Bifunctional Bis(2-carboxyethyl)isocyanurate Crystal for High-PerformancePhotocatalytic Degradation of Rose Bengal Dye and Luminescent Sensing of PO_4^{3-}, NO_3^-, Cl^-, $Cr_2O_7^{2-}$ and F^-ions

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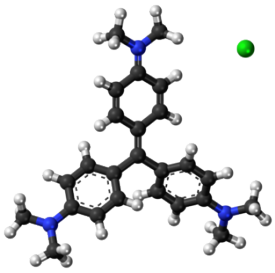
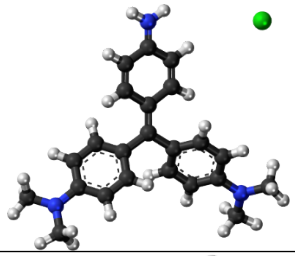
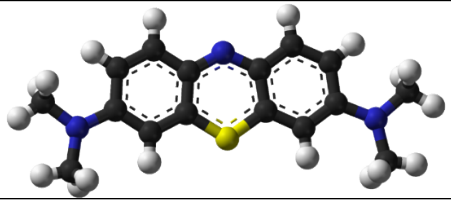
Table S1. Structure and electrical property of used dyes.

S.No.	Dye	Dye Structure	λ_{max} (nm)
		Cationic	
1.	Crystal Violet		**590.67**
2.	Methyl Violet		**589.49**
3.	Methylene Blue		**662.63**

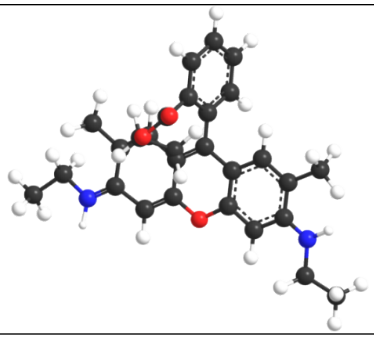
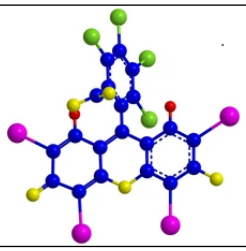
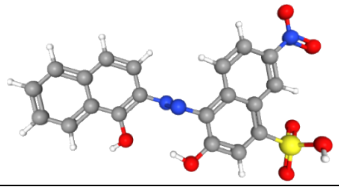
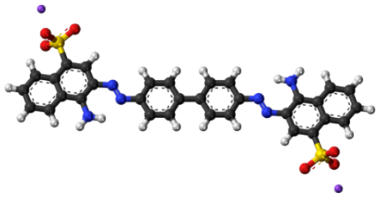
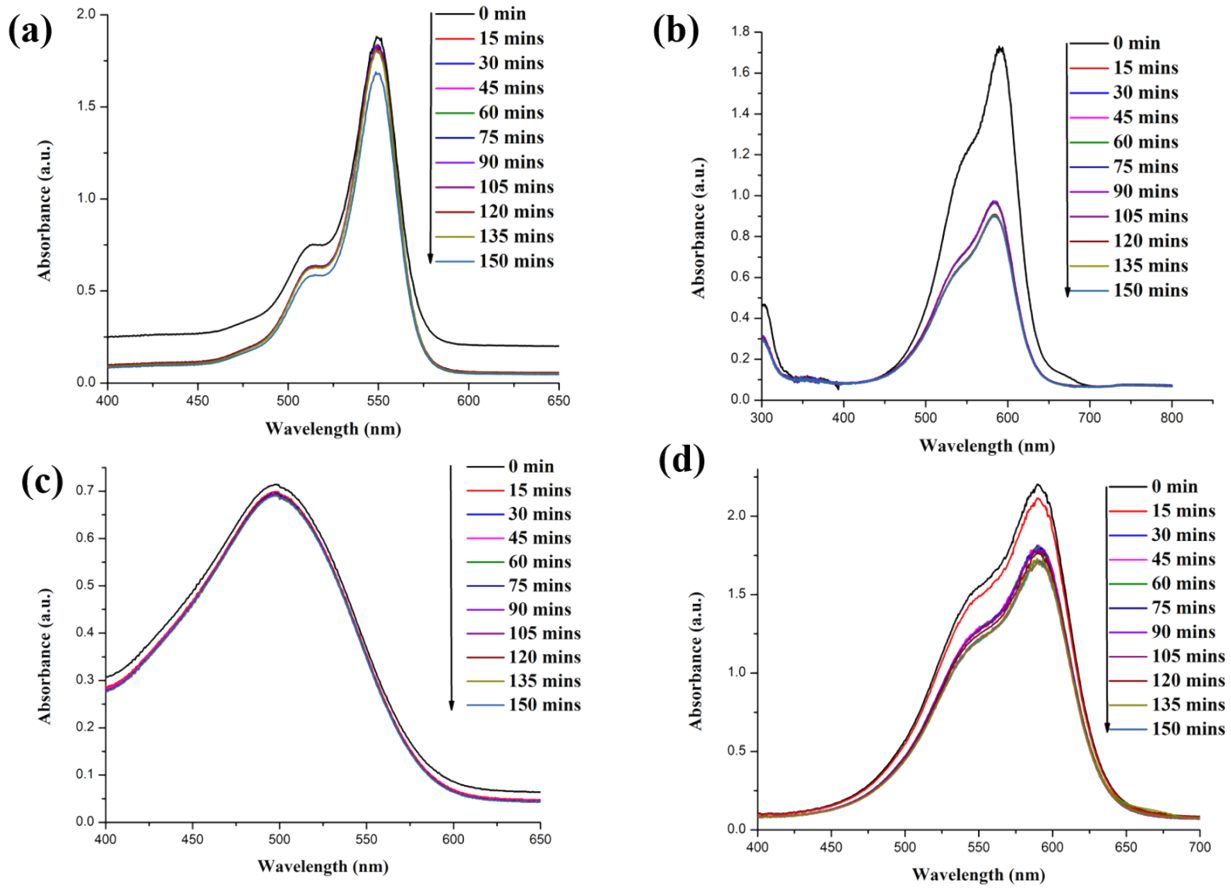
4.	Rhodamine 6G		**525.31**
Anionic			
2.	Rose Bengal		**549.44**
3.	Eriochrome Black T		**529.23**
4.	Congo Red		**497.82**

Table S2. Hydrogen bonding parameters for **KA@PS** (Å) and (◦)

D–H•••A	**d(D•••H)**	**d(H•••A)**	**<(D–H•••A)**
N(2)–H(2)•••O(1)#1	0.860	1.912	180
O(3)–H(3)•••O(4)#2	0.820	1.858	159.56

Symmetry transformations used to generate equivalent atoms: #1 x, -1+y, z; #2 ½-x, -1/2-y, 1-z.


(a)
Absorbance (a.u.)
Wavelength (nm)
0 min
15 mins
30 mins
45 mins
60 mins
75 mins
90 mins
105 mins
120 mins
135 mins
150 mins
(b)
Absorbance (a.u.)
Wavelength (nm)
0 min
15 mins
30 mins
45 mins
60 mins
75 mins
90 mins
105 mins
120 mins
135 mins
150 mins
(c)
Absorbance (a.u.)
Wavelength (nm)
0 min
15 mins
30 mins
45 mins
60 mins
75 mins
90 mins
105 mins
120 mins
135 mins
150 mins
(d)
Absorbance (a.u.)
Wavelength (nm)
0 min
15 mins
30 mins
45 mins
60 mins
75 mins
90 mins
105 mins
120 mins
135 mins
150 mins

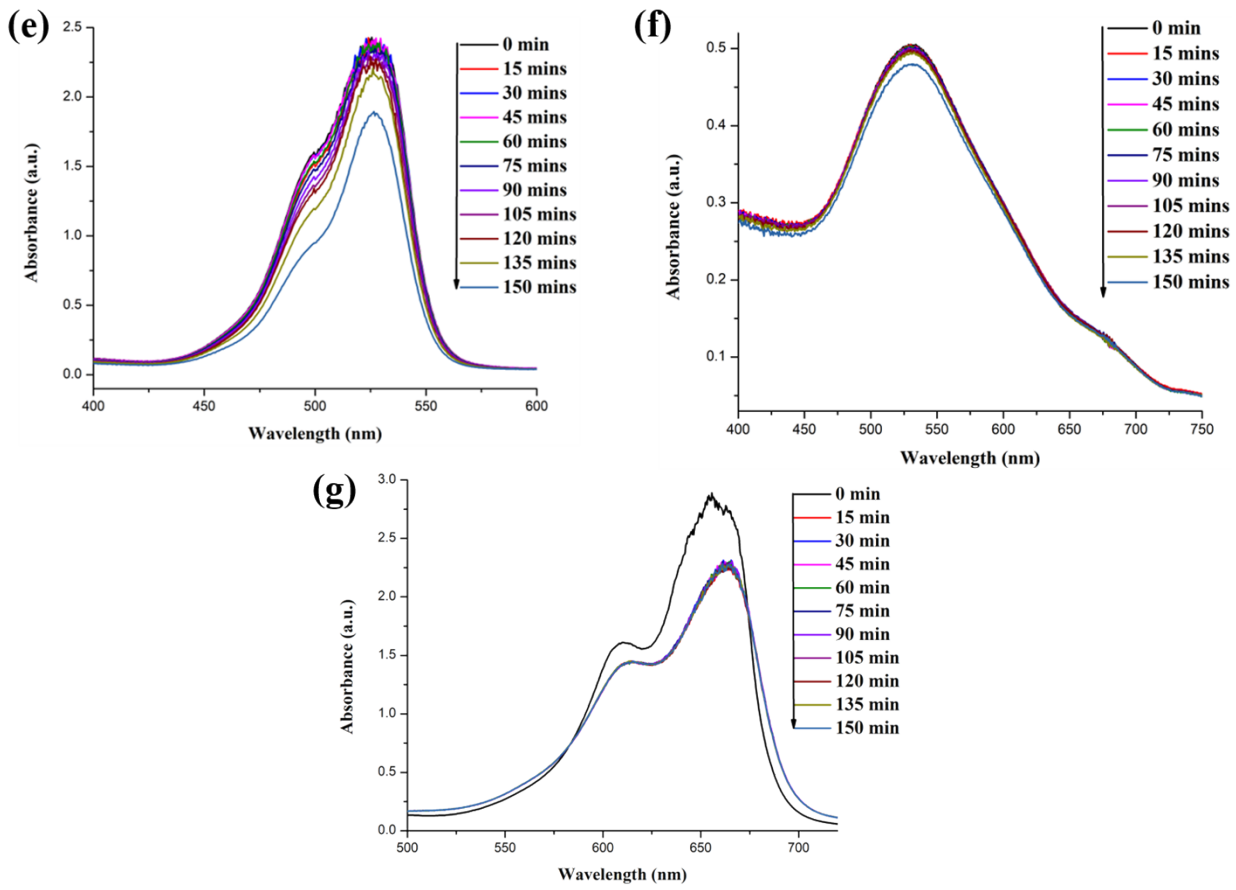


Figure S1:UV-visible spectra of the blank RB **(a)**, MV **(b)**, CR **(c)**, CV **(d)**, Rh6G **(e)**, EBT **(f)**and MB **(g)**from aqueous solution at several time intervals.

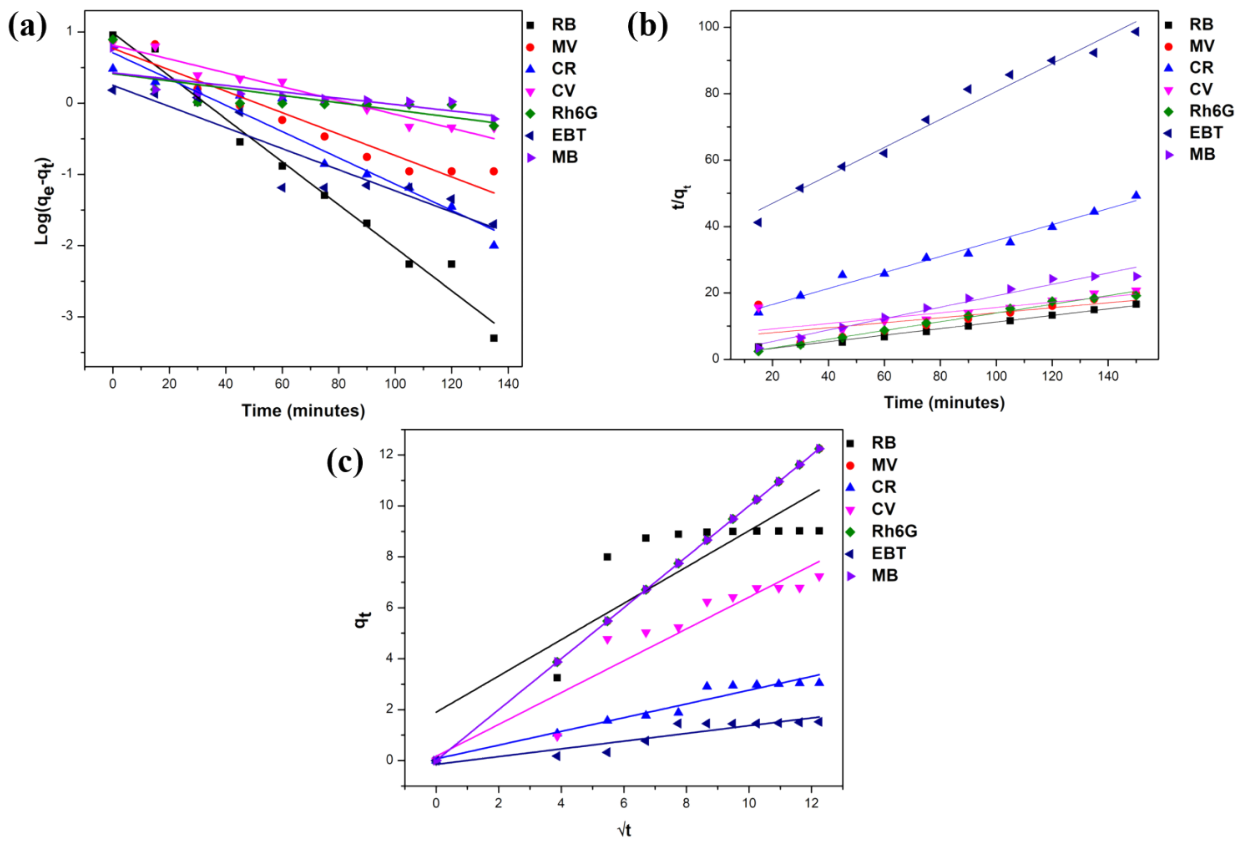
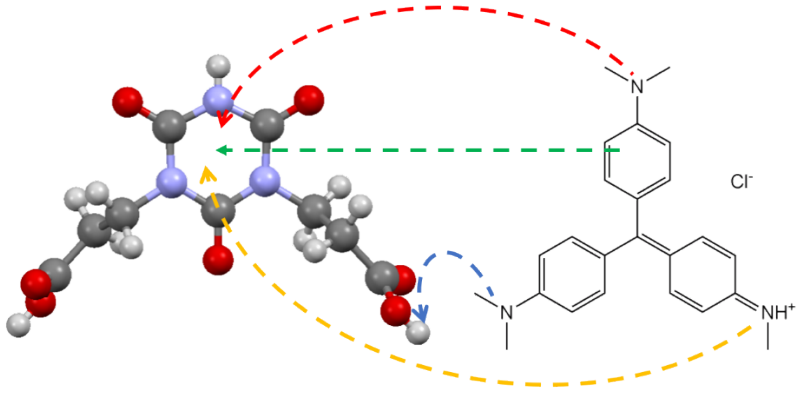
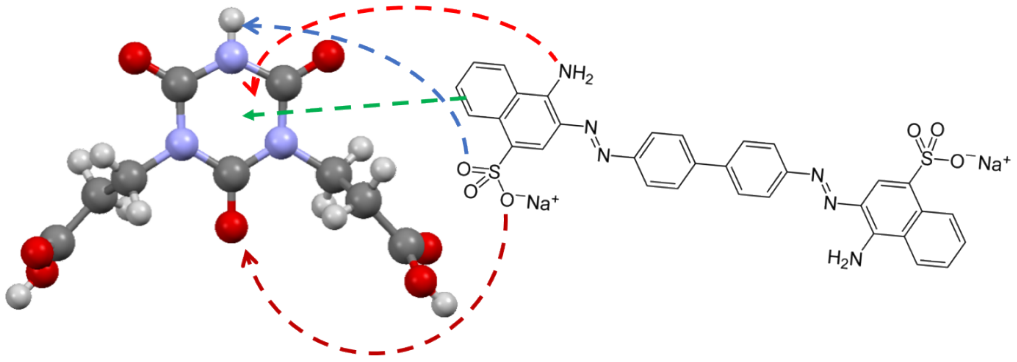


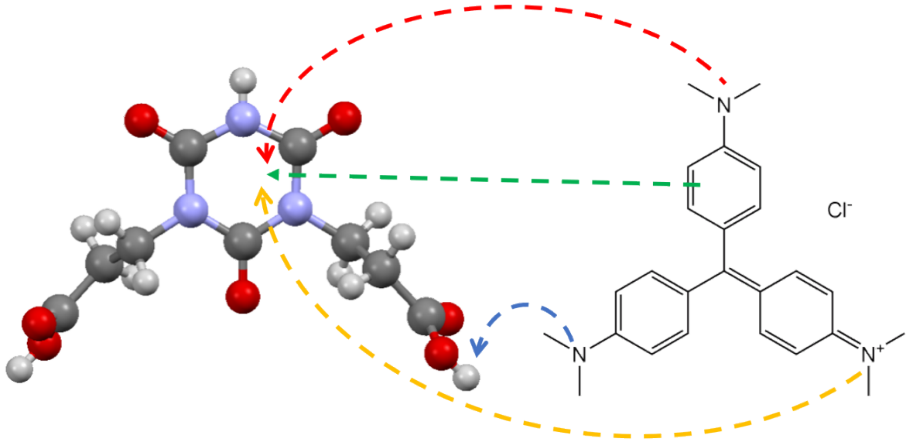
Figure S2. Adsorption kinetic plots of RB, MV, CR, CV, Rh6G, EBT and MB on **KA@PS** representing pseudo-first order kinetics **(a)**; pseudo-second order kinetics **(b)** and intraparticle diffusion **(c)**.



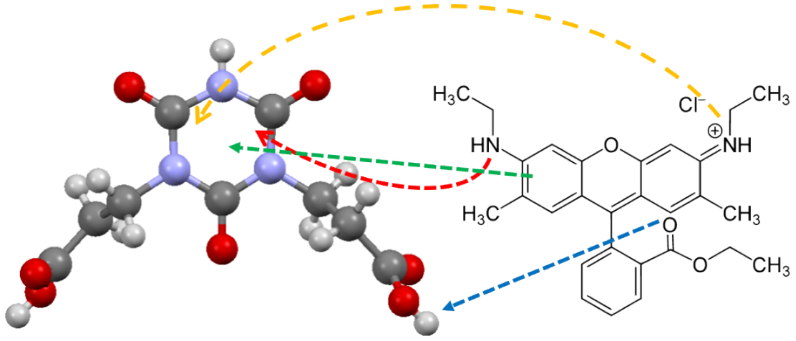
(a)


NH2
N
N
O
S
O
O⁻Na⁺
N
N
O
S
O
O⁻Na⁺
H2N

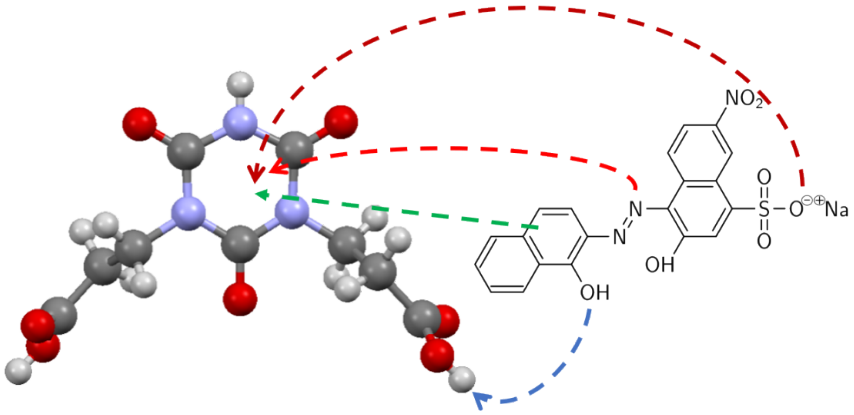
(b)


N
Cl⁻
N
N⁺

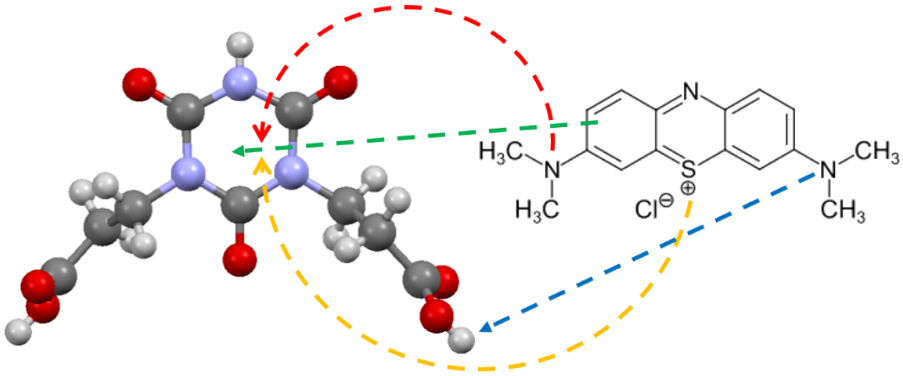
(c)


H3C
HN
Cl⁻
CH3
NH
O
H3C
CH3
O
O
CH3

(d)



(e)



(f)

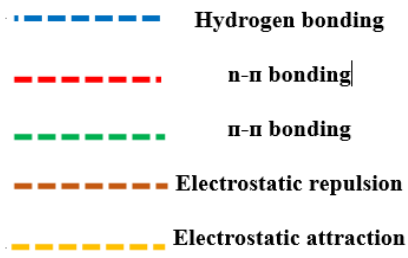


Figure S3: The possible mechanism of dye adsorption among **(a)**MV,**(b)** CR,**(c)** CV,**(d)**Rh6G,**(e)** EBT, **(f)**MB and**KA@PS** .

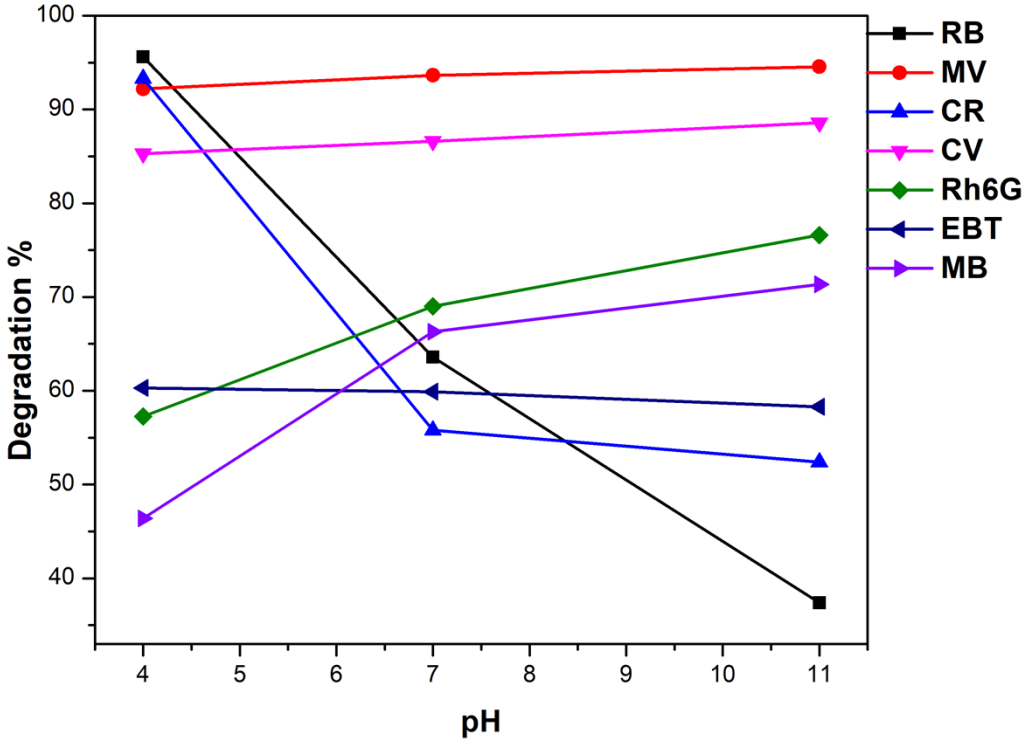


Figure S4. pH effect of**KA@PS**onRB, CV, CR, CV, Rh6G, EBT and MB.

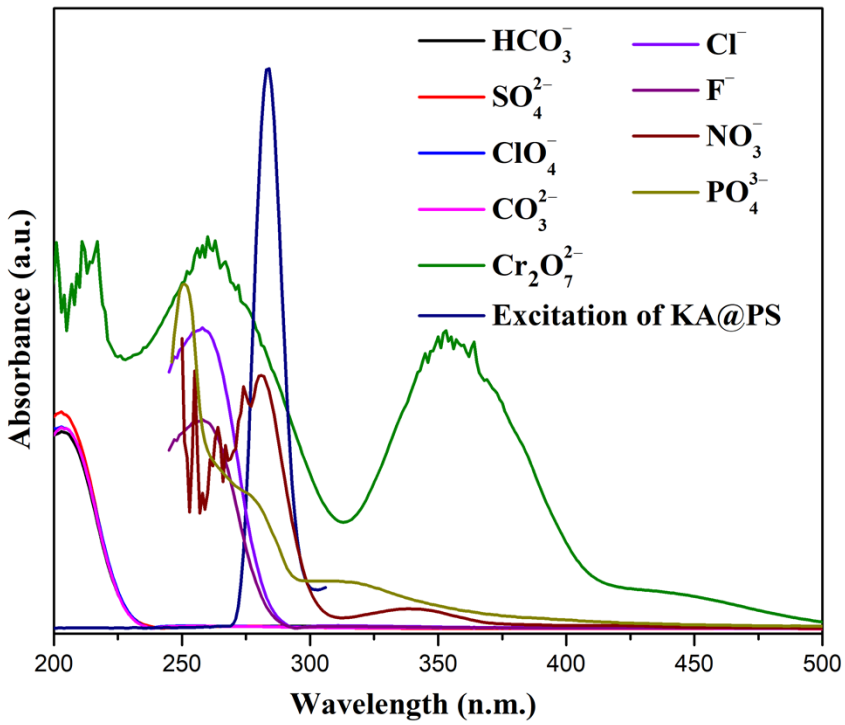


Figure S5: Spectral overlap between the UV-Vis absorption spectra of various anions and the excitation spectra of **KA@PS**

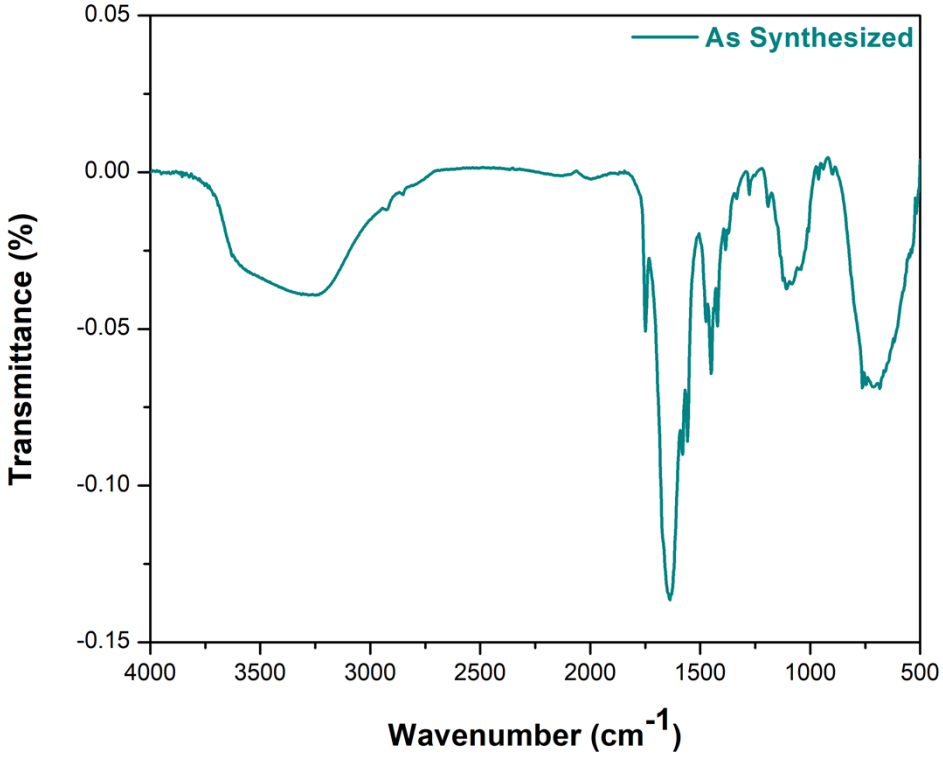


Figure S6. FT-IR of **KA@PS**.

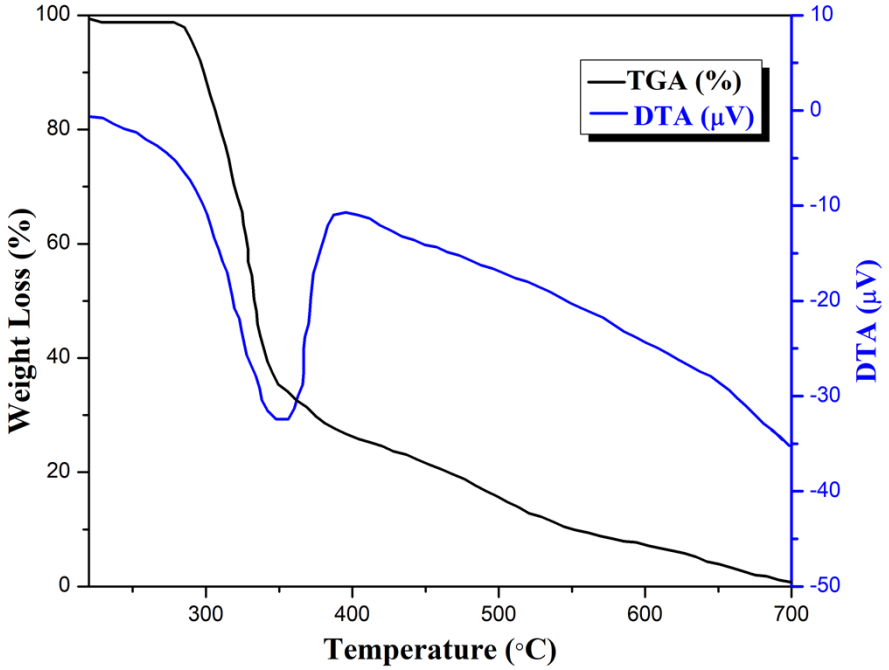


Figure S7. TG/DTA of **KA@PS** .

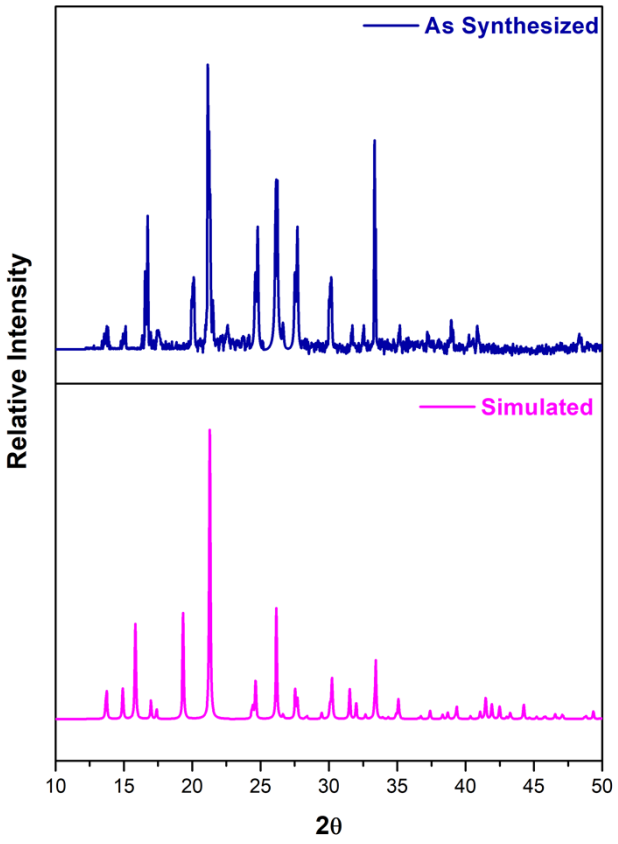


Figure S8. PXRD of **KA@PS** .