Supporting Information for

Strategically designed porous polysilicate acid/graphene composites with wide pore size for methylene blue removal

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Tables

Table S1 Atomic concentrations of the SRGOs

Material	C1s (%)	O1s (%)	Si2p (%)	Cl (%)	O/C ratio
RGO (hydrazine)	75.27	24.73	−	−	0.328
SRGOs ($SiCl_4$)	54.17	44.93	19.45	0.36	< 0.111

The atomic concentrations of carbon and oxygen of RGO and SRGOs were evaluated using XPS elemental analysis (Table SI1). The atomic concentrations for RGO were quoted from literature [1]. The oxygen content of SRGOs is relatively high. Table SI1 includes the concentrations of polysilicate acid and residual oxygenated functional groups. We infer that the Si-containing compound is silicon dioxide, with an O/C ratio of SRGOs of 0.111; that is, the O/C Ratio = (44.93 −19.45 × 2) /54.17 = 0.111. The detected Si-containing compound is polysilicate acid, and the O/C ratio of SRGOs is smaller than 0.111. The oxygen content of SRGOs is less than that of RGO. Thus, SRGOs was fully reduced.

Table SI2 Peak table of SRGOs by XPS

Name	Peak (eV)	Area (P) CPS.eV	At. %
C1s Scan A	284.6	53734.23	25.12
C1s Scan B	286.9	16338.49	7.64
C1s Scan C	288.8	5373.96	2.51
O1s	532.4	268557.06	44.93
Si2p	102.9	34814.94	19.45
Cl2p	199.9	1758.83	0.36

Figures

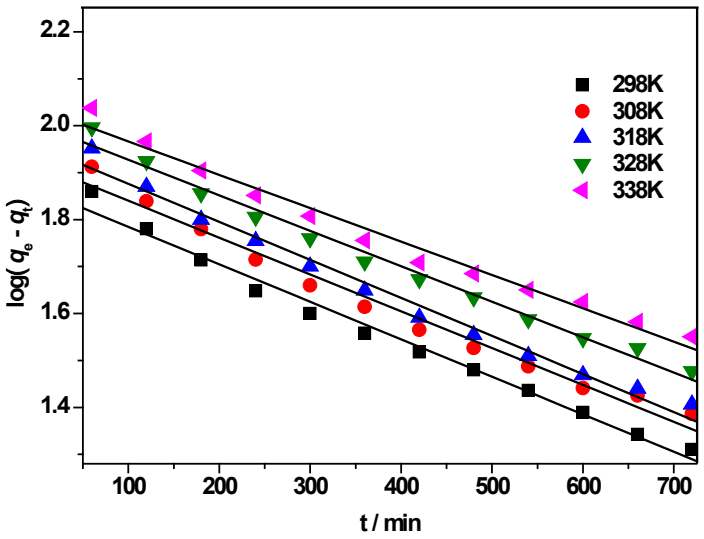

Figure SI1 Adsorption kinetics of MB adsorption by SRGOs for pseudo-first order model. MB concentration = 6 mg L^{-1}

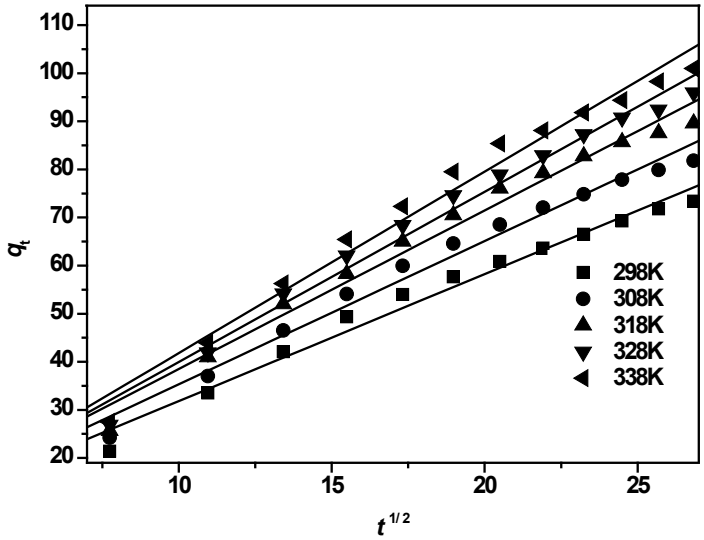

Figure SI2 Adsorption kinetics of MB adsorption by SRGOs using the intraparticle diffusion model. MB concentration = 6 mg L^{-1}

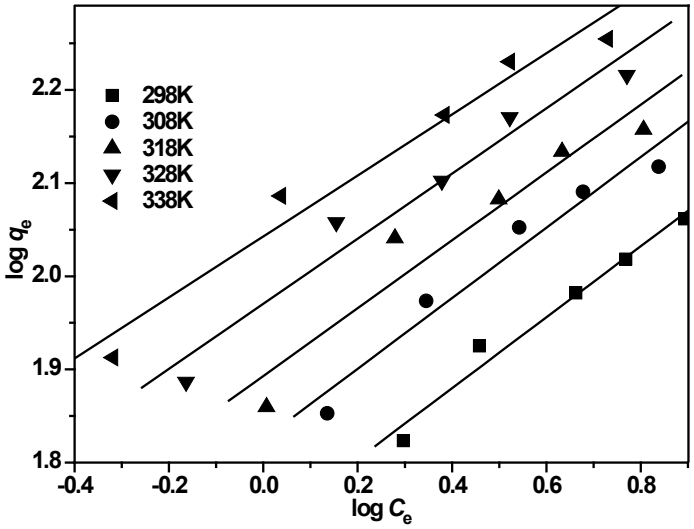

Figure SI3 A Freundlich plot (log q_e *vs.* log C_e) for MB adsorption by SRGOs at different temperatures. MB concentration = 4 mg L^{-1} to 12 mg L^{-1}

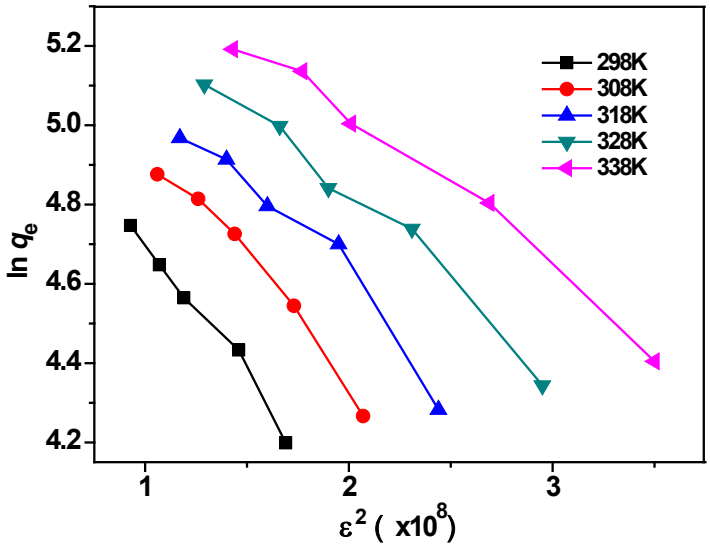

Figure SI4 A Dubinin–Radushkevich plot (log q_e *vs.* ε^2) for MB adsorption by SRGOs at different temperatures. MB concentration = 4 mg L^{-1} to 12 mg L^{-1}

References

[1] J. F. Shen, B. Yan, M. Shi, H. W. Ma, N. Li and M. X. Ye, *J. Mater. Chem.,* 2011, **21**, 3415.