Supplementary Information

Investigating the potential of Greener-Porous Graphene for the treatment of organic pollutants in wastewater

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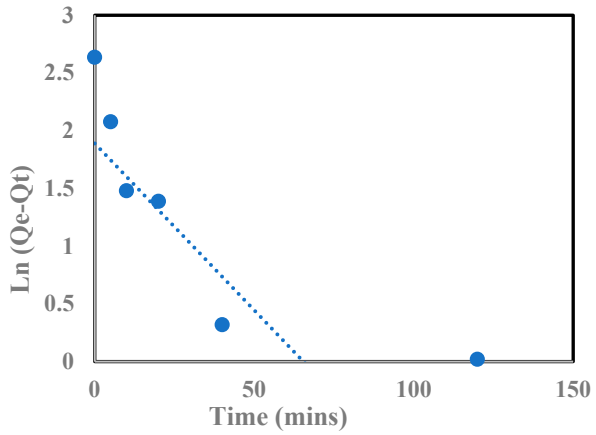
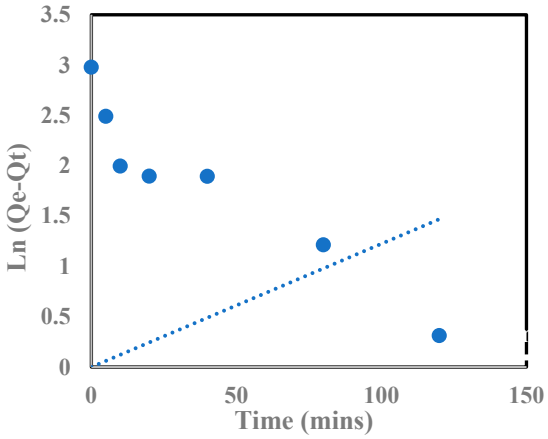
S1. Kinetic Pseudo 1st order Modelling Graphs



(a)



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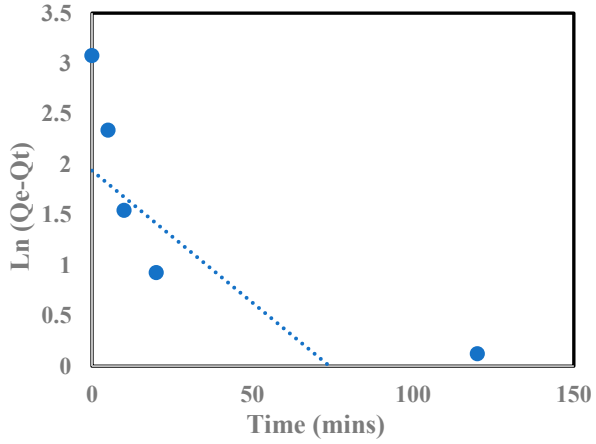
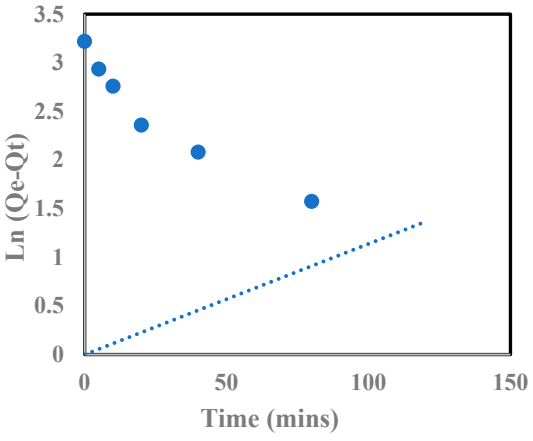
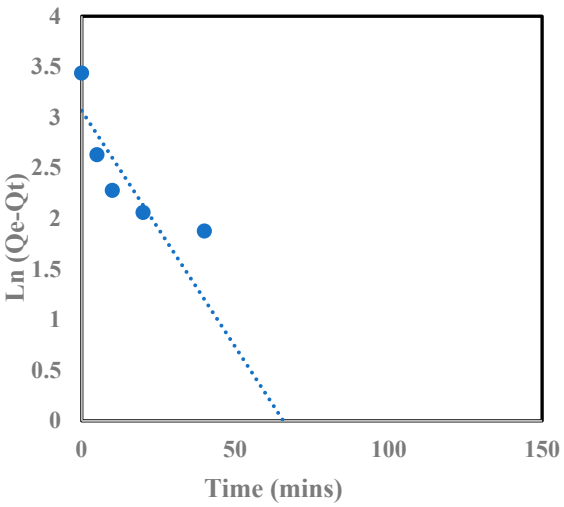


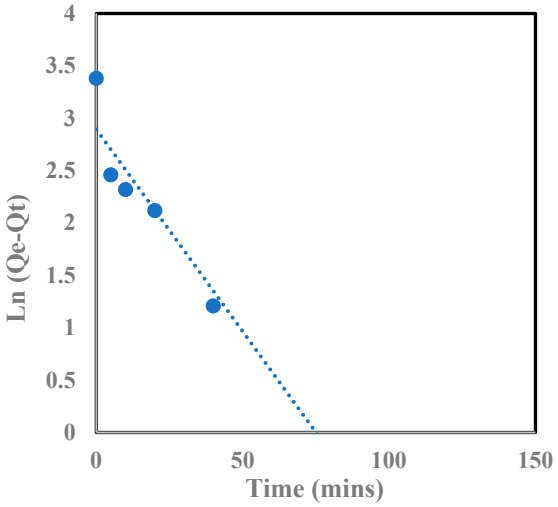
(c)



(d)



(e)



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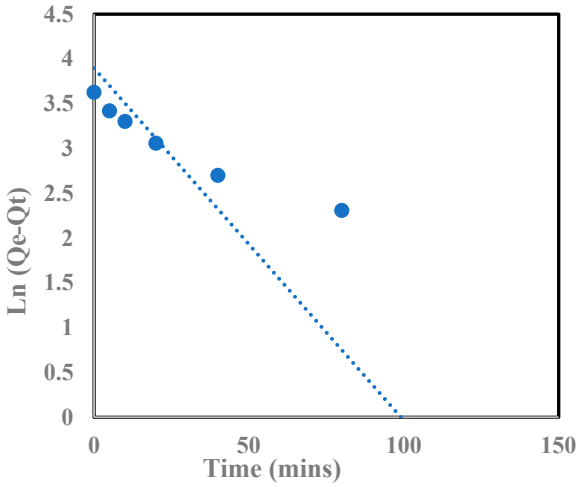

(g)

Figure S1: Pseudo 1st order model for: a) Contaminant AT; b) Contaminant CB; c) Contaminant CPF; d) IBU; e) Contaminant MeO; f) Contaminant MeR; g) Contaminant RD.

Dosages (mL)	MeR R.E%	MeO R.E%	RD R.E%	AT R.E%	CPF R.E%	CB R.E%	IBU R.E%
0.5	38.51	72.96	51.41	15.15	58.40	15.32	11.06
1.0	73.36	77.71	59.5	34.87	54.2	49.17	62.53
1.5	75.73	93.44	75.42	37.14	56.74	62.04	83.72
2.0	84.75	94.86	83.3	49.82	71.49	64.35	94.14
2.5	89.03	92.91	91.72	49.88	73.88	68.04	92.43
3.0	92.76	93.83	87.64	53.31	77.52	70.72	94.28

Table S1: Summary of Equilibrium study of greener PG on seven emerging contaminants

SA[a] (m^2g^{-1})	PV[b] (cm^3g^{-1})	PD[c] (nm)
289.146m^2g^{-1}	0.255 cc/g	3.169nm

Table S2: Parameters of the greener PG sample obtained from the N_2 adsorption-desorption isotherms.

a: BET surface area

b: Pore volume-DFT desorption cumulative volume of the pores

c: Pore diameter- average pore diameter determined by the BJH method.

Pore width: 3.169nm

Mesopore vol: 0.255 cc/g

Total pore volume: 2.738e-01 cc/g for

CONTAMINANT	Freundlich Isotherm Model	Langmuir Isotherm Model	Temkin Isotherm Model
ATENOLOL (AT)	K_f ({mg/g} {mg/l}$^{1/m}$) = *1889117.276* m =1/n= *-2.02* **R^2 = *0.93***	Qmax (mg/g) = *3.79* K_L (l/mg) = *-0.24* R^2 = *0.77*	K_t (L/mg) = *0.90* B_t (J/mol) = *-25.32* R^2 = 0.92
CARBAMAZEPINE (CB)	K_f ({mg/g} {mg/l}$^{1/m}$) = *154.54* m =1/n= *-1.43* **R^2 = *0.92***	Qmax (mg/g) = *5.15* K_L (l/mg) = *-9.77* R^2 = *0.73*	K_t (L/mg) = *0.083* B_t (J/mol) = *-20.99* R^2 = *0.98*
IBUPROFEN (IBU)	K_f ({mg/g} {mg/l}$^{1/m}$) = *34.05894* m =1/n= *-0.69* **R^2 = *0.764***	Qmax (mg/g) = *7.61* K_L (l/mg) = *-0.0104* R^2 = *0.390*	K_t (L/mg) = *0.04* B_t (J/mol) = *-11.55* R^2 = *0.89*
CIPROFLOXACIN (CPF)	K_f ({mg/g} {mg/l}$^{1/m}$) = 47.75 m = *-0.507* **R^2 = *0.98***	Qmax (mg/g) = *17.15* K_L (l/mg) = *-0.003* **R^2 = *0.95***	K_t (L/mg) = *0.041* B_t (J/mol) = *-13.26* R^2 = *0.99*
METHYL RED (MeR)	K_f ({mg/g} {mg/l}$^{1/m}$) = *4227.29* m =1/n= *-0.39* **R^2 = *0.82***	Qmax (mg/g) = *19.799* K_L (l/mg) = *-0.0011* R^2 = *0.46*	K_t (L/mg) = *0.024* B_t (J/mol) = *-9.911* R^2 = *0.89*

METHYL ORANGE (MeO)	K_f ({mg/g} {mg/l}$^{1/m}$) = *34.74* m =1/n= *-0.15* **R^2 = *0.98***	Qmax (mg/g) = *28.52* K_L (l/mg) = *-0.00018* **R^2 = *0.92***	K_t (L/mg) = *0.001* B_t (J/mol) = *-5.31* R^2 = *0.988*
RHODAMINE-B (Rd)	K_f ({mg/g} {mg/l}$^{1/m}$) = *156.3* m =1/n= *-0.046* **R^2 = *0.98***	Qmax (mg/g) = *155.54* K_L (l/mg) = *24197.99* **R^2 = *0.94***	K_t (L/mg) = *$2.9e^{-10}$* B_t (J/mol) = *-7.122* R^2 = *0.98*

Table S3: Linear adsorption isotherm parameters for all seven contaminants, removal by greener PG.

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