Electronic Supplementary Material (ESI) for RSC Advances.

Supporting Information

Facile synthesis of porous organic polymers bifunctionalized with azo and porphyrin groups

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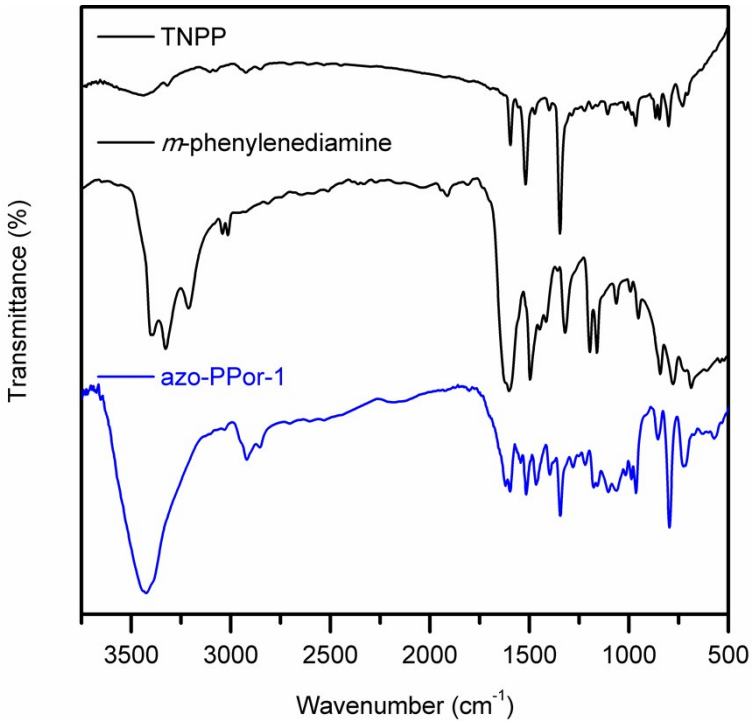

Fig. S1 FTIR spectra of azo-PPor-1 and the monomer.

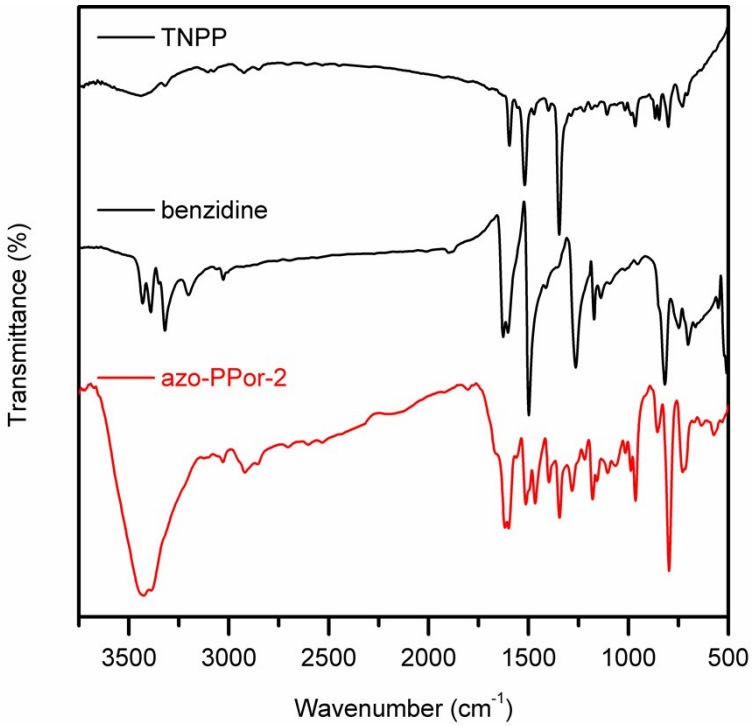

Fig. S2 FTIR spectra of azo-PPor-2 and the monomer.

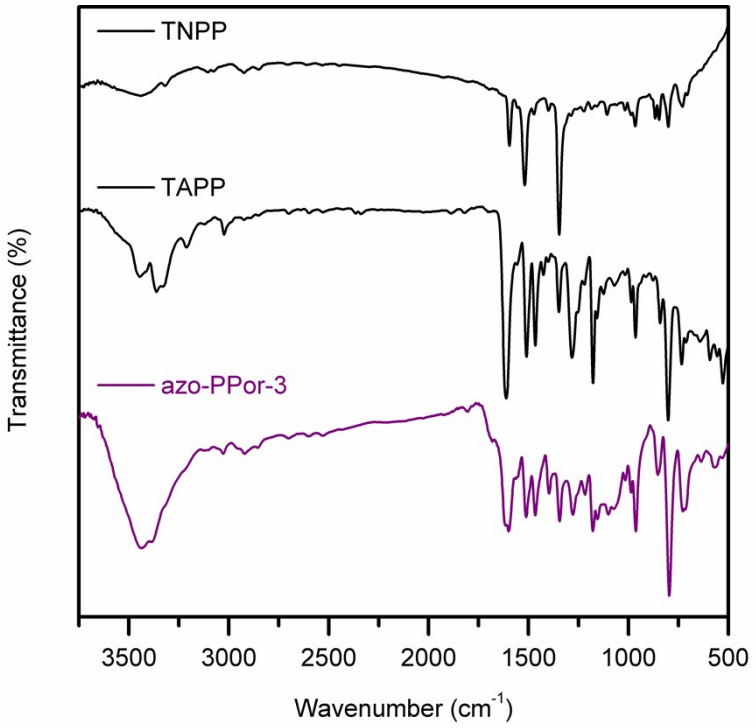

Fig. S3 FTIR spectra of azo-PPor-3 and the monomer.

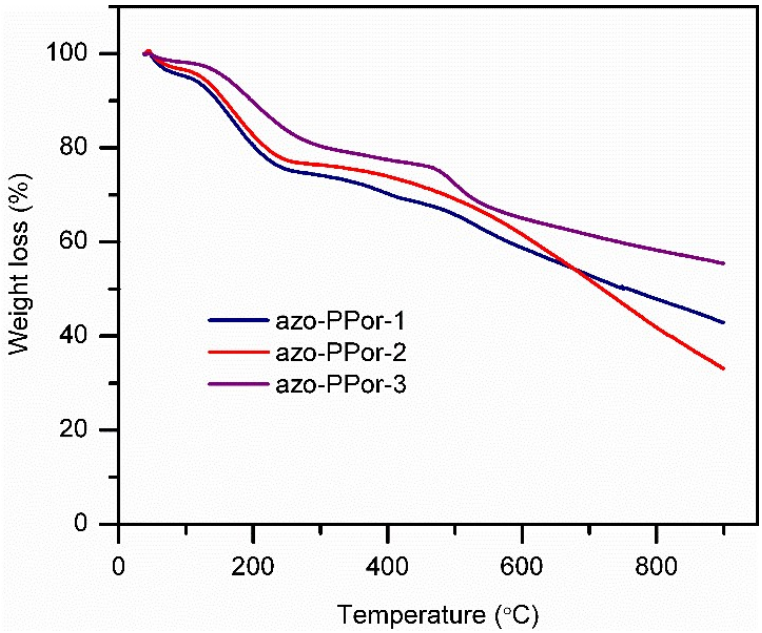

Fig. S4 TGA plots of azo-PPors under nitrogen atmosphere.

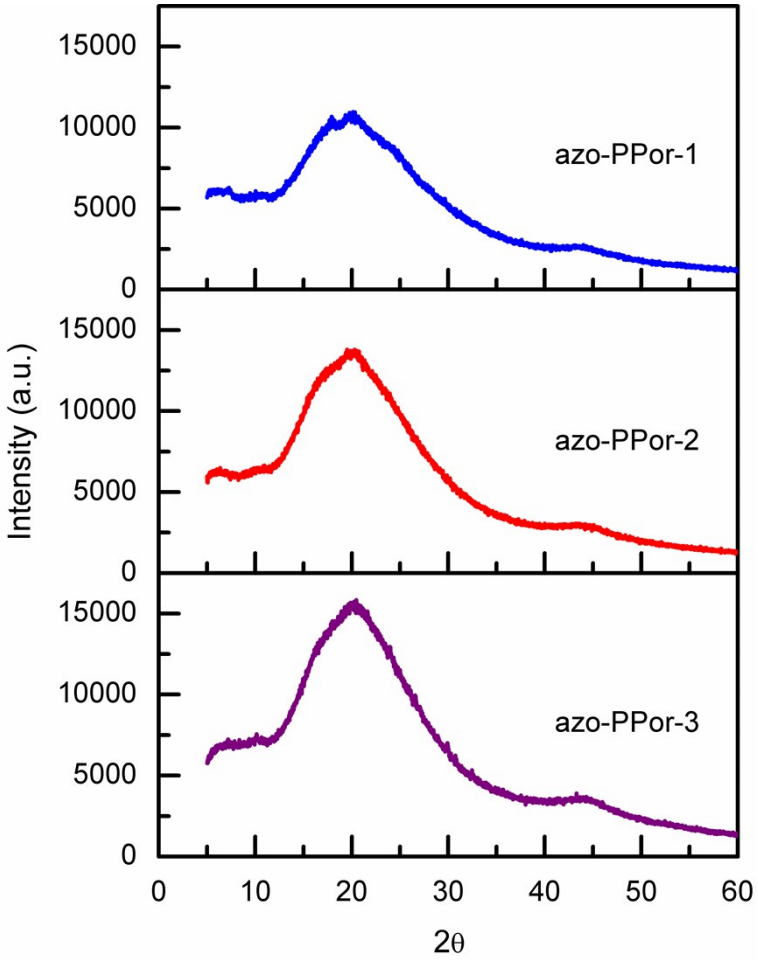

Fig. S5 Powder X-ray diffraction of azo-PPors.

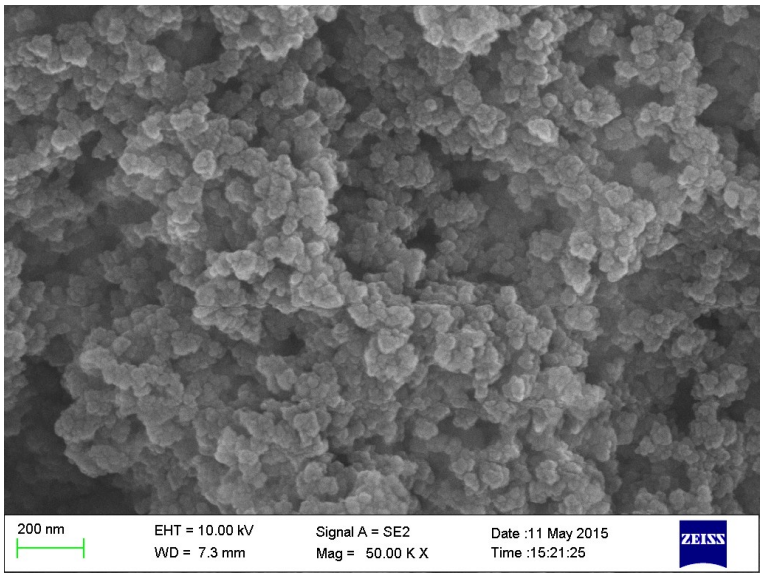

Fig. S6 SEM image of azo-PPor-1.

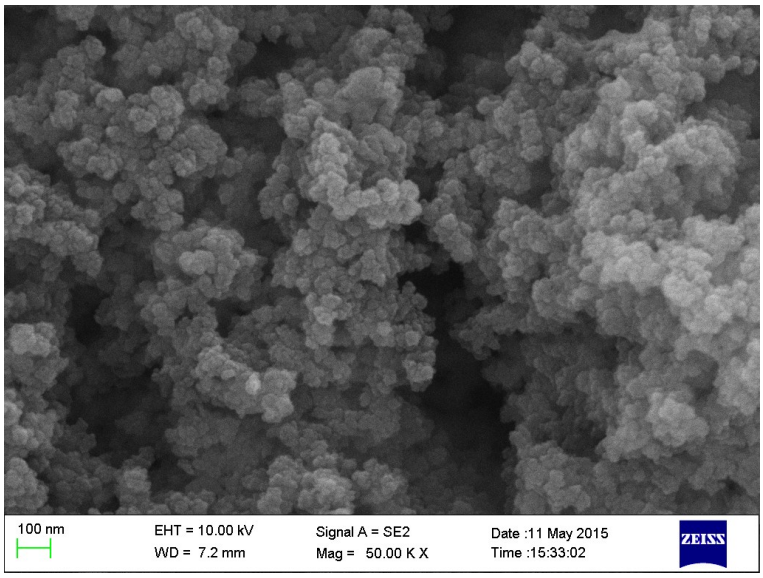

Fig. S7 SEM image of azo-PPor-2.

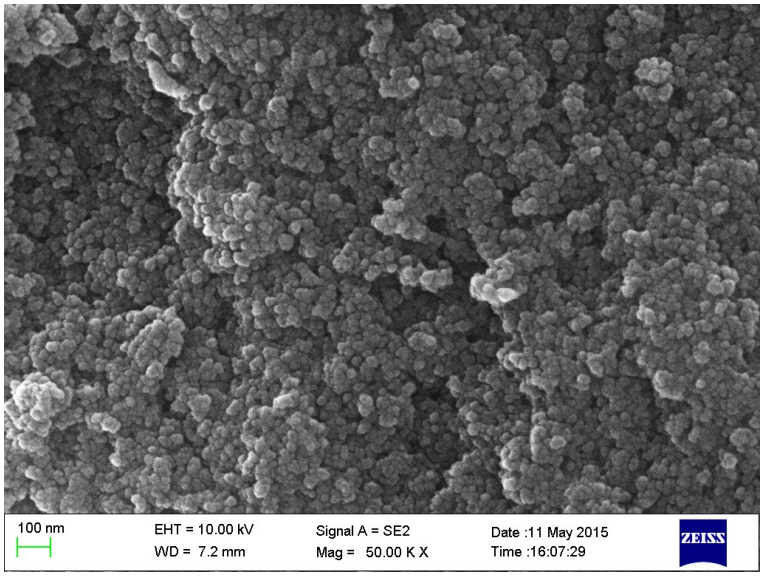

Fig. S8 SEM image of azo-PPor-3.

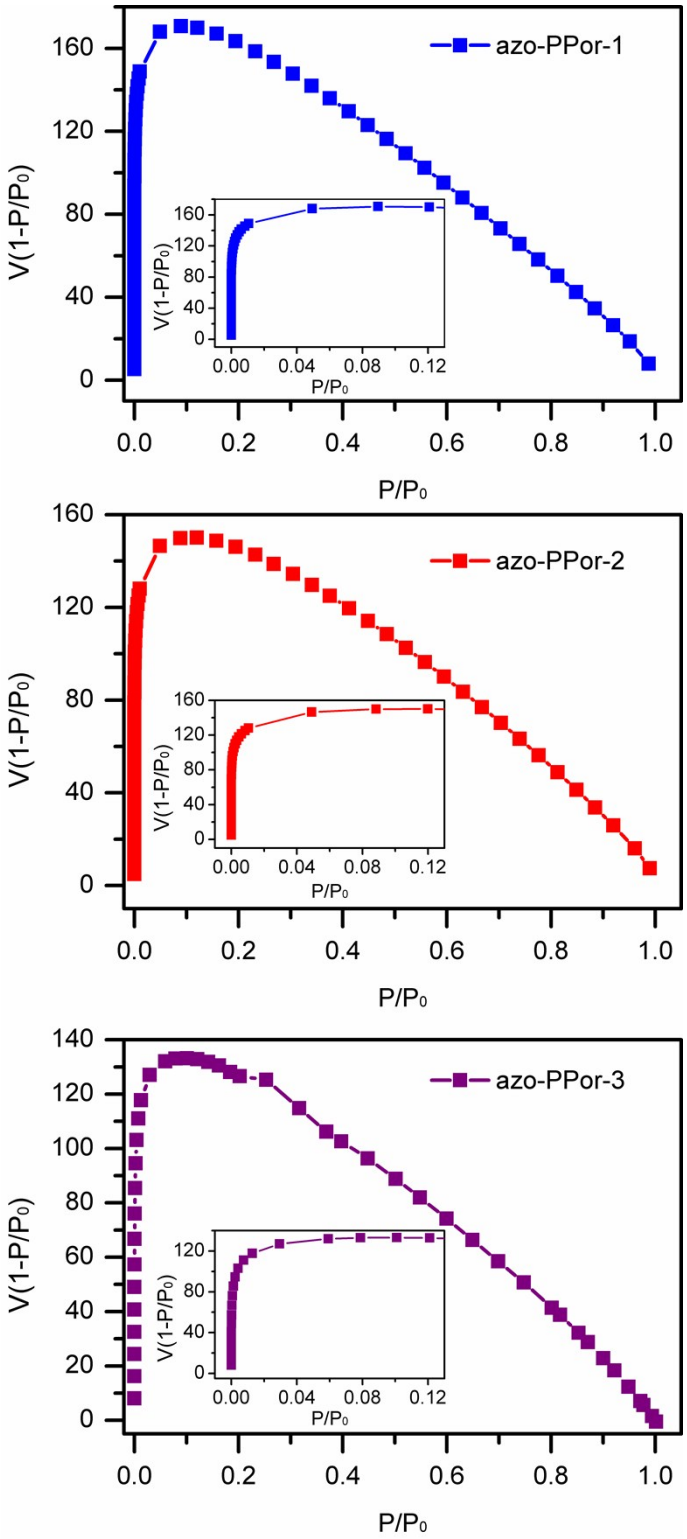

Fig. S9 Calculated Rouquerol plot of azo-PPors (Inset: enlarged plot turning part) along with pressure ranges used for the BET surface area calculations. We have used the pressure range where the term $V(1-P/P_0)$ continuously increases with P/P_0 for the surface area calculations.

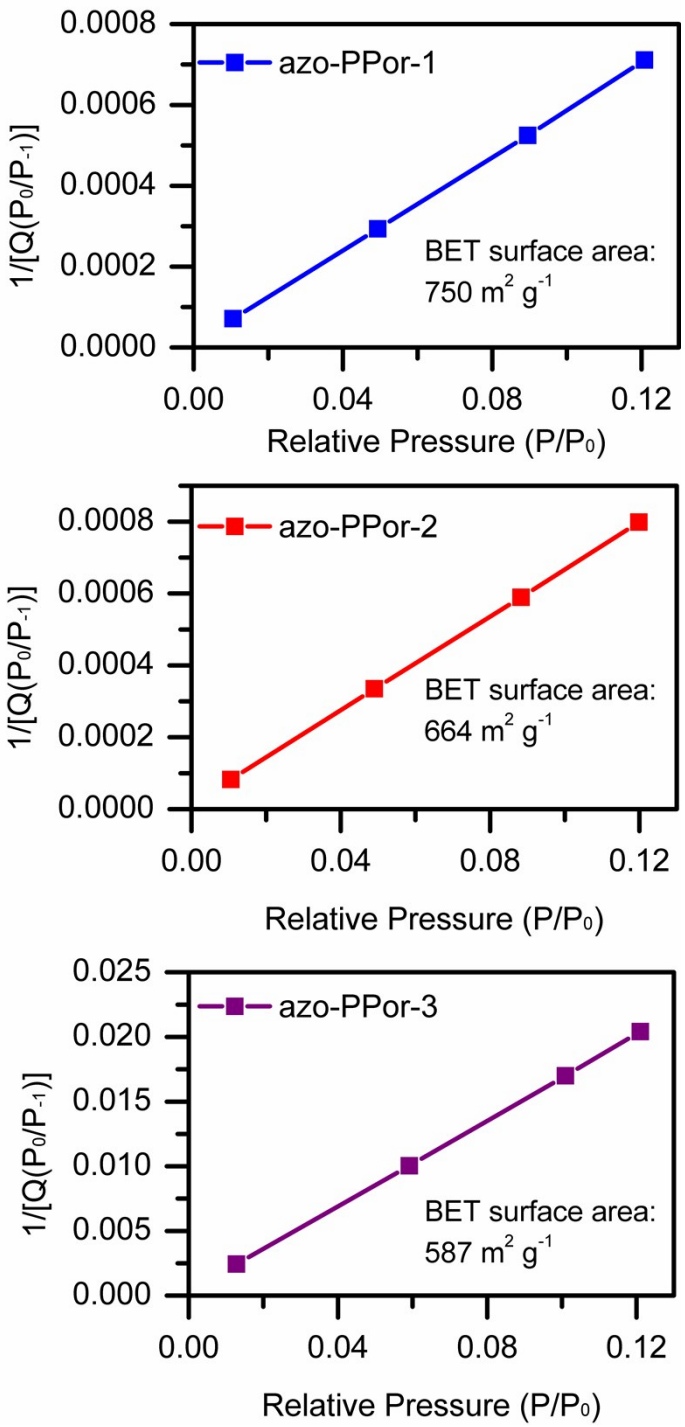

Fig. S10 BET plots of azo-PPors from nitrogen isotherms at 77 K. The selected points are located in the relative pressure ranges (between 0.01 and 0.12) determined according to the Rouquerol plots (see Fig. S9). Correlation coefficient R and C constant was 0.999965, 689.396 (azo-PPor-1), 0.999992, 492.264 (azo-PPor-2) and 0.999977, 602.625 (azo-PPor-3).

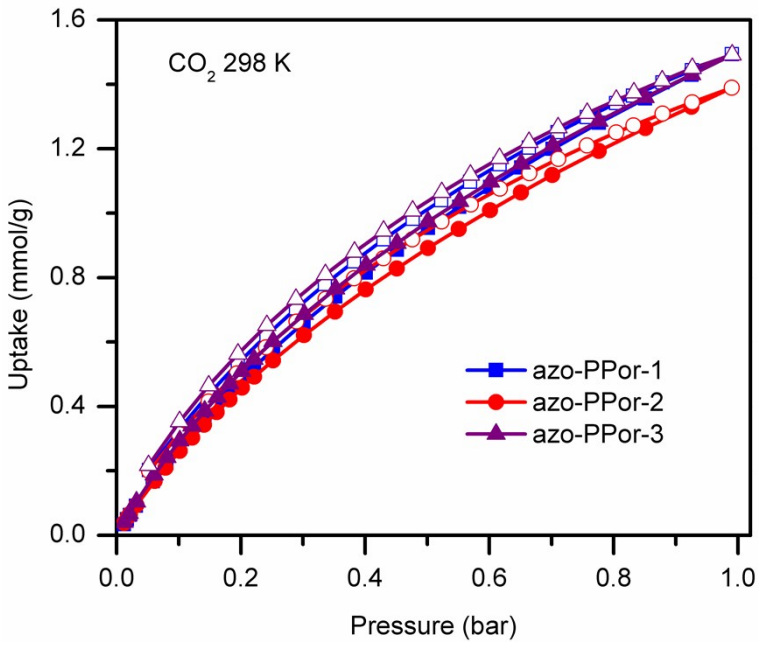

Fig. S11 CO_2 adsorption isotherms of azo-PPors at 298 K.

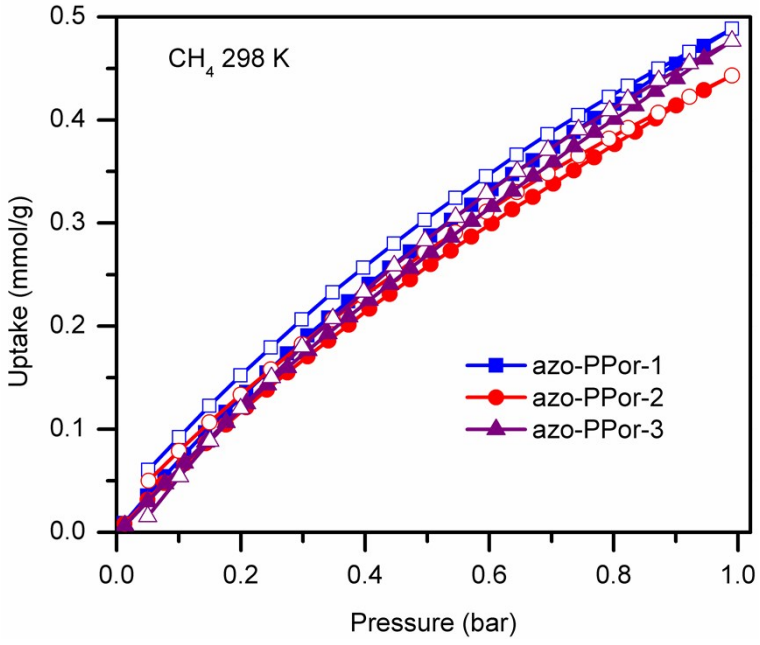

Fig. S12 CH_4 adsorption isotherms of azo-PPors at 298 K.

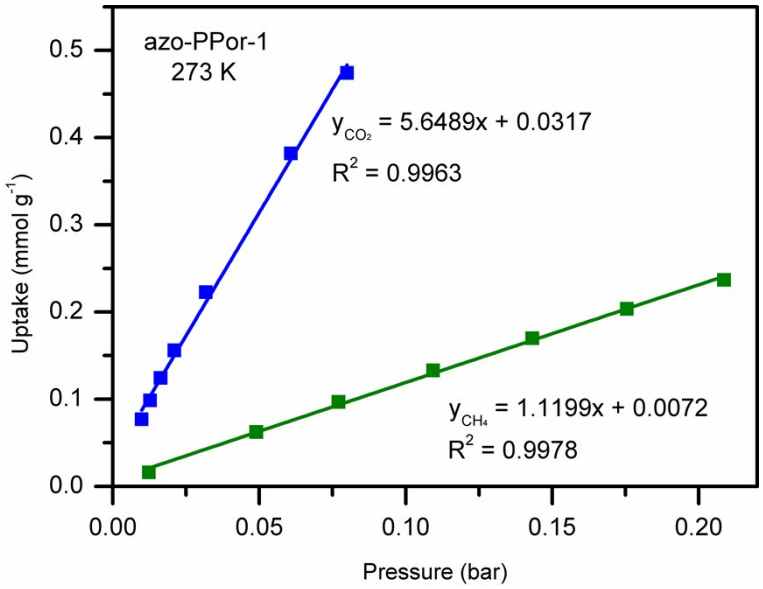

Fig. S13 Initial slope fitting at 273 K for azo-PPor-1.

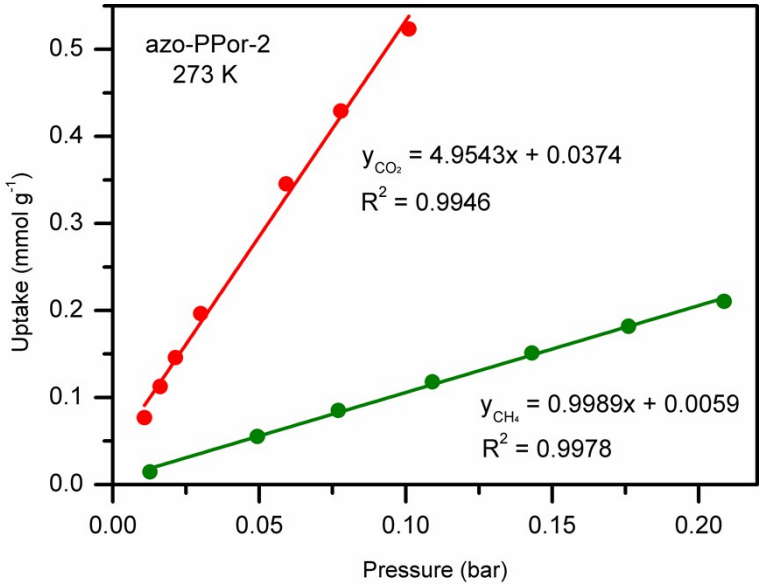

Fig. S14 Initial slope fitting at 273 K for azo-PPor-2.

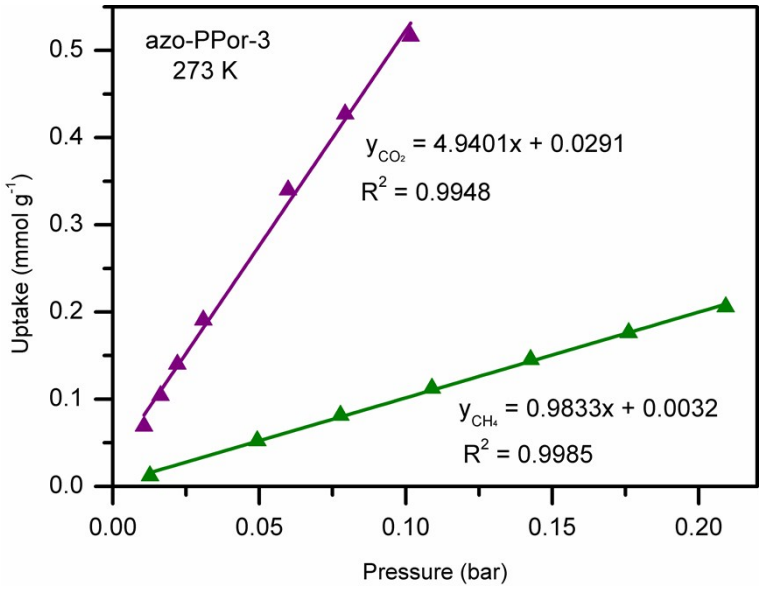

Fig. S15 Initial slope fitting at 273 K for azo-PPor-3.

Table S1. Summary of surface area, CO_2 uptake and selectivity (CO_2/CH_4) (at 273 K) in selected porous materials.

Material	BET ($m^2\ g^{-1}$)	CO_2 uptake (mmol g^{-1})	Selectivity (CO_2/CH_4)	reference
azo-Ppor-1	750	2.45	5.04	this work
azo-Ppor-2	664	2.23	4.96	this work
azo-Ppor-3	587	2.16	5.02	this work
P-1	611	2.02	4.0	[1]
P-2	1222	3.30	3.0	[1]
Cz-POF-1	2065	4.59	4.4	[2]
Cz-POF-2	671	1.75	4.7	[2]
Cz-POF-3	1927	4.77	4.4	[2]
Cz-POF-4	914	2.75	7.1	[2]
PPTBC	917	2.93	5.1	[3]
PMTBC	704	2.86	5.6	[3]
PPETBC	702	2.23	4.0	[3]
PMETBC	540	1.96	4.6	[3]
NPOF-4	1249	2.50	3	[4]
NPOF-4-NO_2	337	2.42	15	[4]
NPOF-4-NH_2	554	2.90	11	[4]
BPL carbon	1150	2.09	3.9	[5]

References

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