Electronic Supplementary Material (ESI) for RSC Advances.

Rapid and selective adsorption of a typical aromatic organophosphorus flame retardant on the MIL-101-based metal-organic frameworks

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Supplementary Information

Number of Pages: 5

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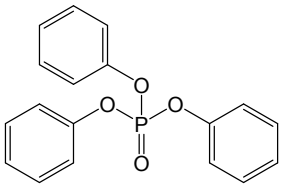
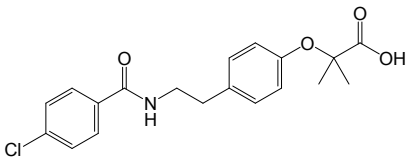
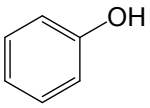
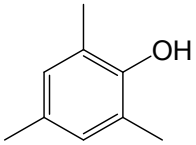
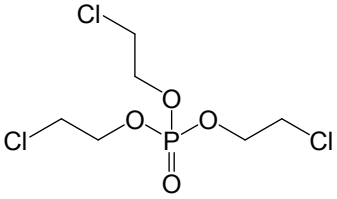
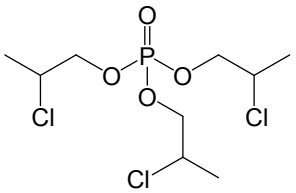
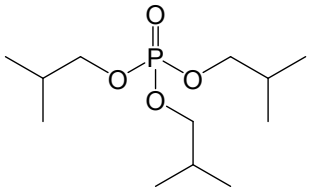
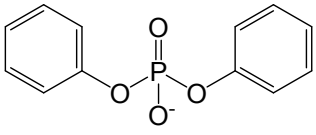
Table S1. Physicochemical properties of pollutants

Name	Molecular formula	Molecular mass (g/mol)	Log K_{OW}	Structural formula
TPhP	$C_{18}H_{15}O_4P$	326.28	4.59 [a]	
bezafibrate	$C_{19}H_{20}ClNO_4$	361.82	4.25 [b]	
phenol	C_6H_5OH	94.11	1.46 [c]	
2,4,6-trimethyl phenol	$C_9H_{12}O$	136.19	2.73 [d]	
TCEP	$C_6H_{12}Cl_3O_4P$	285.49	1.44 [a]	
TCPP	$C_9H_{18}Cl_3O_4P$	327.6	2.59 [a]	
TiBP	$C_{12}H_{27}O_4P$	266.31	3.60 [a]	
DPhP	$C_{12}H_{11}O_4P$	250.19	2.88 [a]	

[a] R. Rodil, J. B. Quintana, P. López-Mahía, S. Muniategui-Lorenzo and D. Prada-Rodríguez, *Journal of Chromatography A*, 2009, **1216**, 2958-2969.

[b] D. De Ridder, A. Verliefde, S. Heijman, J. Verberk, L. Rietveld, L. Van Der Aa, G. Amy and J. Van Dijk, *Water Science and Technology*, 2011, **63**, 416-423.

[c] K. Hanna, I. Beurroies, R. Denoyel, D. Desplantier-Giscard, A. Galarneau and F. Di Renzo, *Journal of colloid and interface science*, 2002, **252**, 276-283.

[d] G. Ohlenbusch and F. Frimmel, *Chemosphere*, 2001, **45**, 323-327.

Table S2 Specific surface area and pore volume of adsorbents

Adsorbent material	Specific surface m^2/g	Pore volume cm^3/g	Average pore size nm
Cr-MIL-101	3559.72	1.658	2.10
Fe-MIL-101-NH_2	1651.96	1.100	2.99
Activated carbon [a]	950-1050	0.9	08-1.2

[a] Provided by the manufacturer.

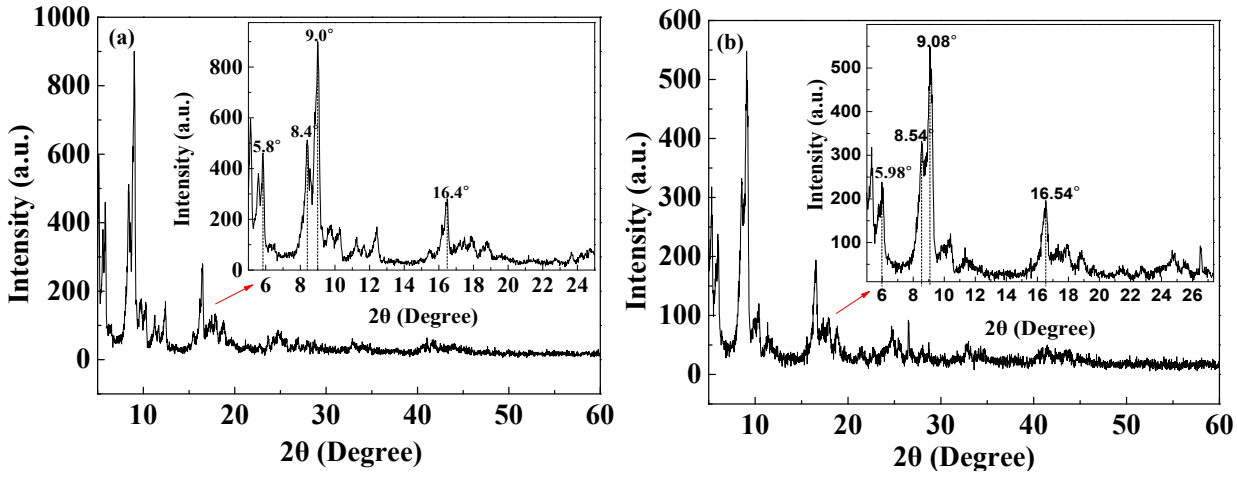


Fig S1. XRD patterns of Cr-MIL-101 (a) and Fe-MIL-101-NH_2 (b)

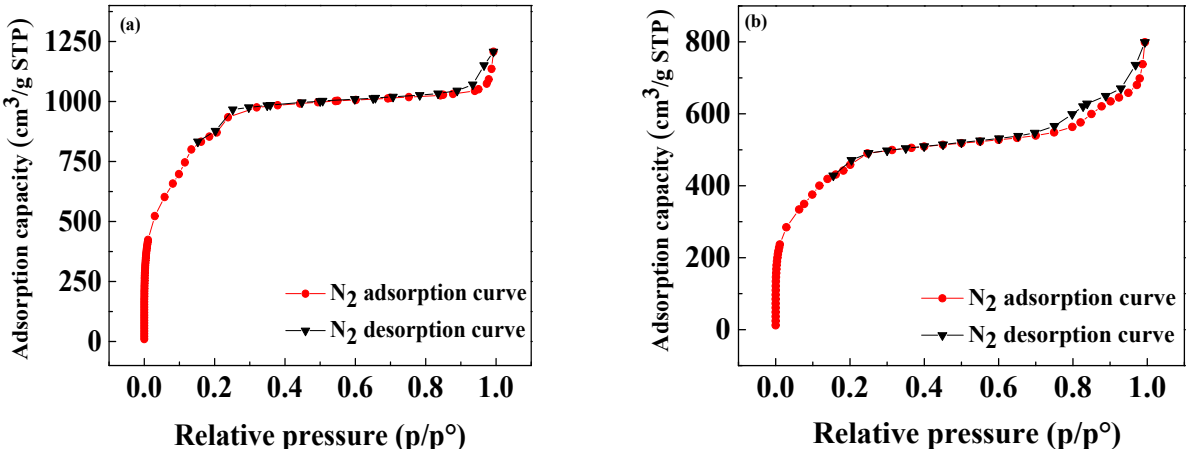


Fig S2. Nitrogen adsorption desorption curves of Cr-MIL-101(a) and Fe-MIL-101-NH_2 (b)

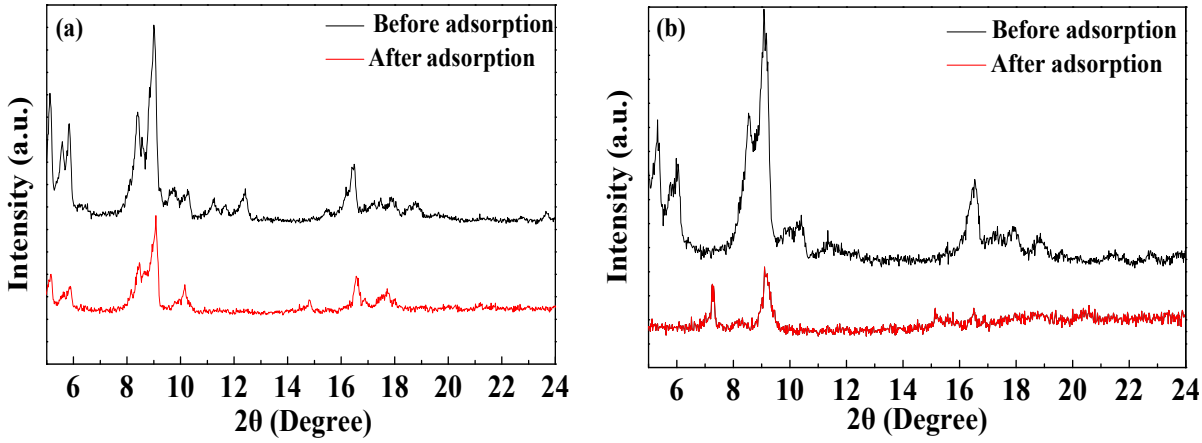


Fig S3. XRD patterns of Cr-MIL-101(a) and Fe-MIL-101-NH_2 (b) before and after TPhP adsorption

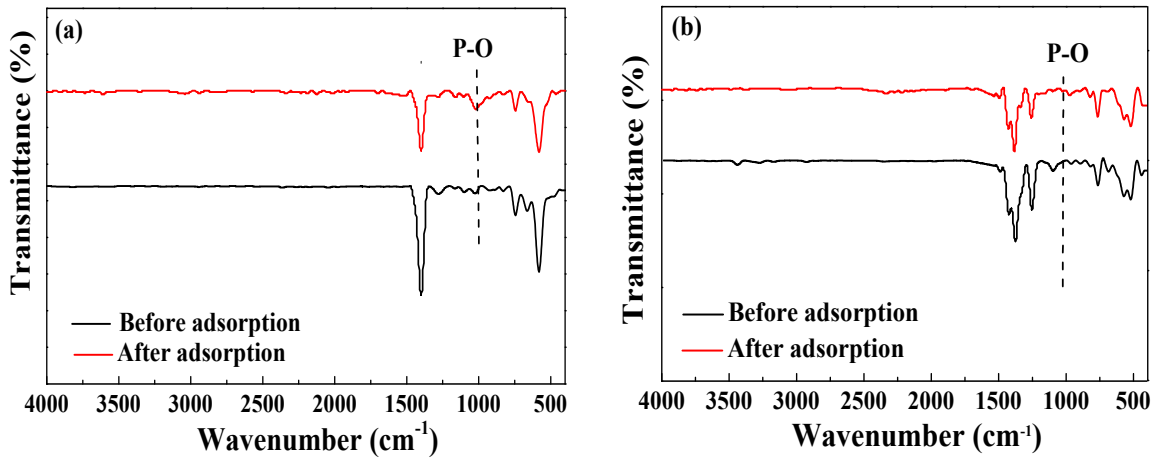


Fig S4. FT-IR spectra of Cr-MIL-101(a) and Fe-MIL-101-NH_2 (b) before and after TPhP adsorption

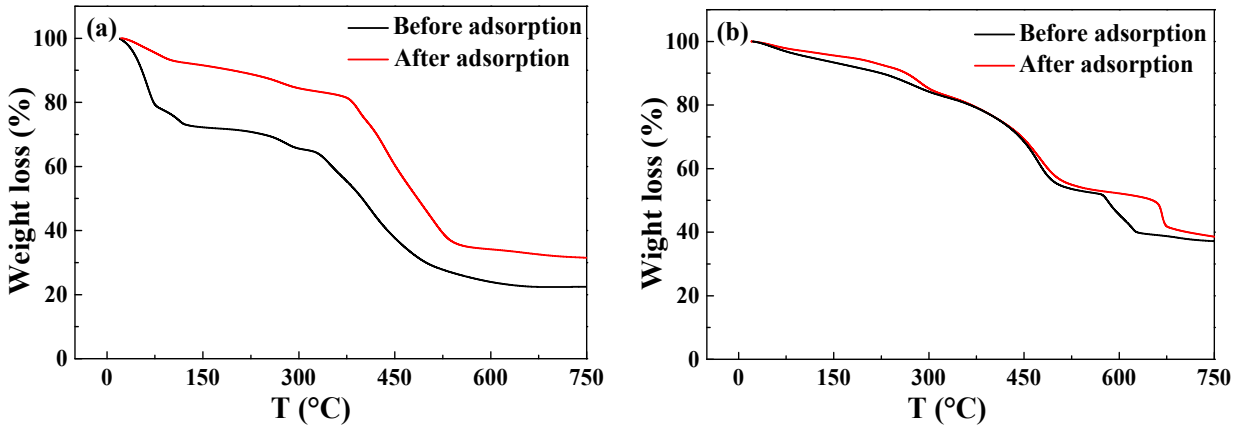


Fig S5. TGA curves of Cr-MIL-101(a) and Fe-MIL-101-NH_2 (b) before and after TPhP adsorption

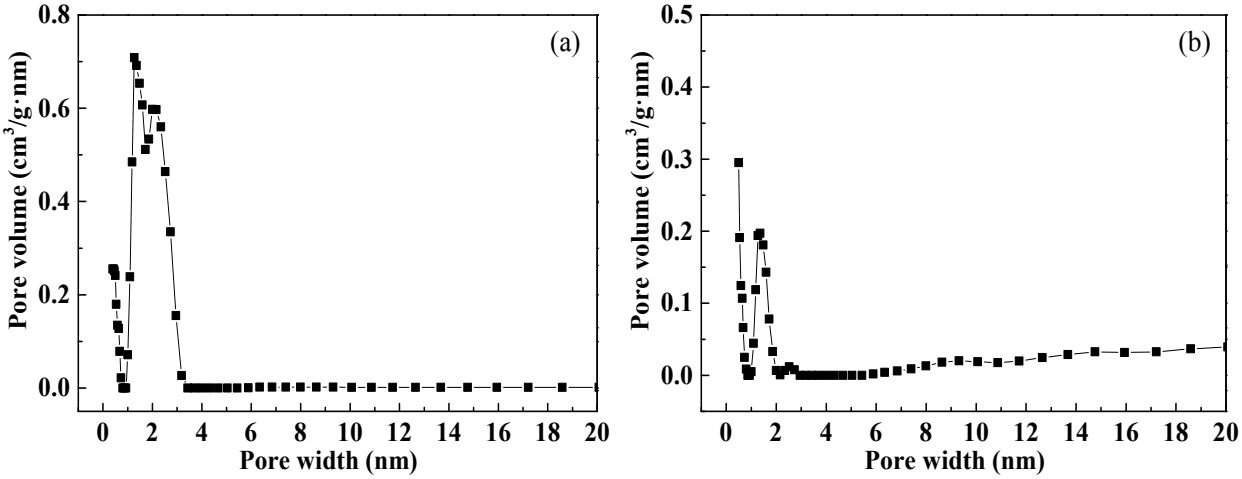


Fig S6. Pore size distribution of Cr-MIL-101(a) and Fe-MIL-101-NH_2 (b) after adsorption

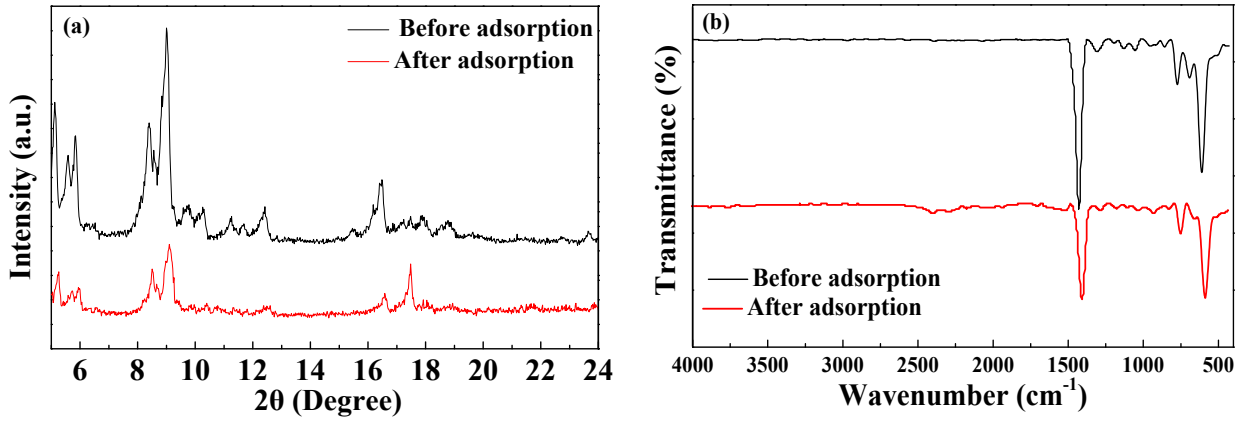


Fig S7. XRD patterns (a) and FTIR spectra (b) of Cr-MIL-101 before and after TPhP adsorption at pH 9

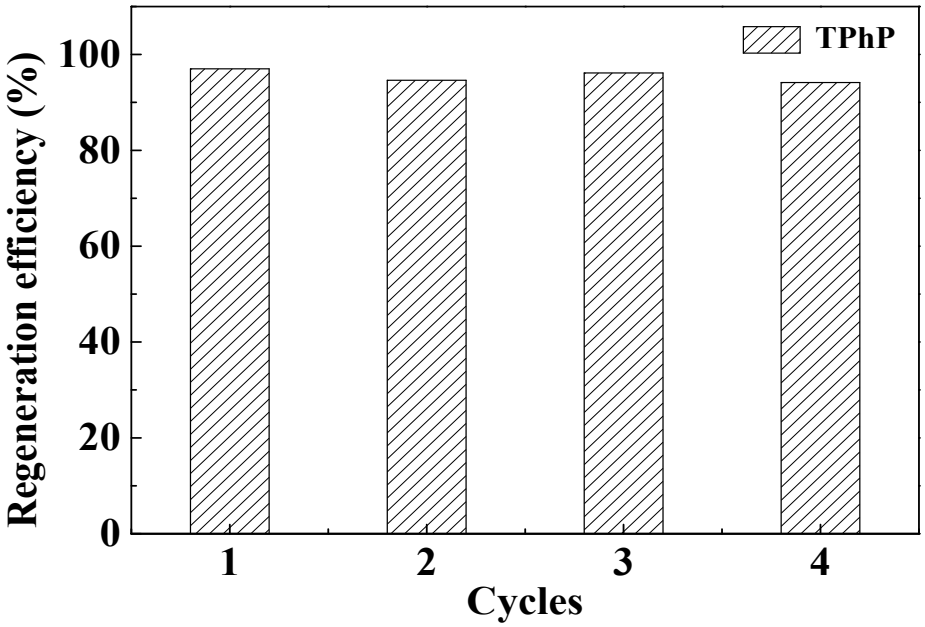


Fig S8. The regeneration efficiency of TPhP during successive sorption cycles

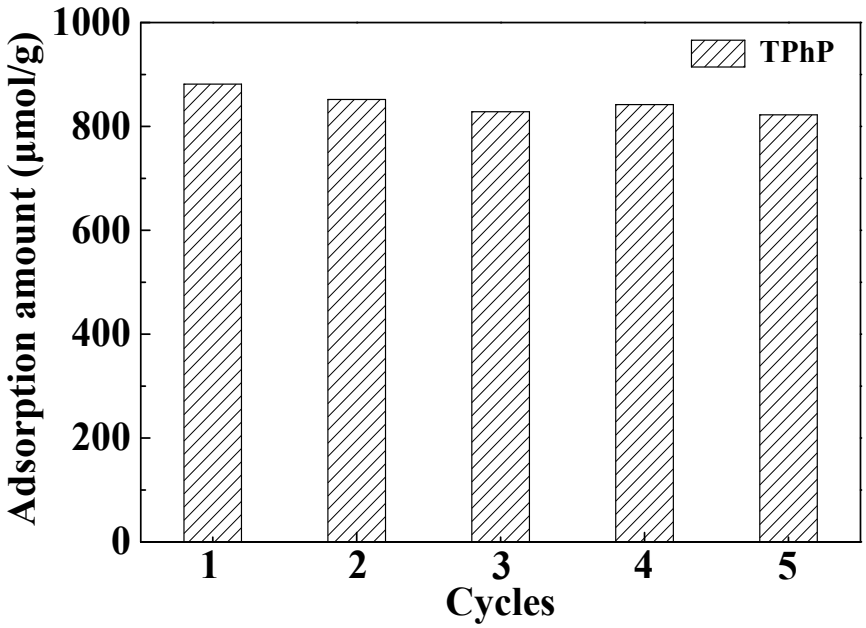


Fig S9. Adsorbed amounts of TPhP on the Cr-MIL-101 in five successive sorption cycles