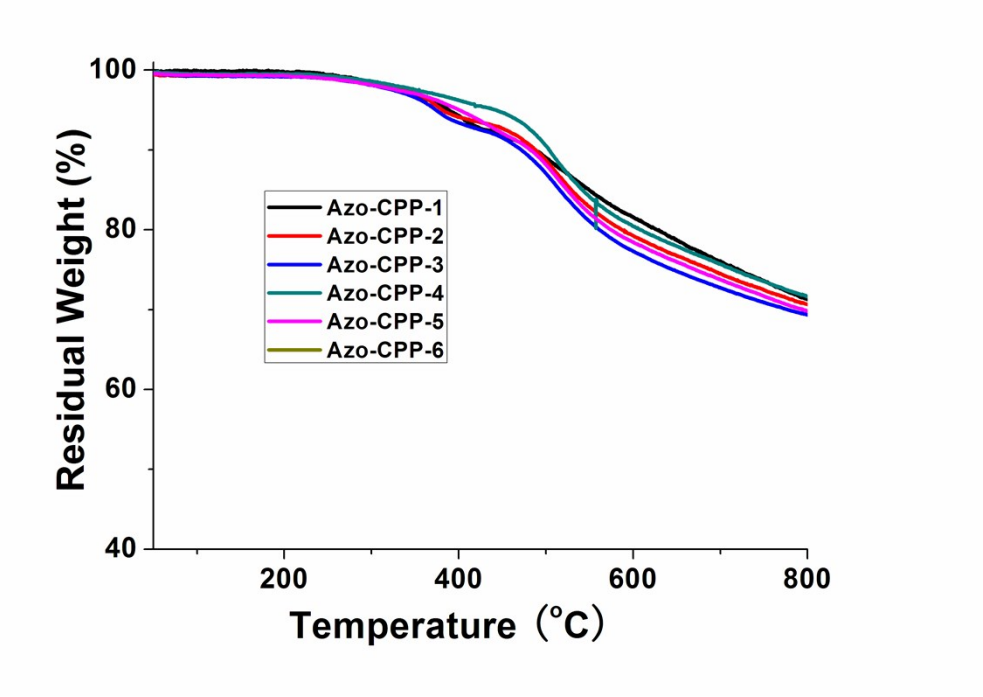


Fig. S7 TGA curves of Azo-CPPs. (N_2, 10 °C /min)

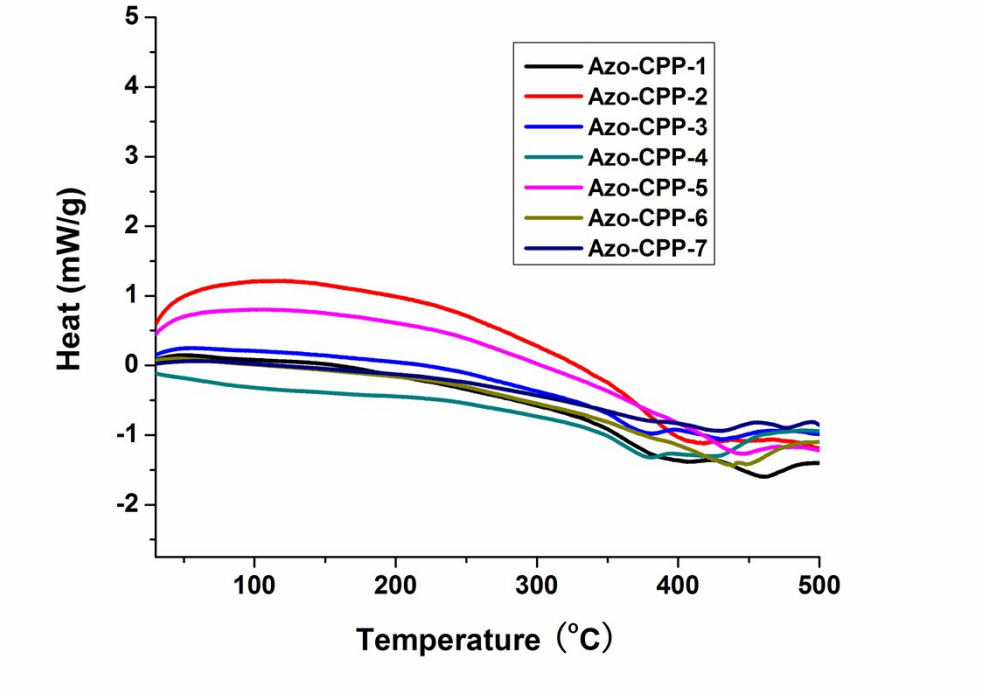


Fig. S8 DSC curves of the Azo-CPPs. (10 °C/min, N_2)

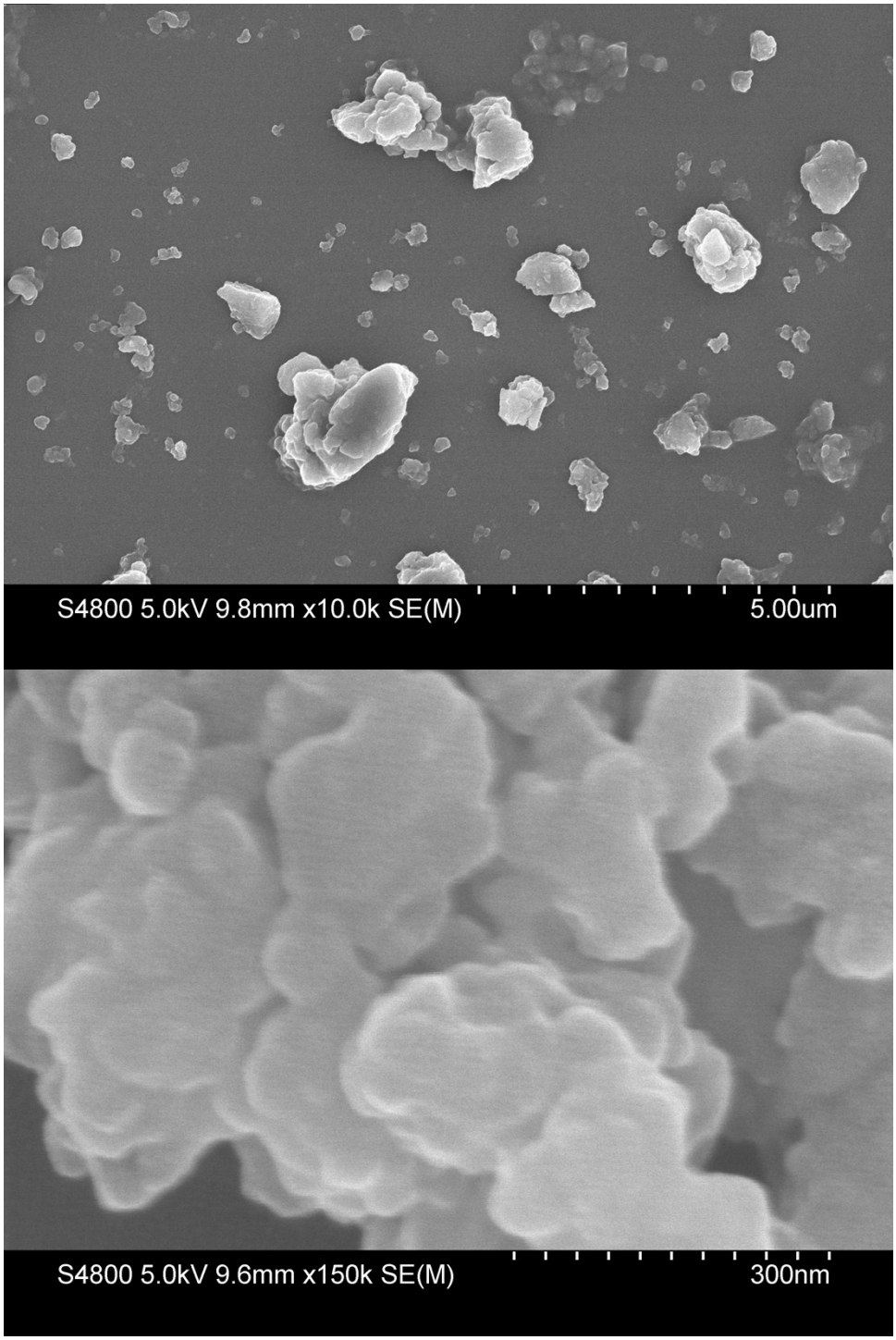


Fig. S9 SEM images of Azo-CPP-1

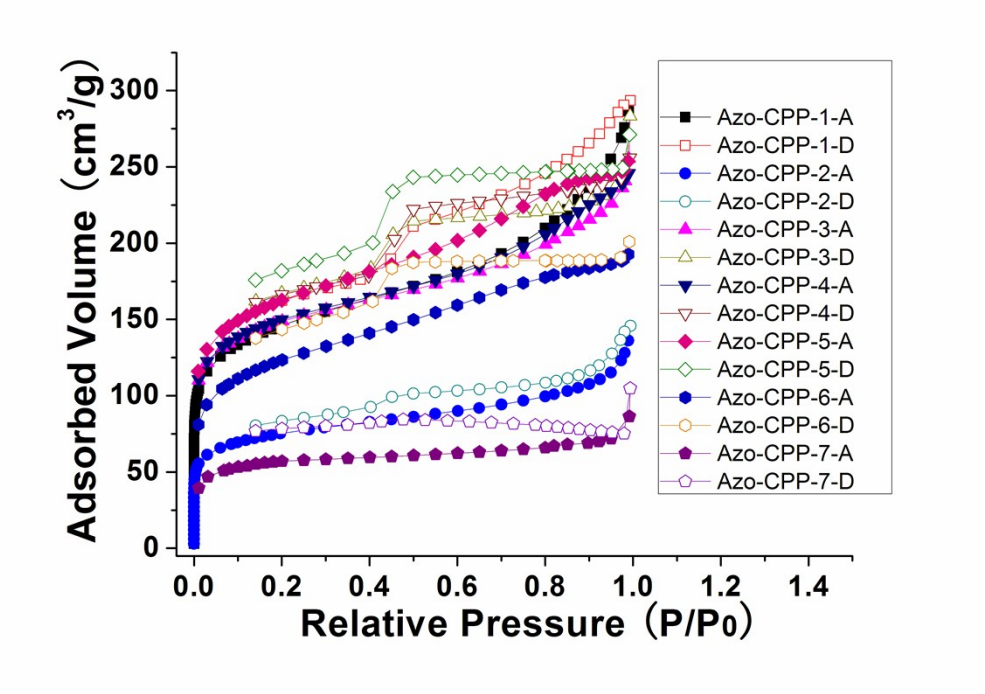


Fig. S10 Nitrogen adsorption and desorption isotherms at 77.3 K for all Azo-CPPs.

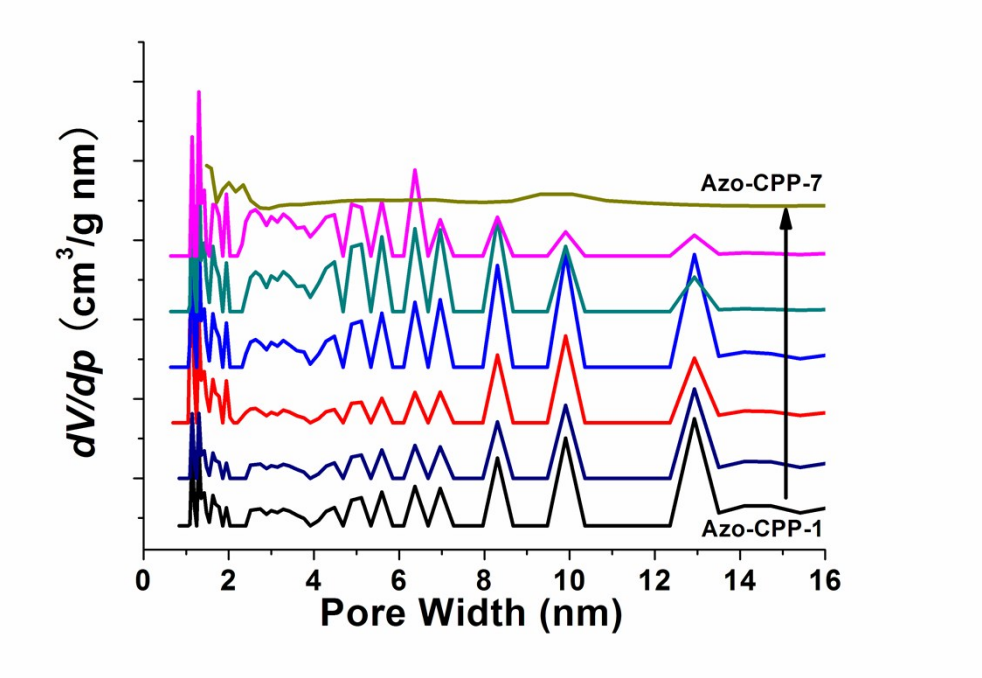


Fig. S11 Pore size distributions (PSD) calculated by the NLDFT method for all Azo-CPPs.

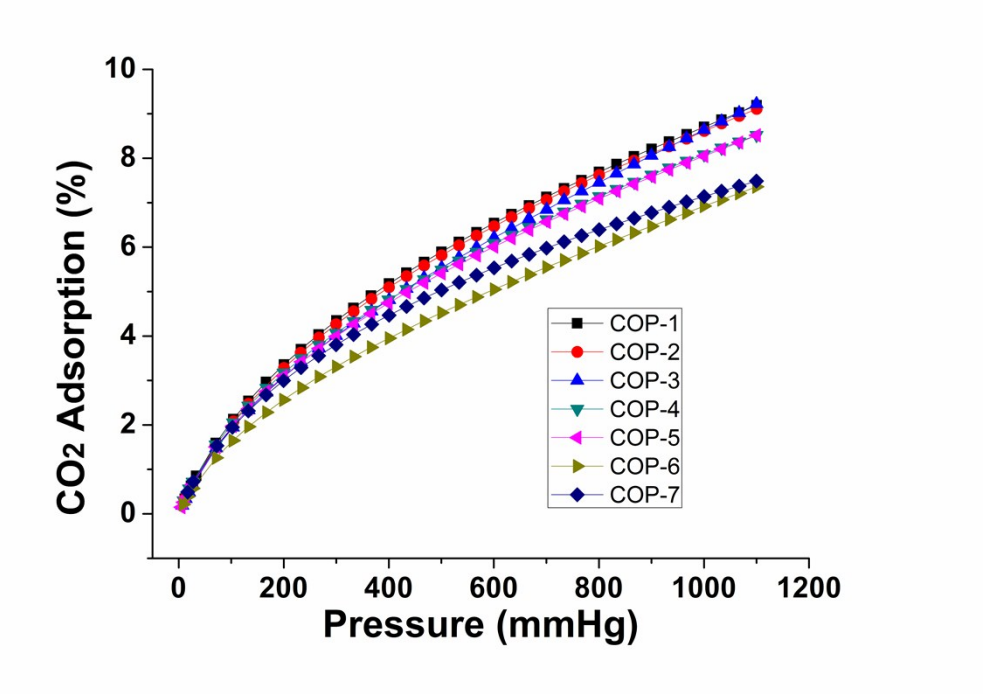


Fig. S12 CO_2 adsorption isotherms at 273 K for all Azo-CPPs.

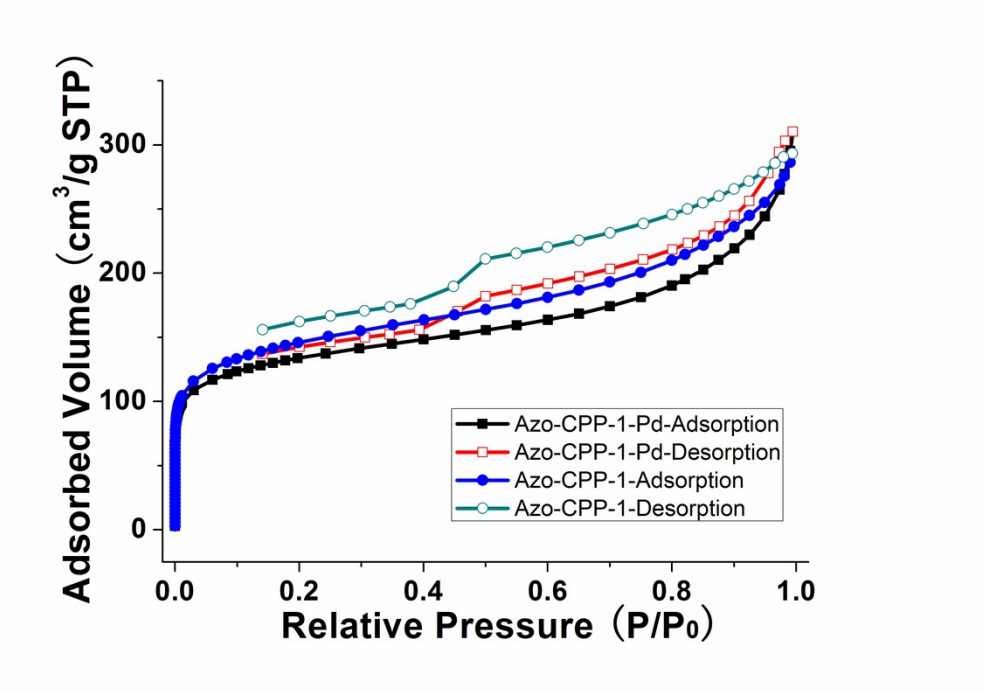


Fig. S13 Nitrogen adsorption and desorption isotherms at 77.3 K for Azo-CPP-1 and Azo-CPP-1-Pd.

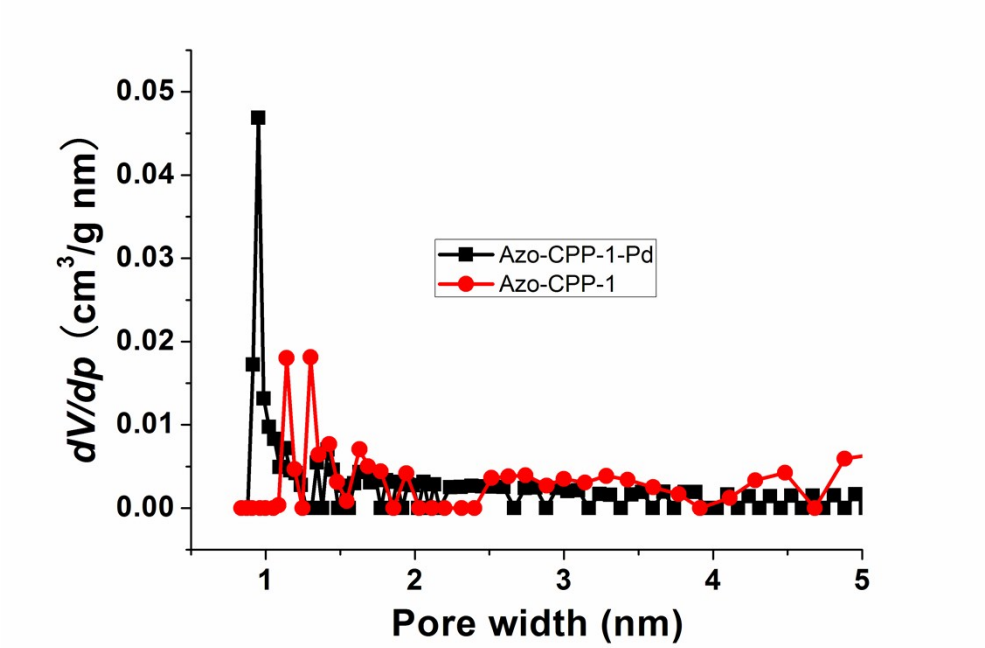


Fig. S14 Pore size distributions (PSD) calculated by the NLDFT method for Azo-CPP-1 and Azo-CPP-1-Pd.

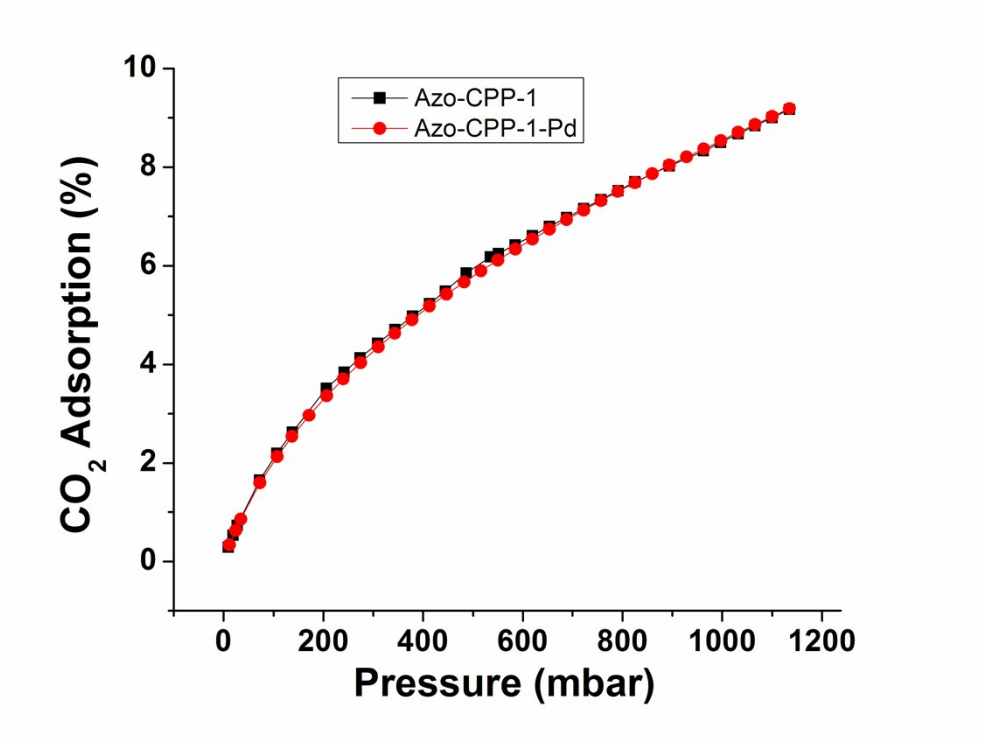


Fig. S 15 CO_2 adsorption isotherms at 273 K for Azo-CPP-1 and Azo-CPP-1-Pd

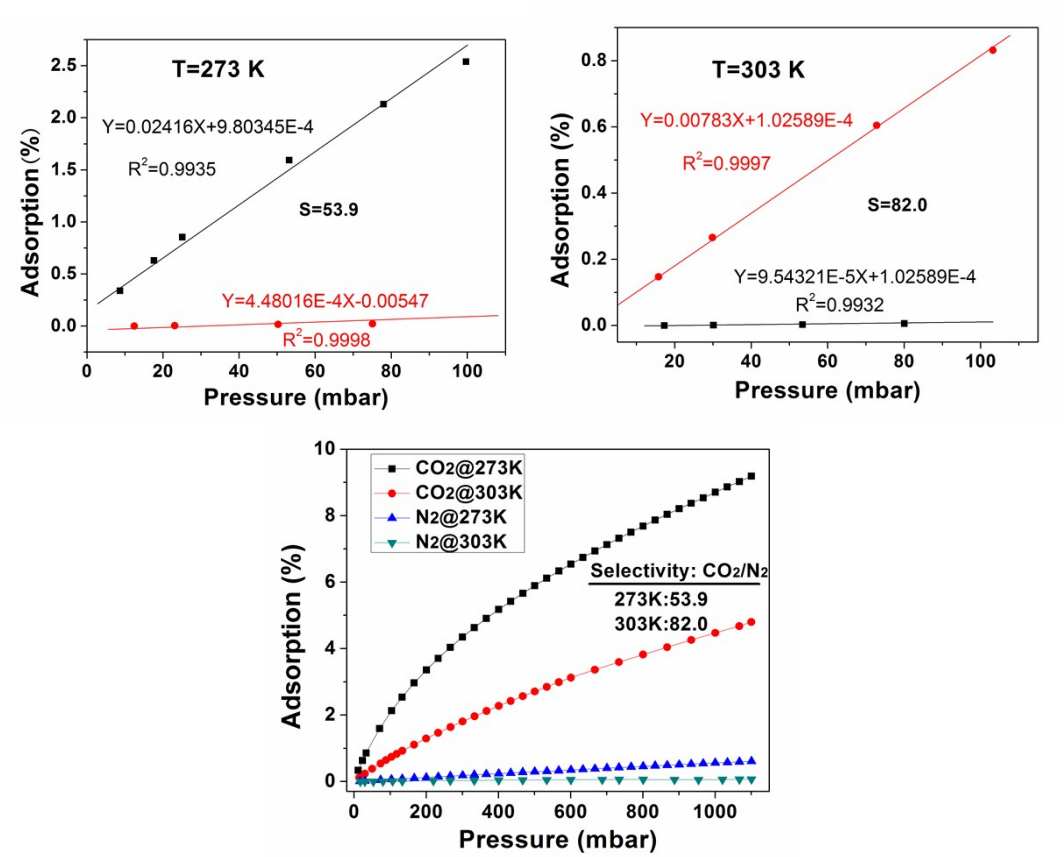


Fig. S16 CO_2/N_2 selectivities for Azo-CPP-1 calculated using the Henry's Law constants in the linear low pressure range (0~100 mbar).

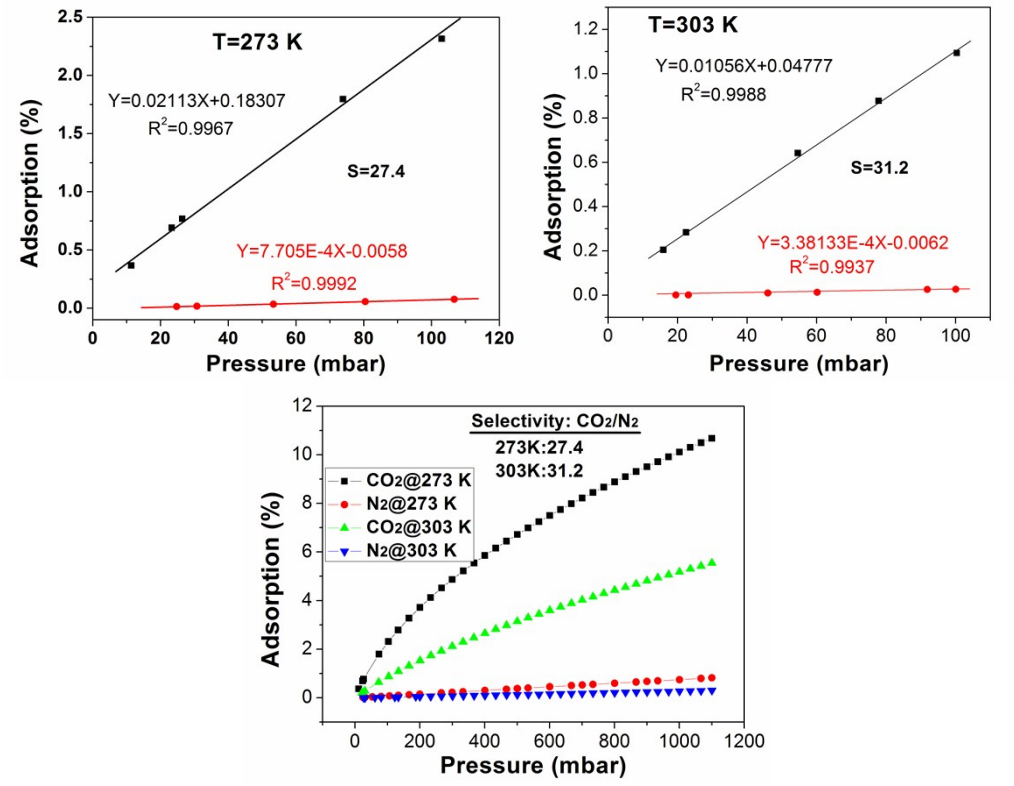


Fig. S17 CO_2/N_2 selectivities for Azo-CPP-2 calculated using the Henry's Law constants in the linear low pressure range (0~100 mbar)

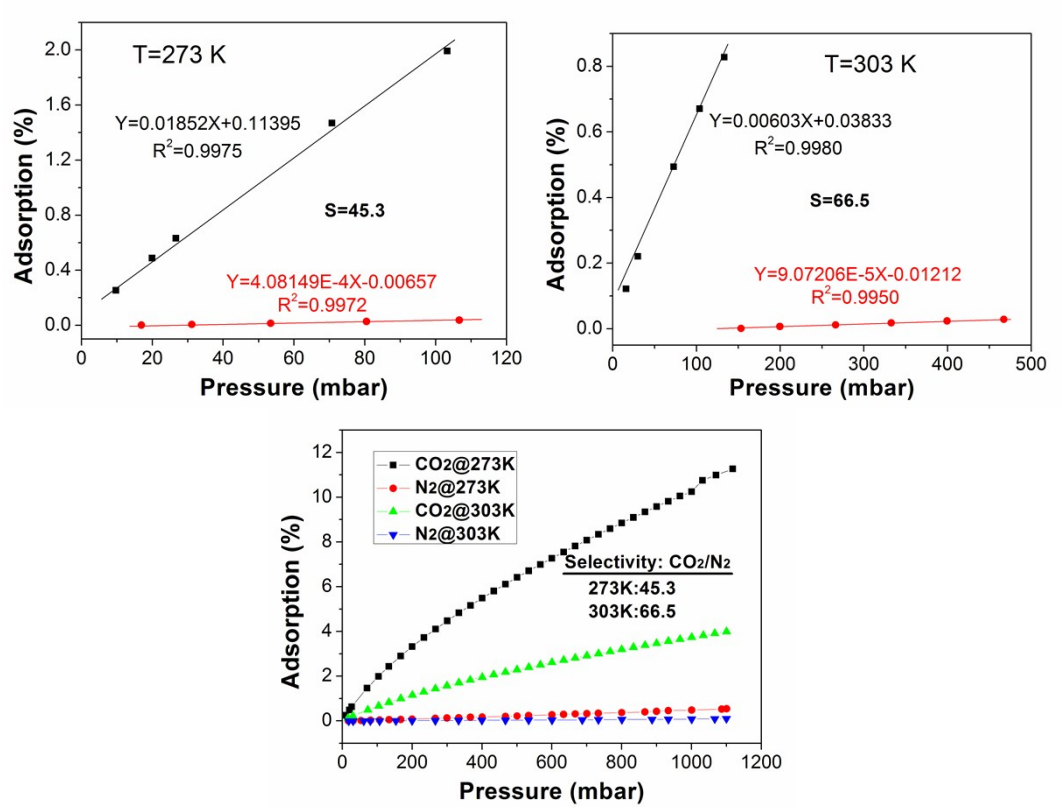


Fig. S18 CO_2/N_2 selectivities for Azo-CPP-3 calculated using the Henry's Law constants in the linear low pressure range (0~100 mbar). Due to the very low adsorption of N_2 at 303 K in the range of 0~100 mbar, the data from 150 to 500 mbar were used instead.

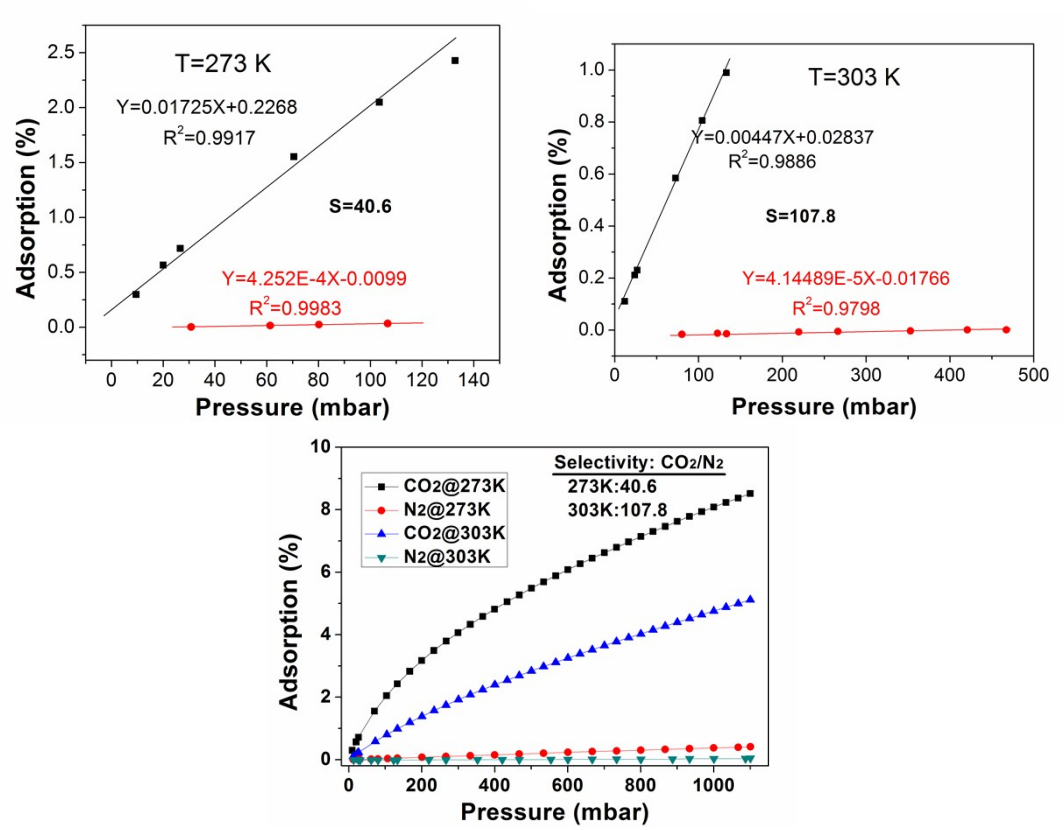


Fig. S19 CO_2/N_2 selectivities for Azo-CPP-4 calculated using the Henry's Law constants in the linear low pressure range (0~100 mbar). Due to the very low adsorption of N_2 at 303 K in the range of 0~100 mbar, the data from 90 to 500 mbar were used instead.

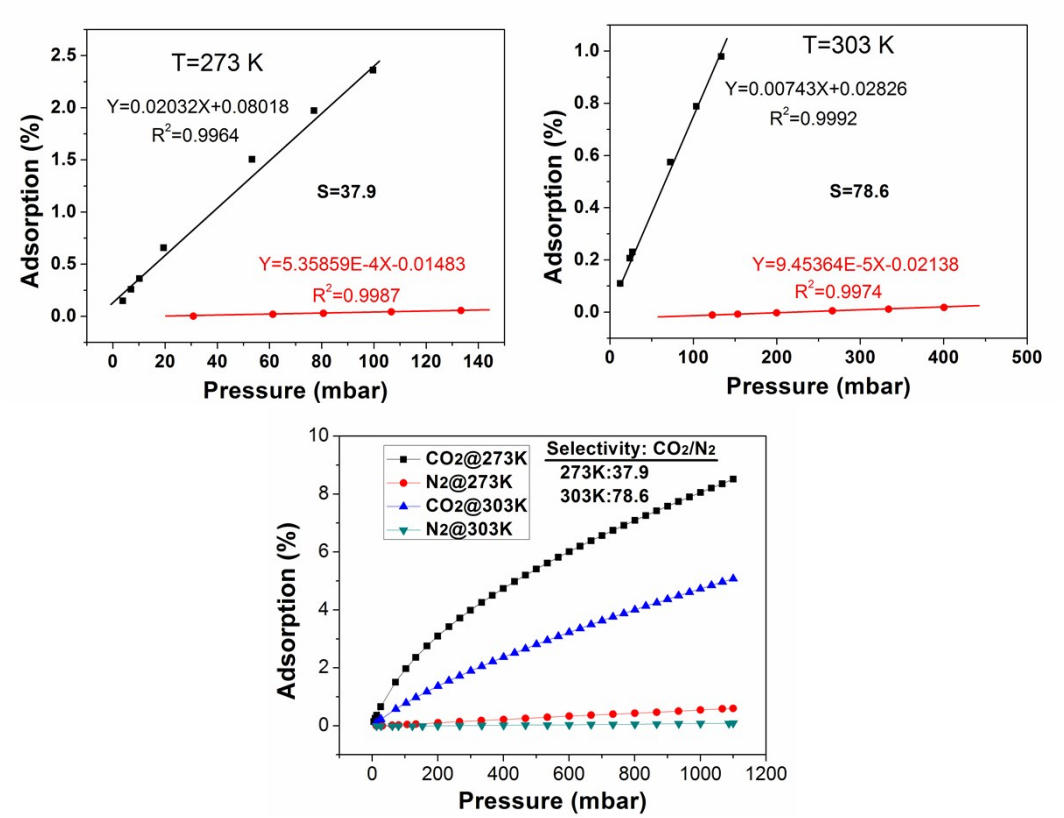
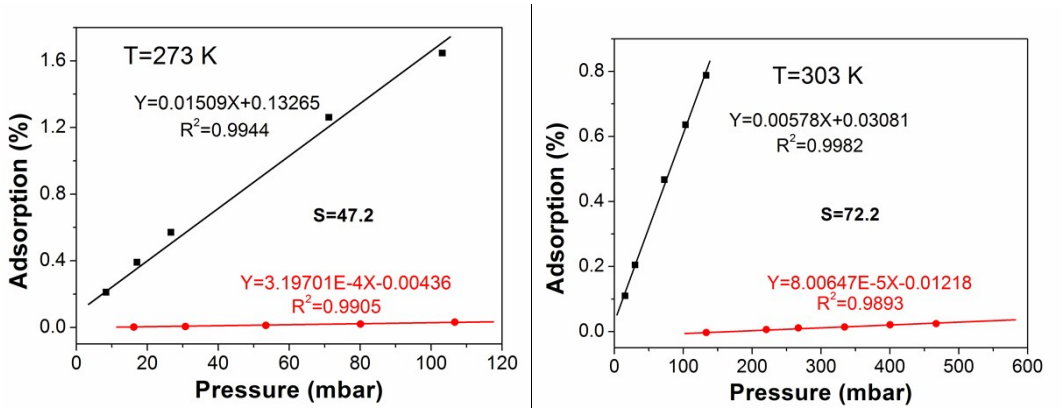


Fig. S20 CO_2/N_2 selectivities for Azo-CPP-5 calculated using the Henry's Law constants in the linear low pressure range (0~100 mbar). Due to the very low adsorption of N_2 at 303 K in the range of 0~100 mbar, the data from 100 to 500 mbar were used instead.



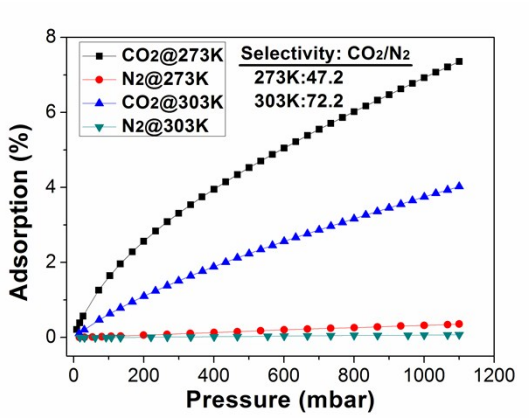


Fig. S21 CO_2/N_2 selectivities for Azo-CPP-6 calculated using the Henry's Law constants in the linear low pressure range (0~100 mbar). Due to the very low adsorption of N_2 at 303 K in the range of 0~100 mbar, the data from 100 to 500 mbar were used instead.

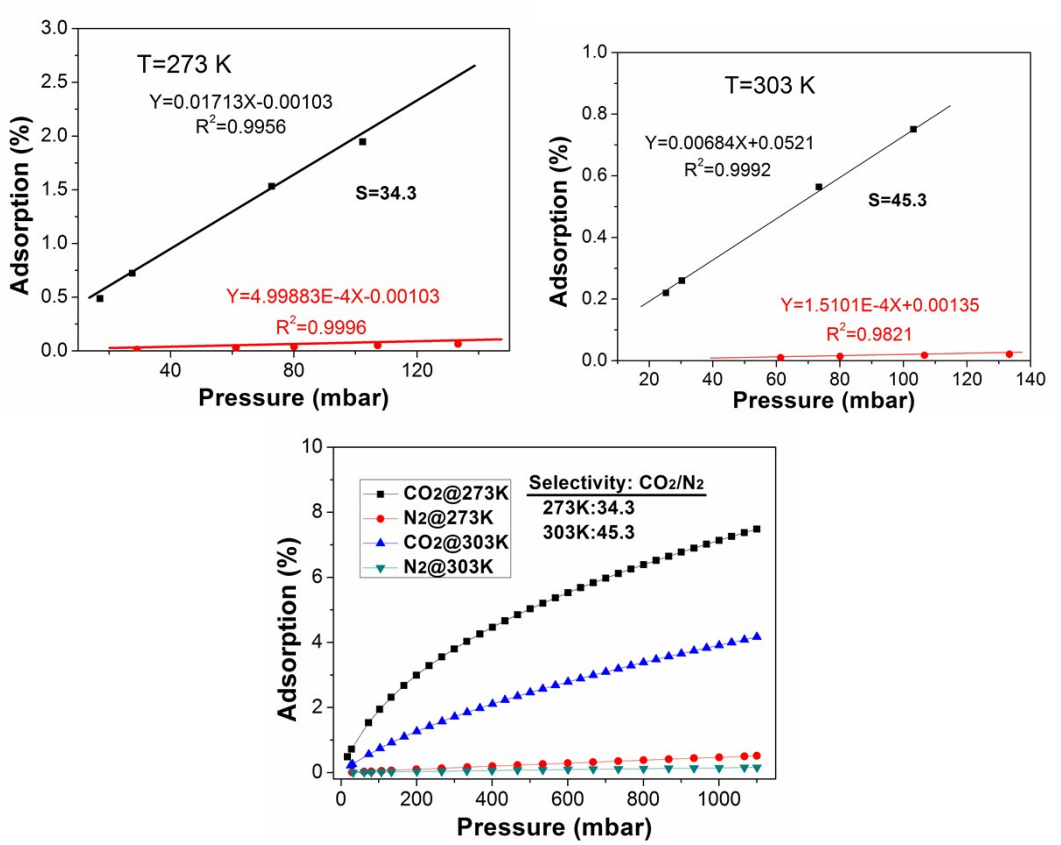


Fig. S22 CO_2/N_2 selectivities for Azo-CPP-7 calculated using the Henry's Law constants in the linear low pressure range (0~150 mbar).