Supplementary data

Adsorption and equilibrium studies of phenol and para-nitrophenol by magnetic activated carbon synthesised from cauliflower waste

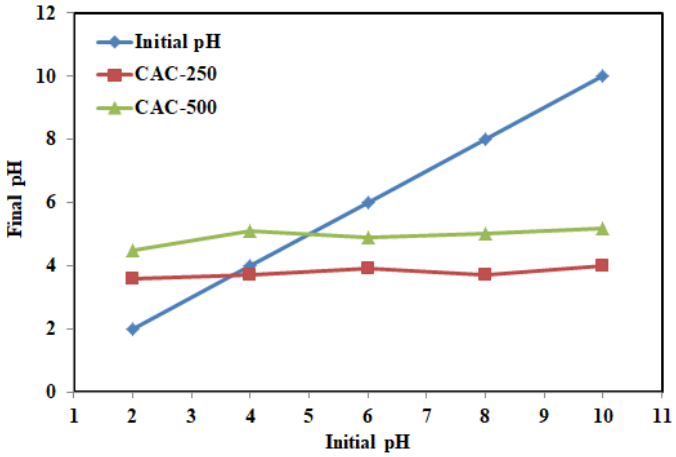

Fig. S1. Graph for pH_{ZPC} of CAC-250 and CAC-500.

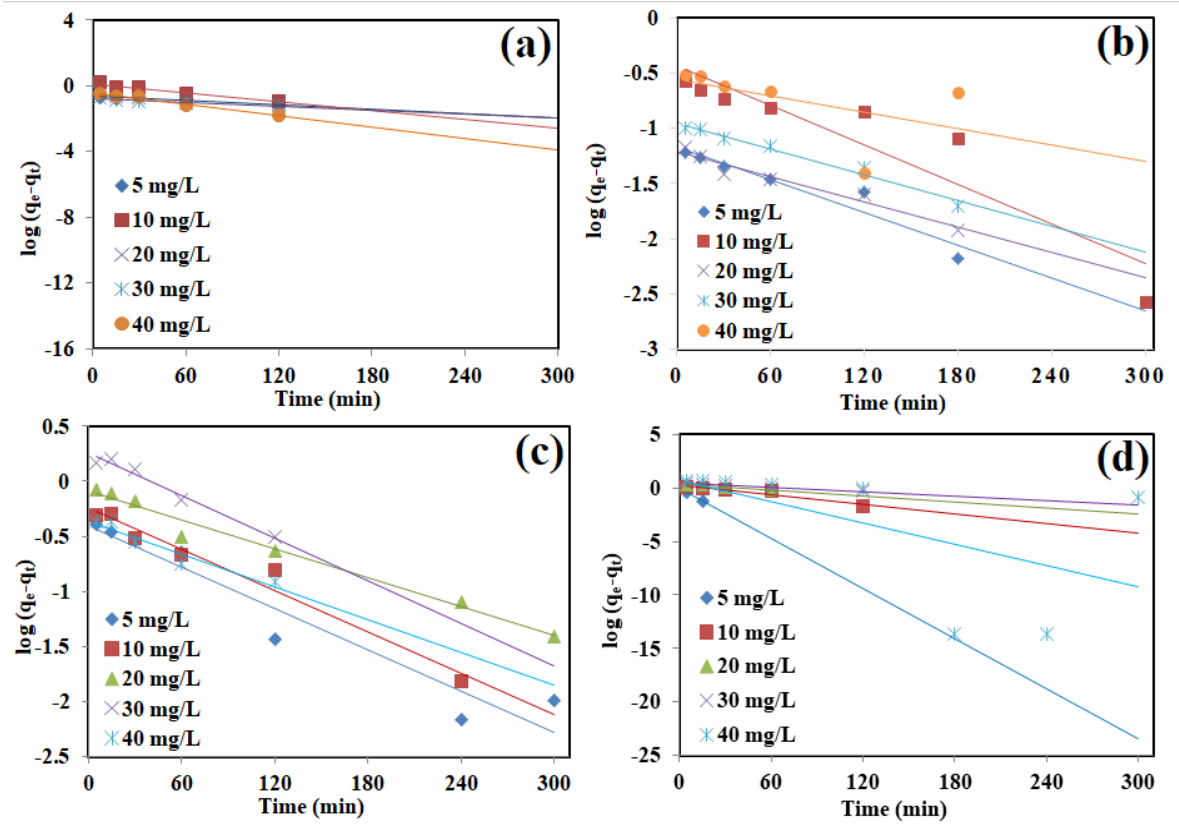

Fig. S2. Plots for pseudo first order kinetics for phenol by a) CAC-250 and b) CAC-500 and for PNP by c) CAC-250 and d) CAC-500.

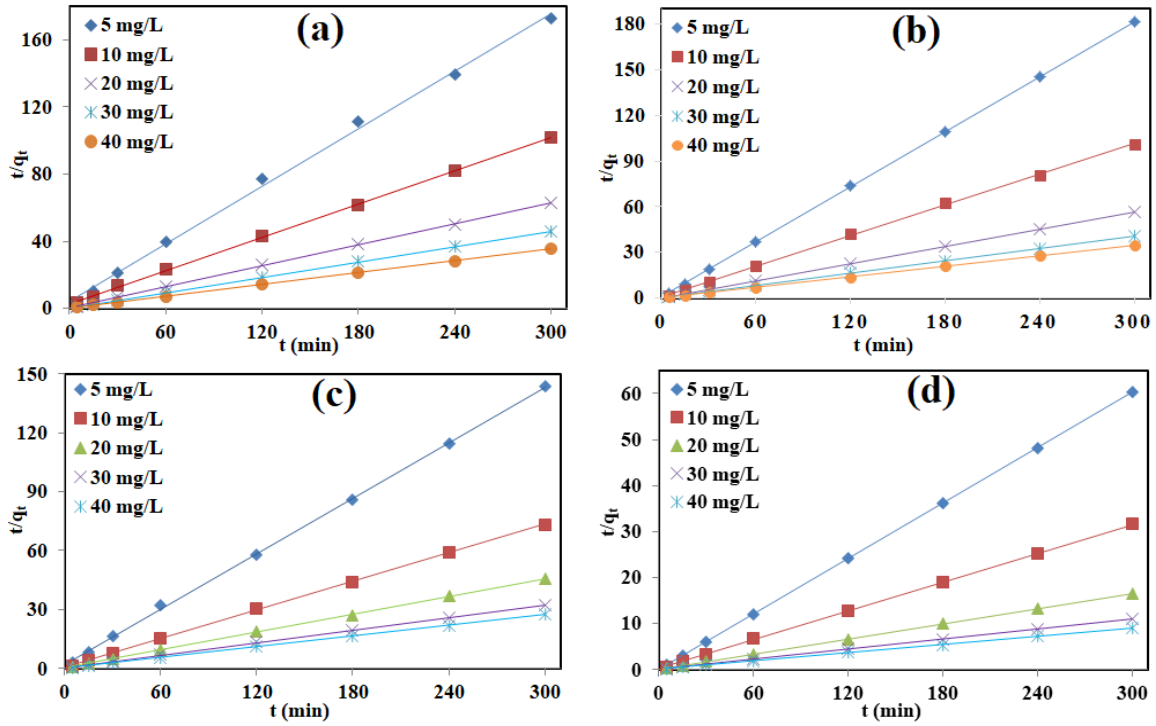

Fig. S3. Plots for pseudo second order kinetics for phenol by a) CAC-250 and b) CAC-500 and for PNP by c) CAC-250 and d) CAC-500.

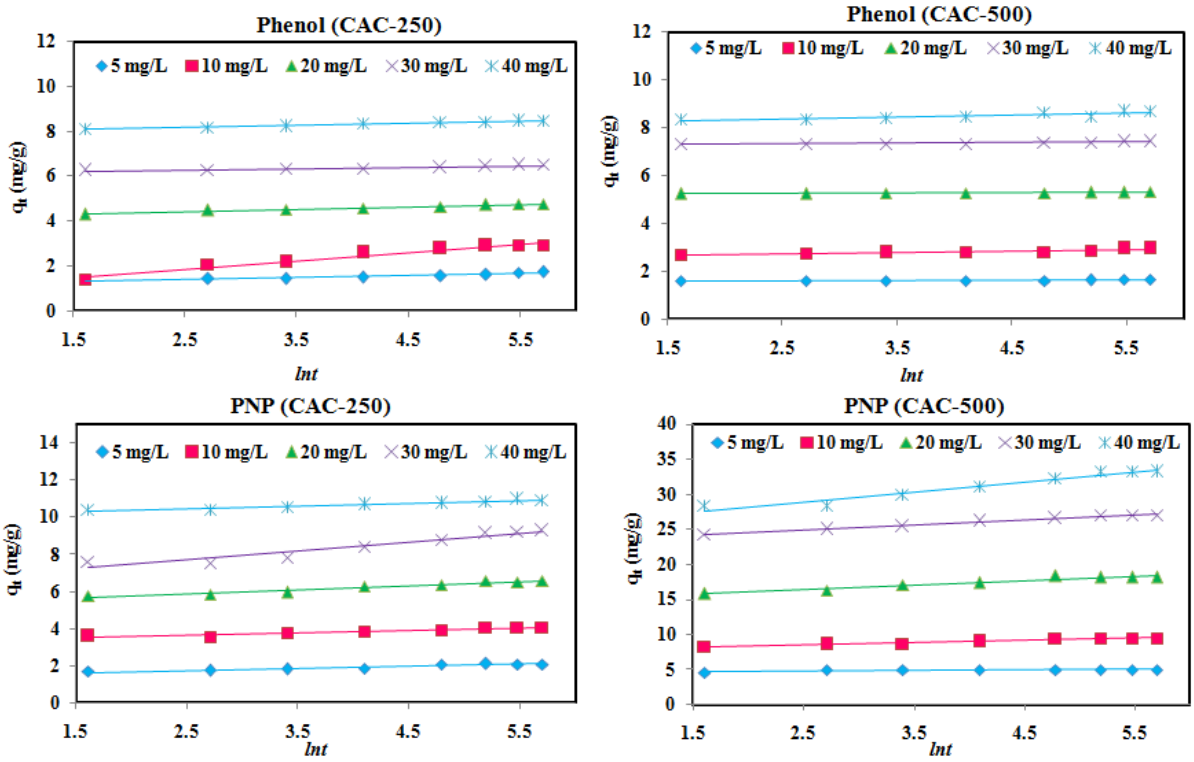

Fig. S4. Plots for Elovich kinetics model for phenol and PNP adsorption.

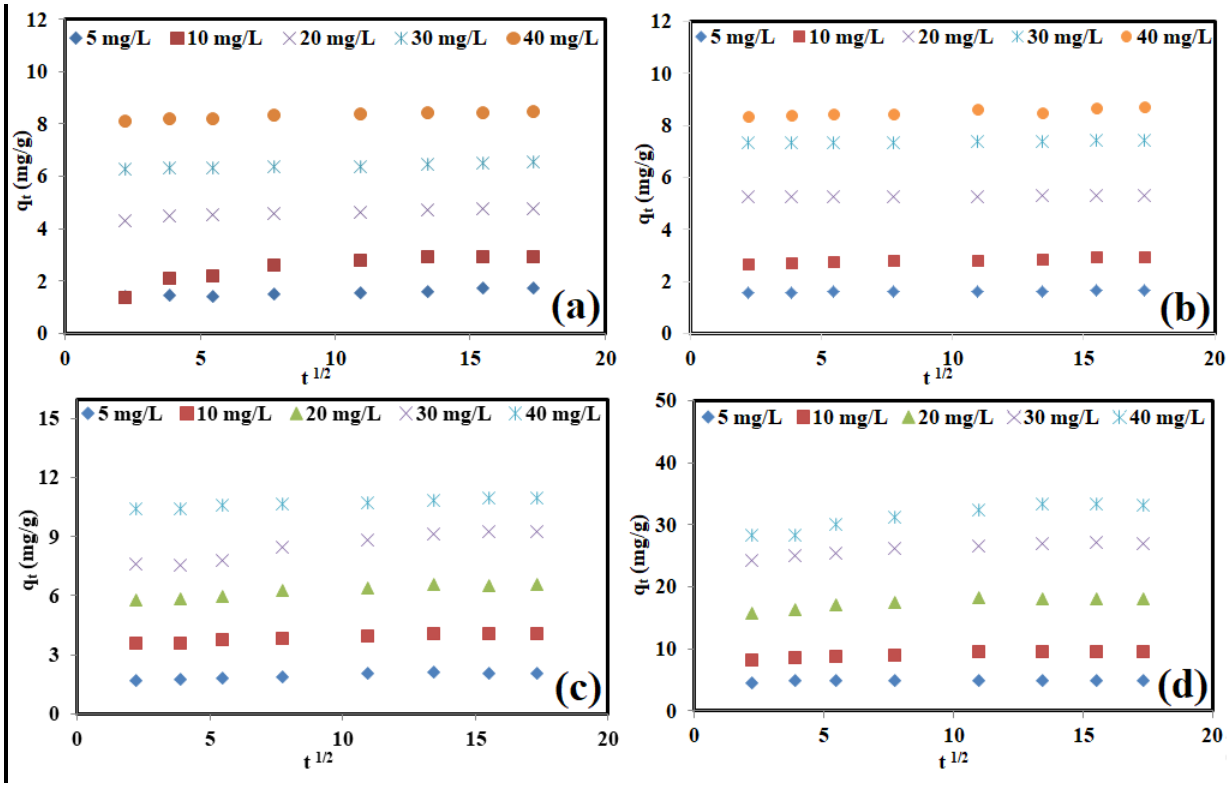

Fig. S5. Plots for intraparticle diffusion model for phenol by a) CAC-250 and b) CAC-500 and for PNP by c) CAC-250 and d) CAC-500.

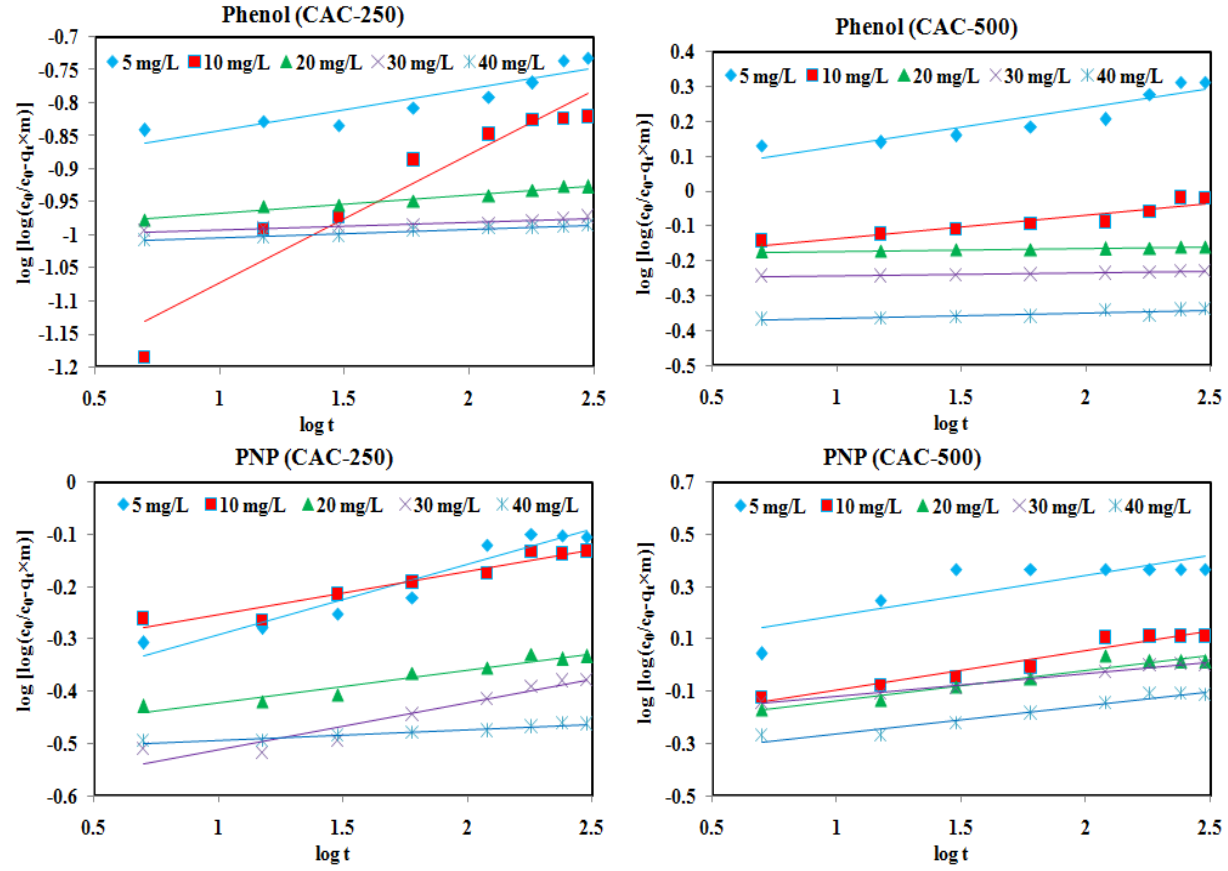

Fig. S6. Plots for pore diffusion model for phenol and PNP adsorption.

Table S1. Values for Adsorption Kinetics Parameters for the Adsorption of Phenol and PNP

Kinetics		**Pseudo first order kinetics**				**Pseudo second order**		
		C_0 **(mg/L)**	q_e **(mg/g)**	k_1 **(min-1)**	R^2	q_e **(mg/g)**	k_2 **(g/mg min))**	R^2
CAC-250	**Phenol**	**5**	0.040	1.526	0.978	1.749	0.083	0.997
		10	0.155	0.319	0.868	3.023	0.038	0.999
		20	0.070	0.856	0.927	4.597	0.010	0.992
		30	0.038	1.658	0.968	4.793	0.111	0.999
		40	0.022	1.726	0.896	6.531	0.126	0.999
	PNP	**5**	0.397	0.003	0.927	2.123	0.121	1
		10	0.570	0.003	0.968	4.114	0.091	1
		20	0.805	0.002	0.980	6.609	0.064	1
		30	1.800	0.003	0.977	9.390	0.022	1
		40	2.288	0.002	0.928	10.990	0.077	1
CAC-500	**Phenol**	**5**	0.067	0.002	0.918	1.655	4.832	1
		10	0.367	0.002	0.851	2.971	8.129	0.999
		20	0.061	0.001	0.952	5.316	0.602	1
		30	0.111	0.001	0.978	7.434	0.304	1
		40	0.276	0.001	0.257	8.680	0.110	0.999
	PNP	**5**	0.899	0.034	1	4.980	1.237	1
		10	1.981	0.007	0.920	9.569	0.05	1
		20	2.450	0.004	0.956	18.250	0.037	1
		30	2.558	0.003	0.963	27.170	0.022	1
		40	5.103	0.002	0.994	33.670	0.010	1

Table S2. Values of Elovich and Pore Diffusion Kinetics Model Parameters for the Adsorption of Phenol and PNP

			Elovich kinetic model			**Bangham's pore diffusion model**		
		C_0 **(mg/L)**	***A***	***B***	R^2	K_{diff} ***(g)***	***A (<1)***	R^2
CAC-250	**Phenol**	**5**	0.029	12.500	0.829	3.318	0.062	0.840
		10	0.400	2.688	0.960	3.464	0.194	0.926
		20	0.029	9.174	0.969	3.359	0.027	0.969
		30	0.013	16.129	0.884	3.363	0.011	0.887
		40	0.021	10.526	0.965	3.369	0.013	0.966
	PNP	**5**	0.044	8.849	0.936	2.991	0.134	0.929
		10	0.044	7.142	0.935	2.889	0.083	0.934
		20	0.072	4.385	0.935	3.046	0.062	0.936
		30	0.185	2.074	0.913	3.141	0.089	0.914
		40	0.032	7.142	0.933	3.071	0.019	0.934
CAC-500	**Phenol**	**5**	0.003	62.500	0.925	1.592	0.11	0.850
		10	0.016	15.873	0.893	2.667	0.067	0.870
		20	0.002	58.823	0.955	2.615	0.007	0.954
		30	0.005	35.714	0.888	2.761	0.008	0.887
		40	0.016	12.820	0.716	2.944	0.016	0.716
	PNP	**5**	0.016	14.705	0.596	1.942	0.152	0.69
		10	0.109	2.941	0.961	2.754	0.151	0.941
		20	0.203	1.562	0.933	2.768	0.117	0.921
		30	0.206	1.392	0.985	2.680	0.088	0.982
		40	0.497	0.699	0.946	2.928	0.107	0.943