

Supplementary information

Tapping the potential of a Glucosamine Polysaccharide-Diatomaceous Earth hybrid adsorbent in the solid phase extraction of a persistent organic pollutant and toxic pesticide 4,4'-DDT from Water

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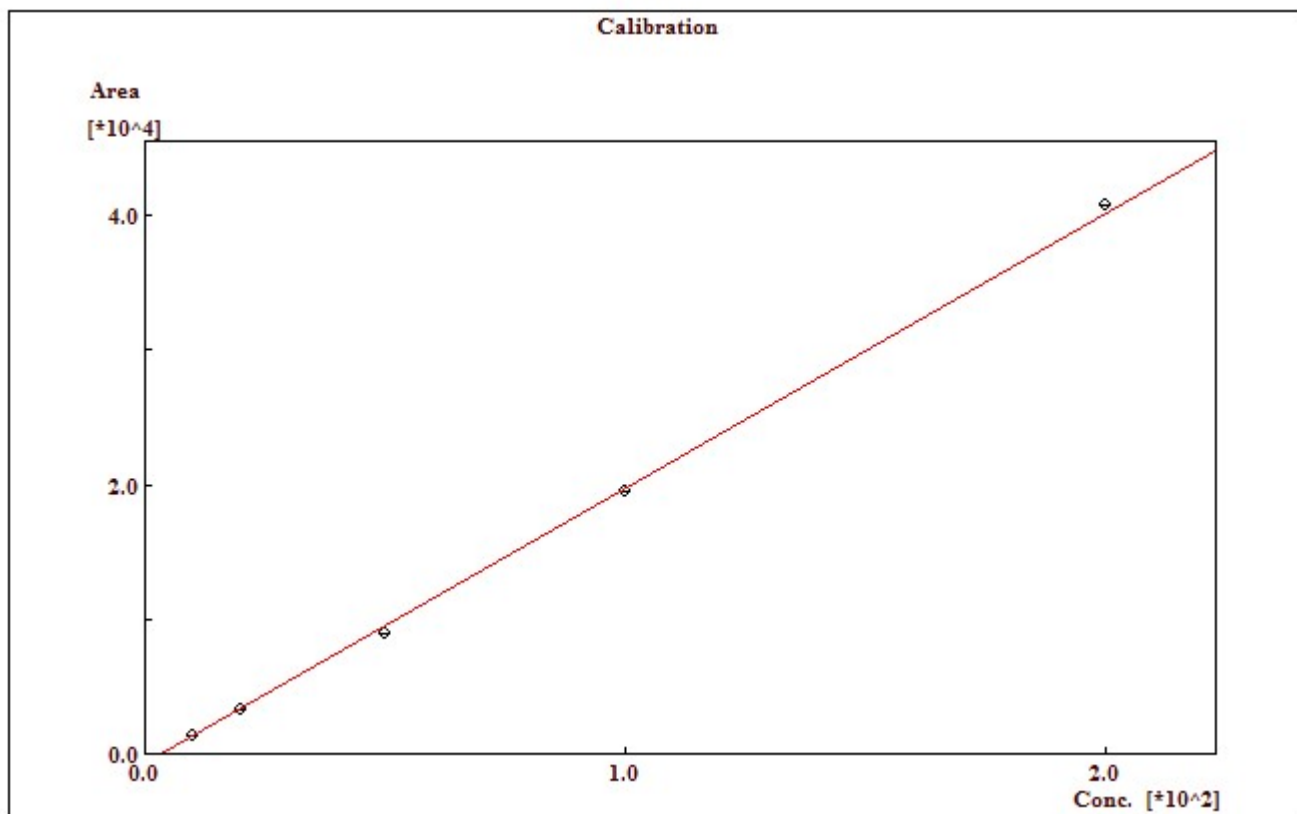


Fig S1(a). Calibration curve for 4,4'-DDT

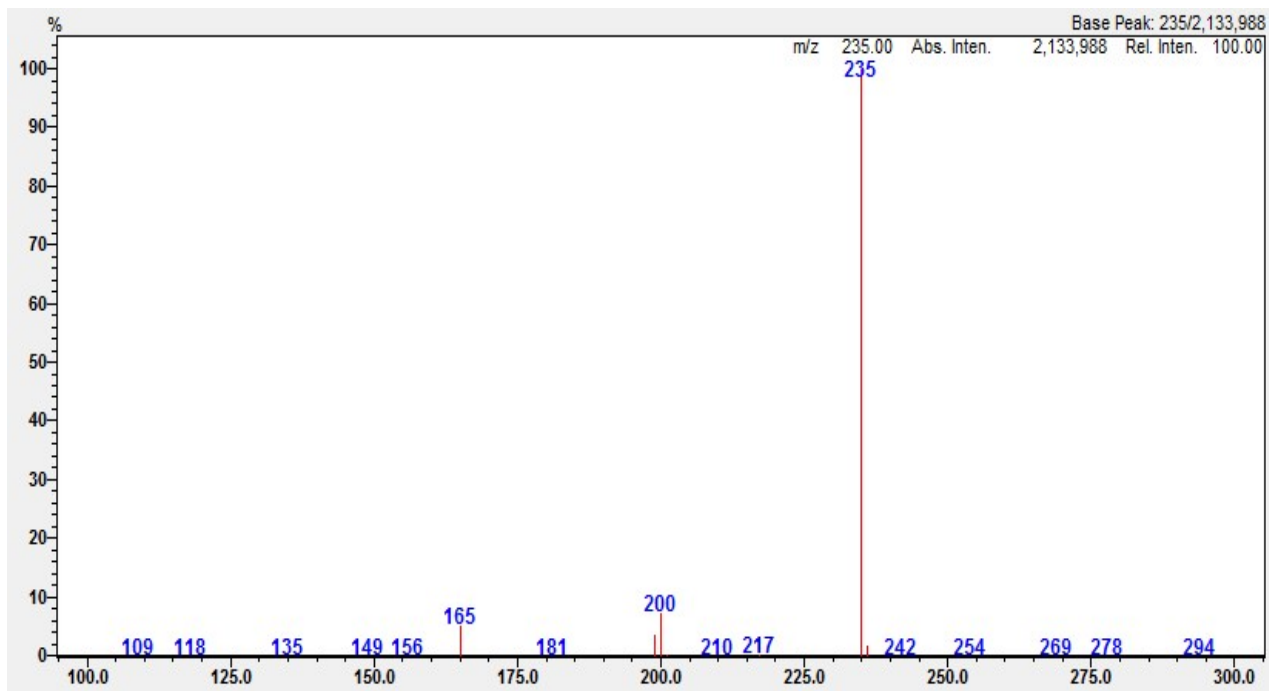


Fig S1(b). Precursor ion scan of 4,4'-DDT (m/z 235)

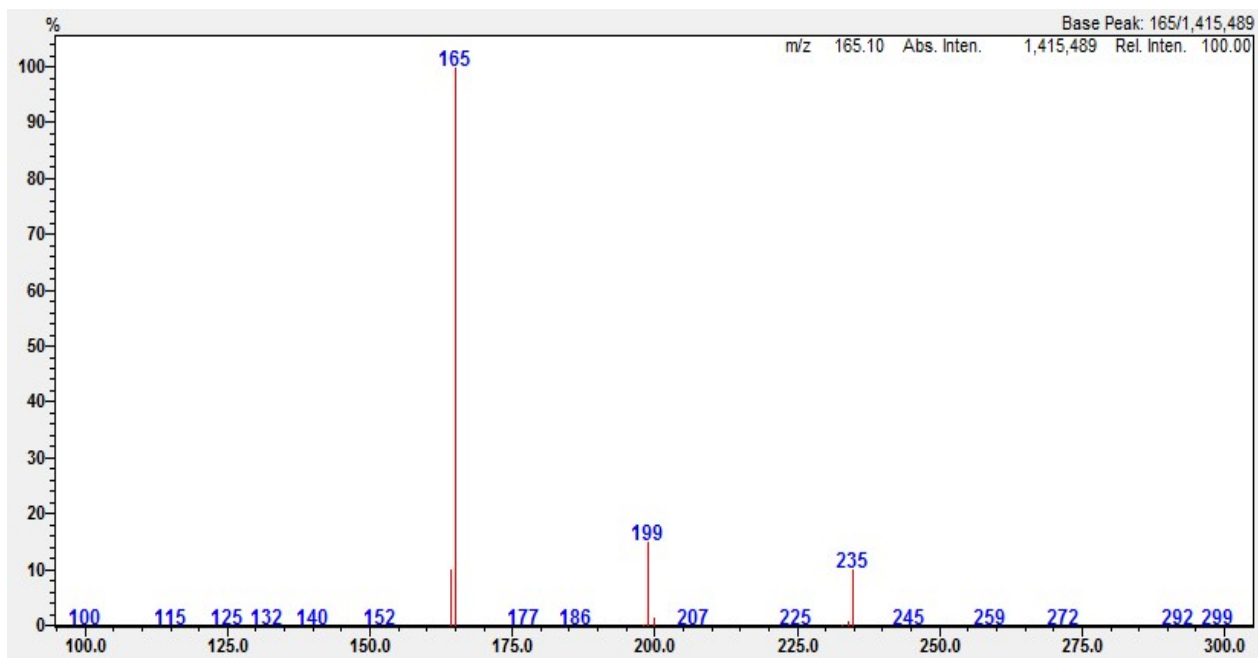


Fig S1(c). Product ion spectra of 4,4'-DDT (m/z 165, m/z 199)

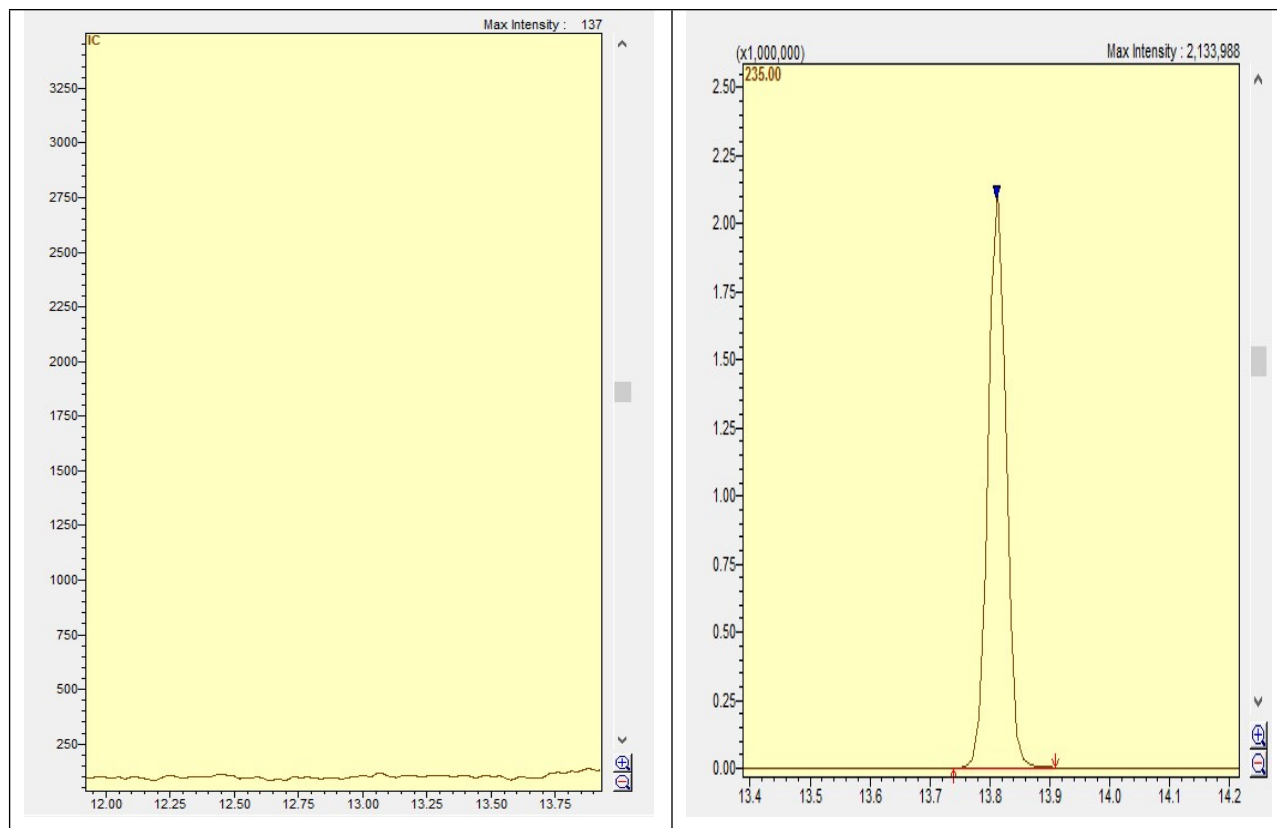


Fig S1(d).(left) Blank and (right) 4,4'-DDT peak

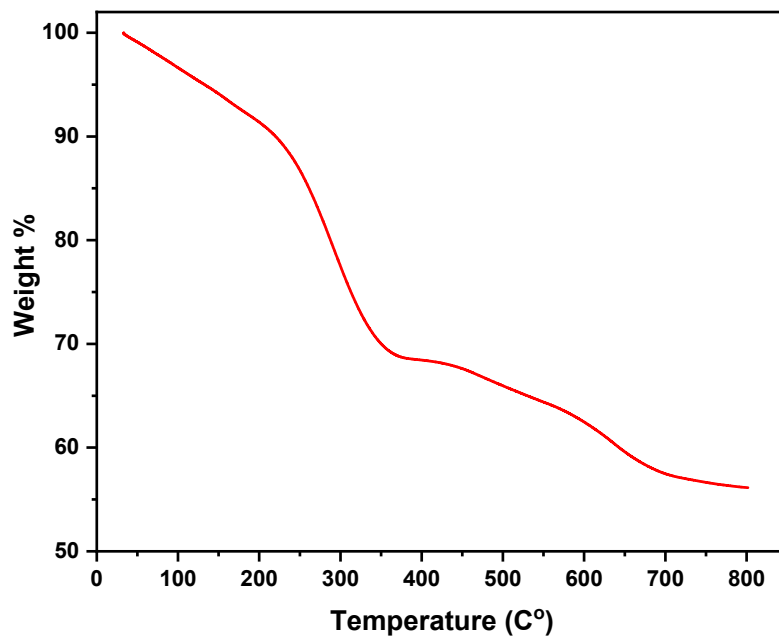


Fig S2. TGA profile of adsorbent Chitosan Diatomaceous earth composite

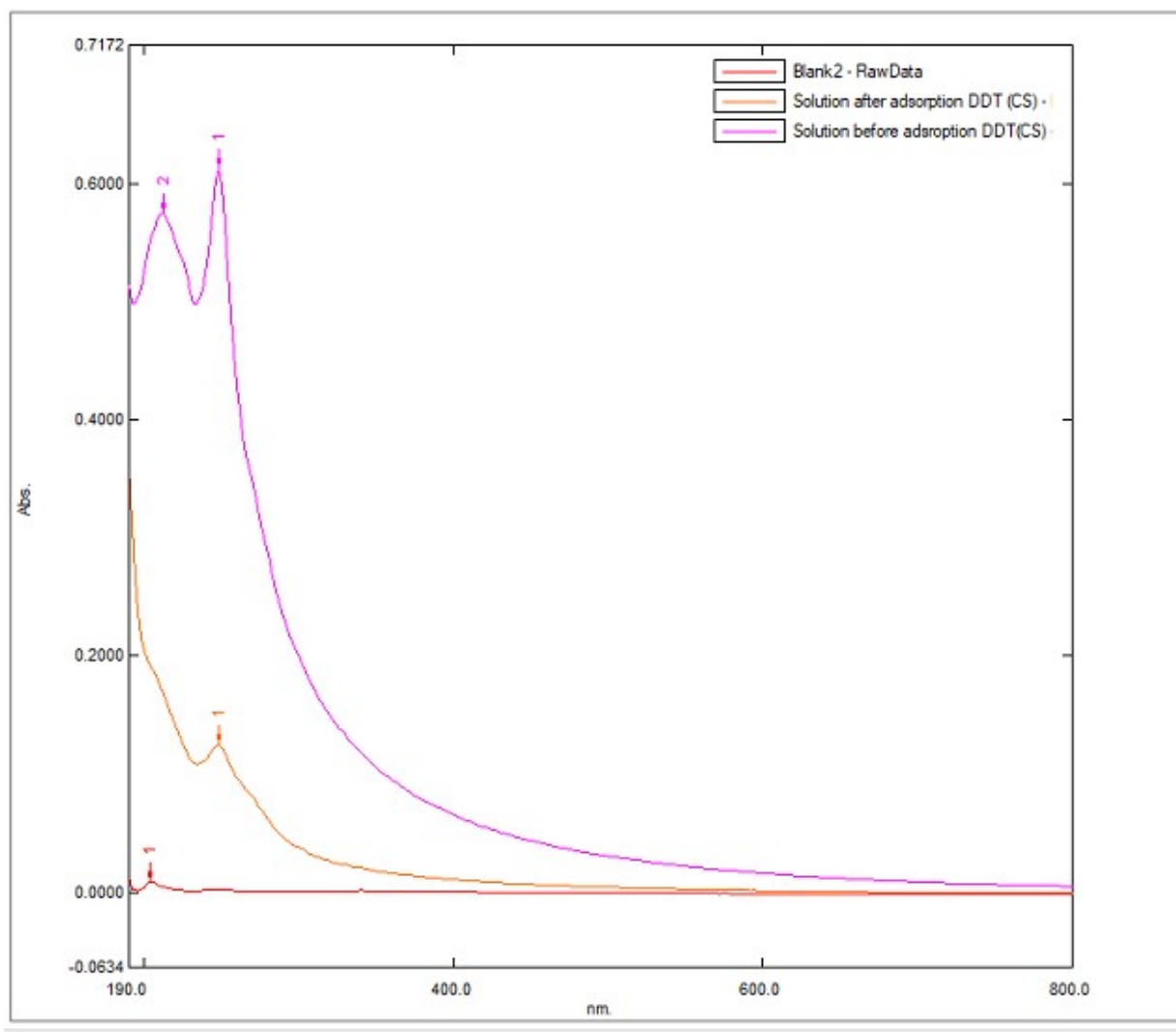


Fig S3. UV spectra of solution before and after desorption of 4,4'-DDT

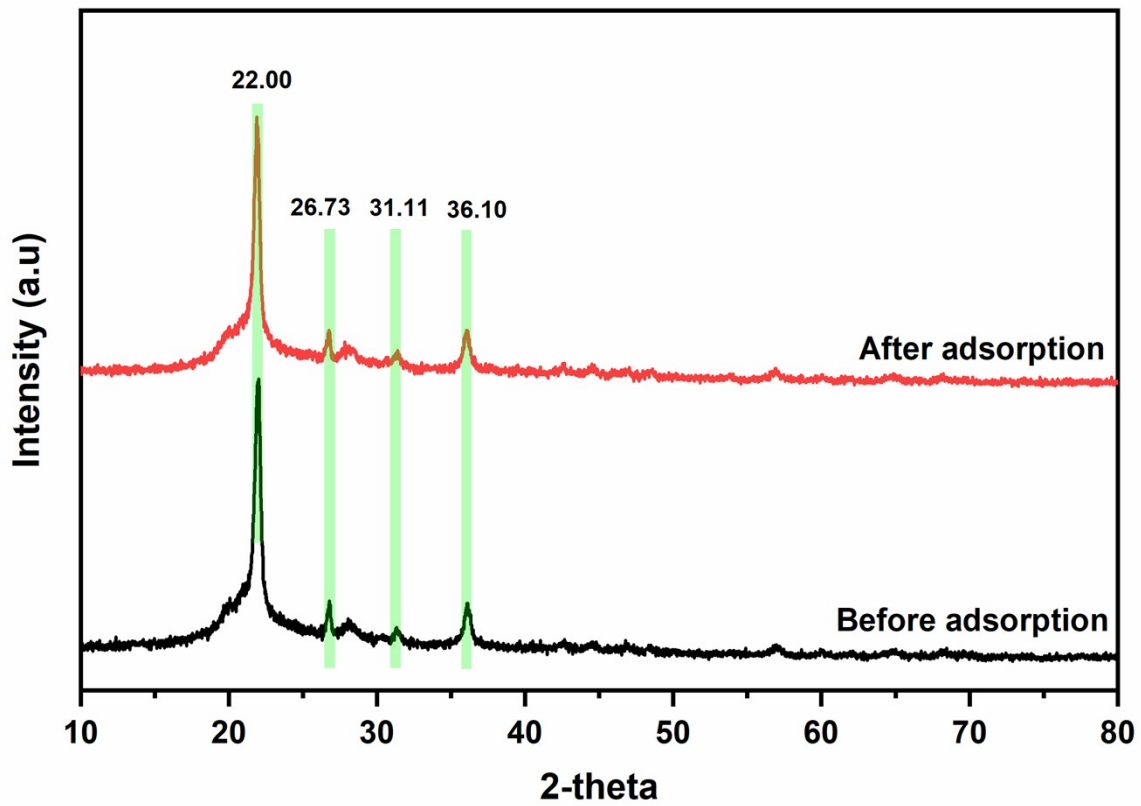


Fig S4. XRD pattern of Chitosan-Diatomaceous earth hybrid before and after adsorption of 4,4'-DDT.

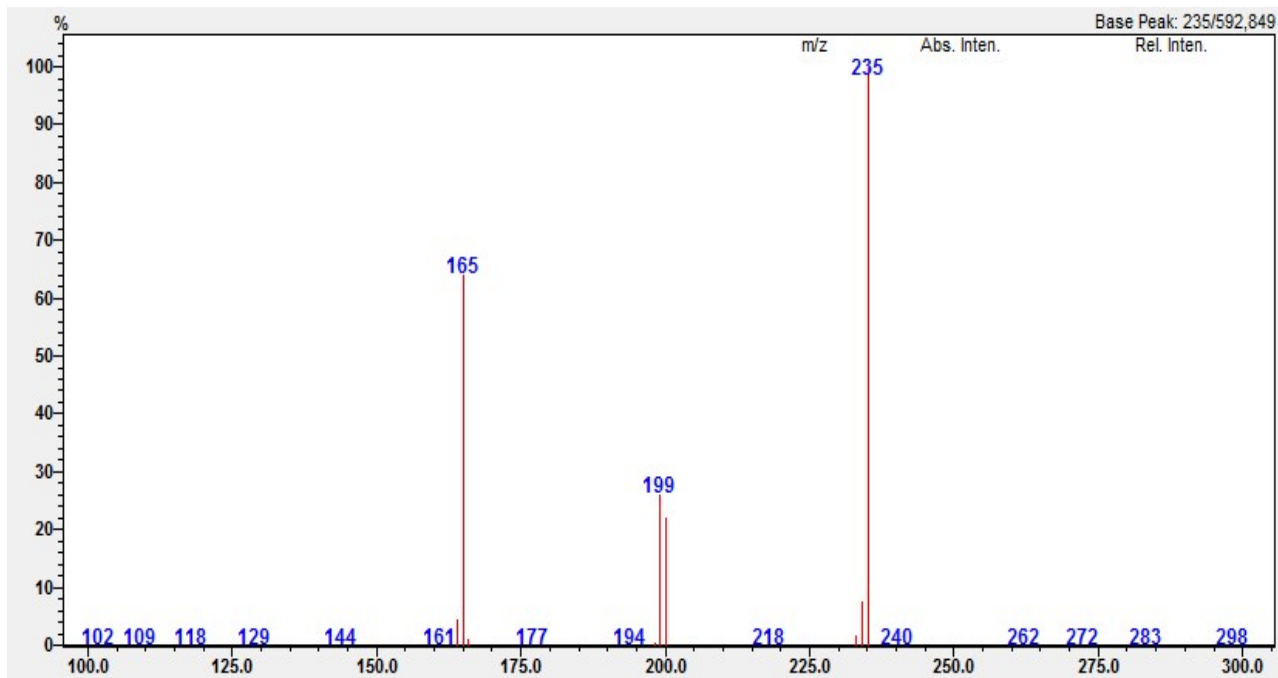


Fig S5. MS spectra of 4,4'-DDT showing distinct precursor and product ions after desorption

Table S1: Regeneration studies of Chitosan-Diatomaceous earth hybrid

Volume of water(L)	Weight of sorbent (g)	Cycle	4,4'-DDT Spiking concentration, mg L ⁻¹	Equilibrium Conc. mg L ⁻¹	Adsorbed Conc. mg L ⁻¹	% Adsorption
0.1	0.2	1st cycle	0.1	0.0026 ±0.0006	0.0974 ±0.0006	97.4 ± 0.6
0.1	0.2	2nd cycle	0.1	0.0048 ±0.0011	0.0952 ±0.0011	95.2 ± 0.5
0.1	0.2	3rd cycle	0.1	0.0087 ±0.0014	0.0913 ±0.0014	91.3 ± 0.6

Table S2: Adsorption efficacy of 4, 4'-DDT in the presence of competing pesticides (0.1 mg L⁻¹ level)

Volume of water (L)	Weight of sorbent (g)	Competing pesticides spiking concentration #	4,4'-DDT Spiking concentration, mg L ⁻¹	Conc. at equilibrium, mg L ⁻¹	Adsorbed conc. mg L ⁻¹	% Adsorption
			C _o	C _e	C _o -C _e	
0.1	0.2	0.1 mg L ⁻¹ each	0.1	0.0035±0.0007	0.09647±0.0007	96.5±0.65

Competing pesticides: alpha-HCH, beta-HCH, gamma-HCH, Endosulfan-I, Endosulfan-II

Table S3: Adsorption efficiency of Chitosan-Diatomaceous earth hybrid in farm run-off water

Volume of agri run-off water (L)	Weight of sorbent (g)	4,4'-DDT Spiking concentration, mg L ⁻¹	Conc. at equilibrium, mg L ⁻¹	Adsorbed conc. mg L ⁻¹	% Adsorption
		C _o	C _e	C _o -C _e	
0.1	0.2	0.1	0.0094±0.0012	0.09057±0.0012	90.6±1.2