



Supplementary Materials

Table S1. Predicted Parameters for PFO, PSO and Intra-particle Diffusion Kinetic Models in the Sorption of AY by Hybrid Materials (Concentration of AY: 10.0 mgL⁻¹; pH: 7.0; Temperature: 25°C)

Material	PFO Model			PSO Model			FL-PSO Model			
	q_e (mgL ⁻¹)	k_1 (min ⁻¹)	s^2	q_e (mgL ⁻¹)	k_2 (gmg ⁻¹ min ⁻¹)	s^2	q_e (mgL ⁻¹)	K (gmg ⁻¹ min ⁻¹)	α	s^2
BnH	4.827	0.907	0.003	4.846	2.412	0.001	6.822	0.331	0.019	0.0001
BnAH	4.697	0.817	0.001	4.717	1.980	0.0002	6.724	0.319	0.020	0.0008

Table S2. Real Water Analysis for Various Parameters

Analysis	Parameters analyzed	Spring water (mgL ⁻¹)
TOC	IC	14.49
	NPOC	2.90
AAS	Element:	Concentration (mgL ⁻¹)
	Mn	ND
	Zn	ND
	Ni	0.10
	Ca	0.23
	Pb	ND
	Fe	ND
	Cu	ND
Other parameters	pH	6.89
	Nitrate	3.70 mgL ⁻¹
	Sulphate	11.0 mgL ⁻¹
	Phosphate	0.02 mgL ⁻¹
	Fluoride	0.09 mgL ⁻¹

ND: Not detected