Supplementary material

Controllable and green synthesis of robust graphene aerogels with tunable surface properties for oil and dyes adsorption

Lijuan Qiu\textsuperscript{a,b}, Wenchao Wan\textsuperscript{b}, Zhongqiu Tong\textsuperscript{b}, Ruiyang Zhang\textsuperscript{b}, Lina Li\textsuperscript{c}, Ying Zhou\textsuperscript{a,b,*}

\textsuperscript{a)} State Key Laboratory of Oil and Gas Reservoir Geology and Exploitation, Southwest Petroleum University, Chengdu 610500, China.

\textsuperscript{b)} The Center of New Energy Materials and Technology, School of Materials Science and Engineering, Southwest Petroleum University, Chengdu 610500, China.

\textsuperscript{c)} Shanghai Synchrotron Radiation Facility, Shanghai Institute of Applied Physics, Chinese Academy of Sciences, Shanghai 201204 China.

\textsuperscript{*}To whom correspondence should be addressed

Ying Zhou, Southwest Petroleum University, Xindu Rd. 8, Chengdu 610500, China.

Email: yzhou@swpu.edu.cn; Tel: +86 2883037411
**Fig. S1.** (a) The diagram of vacuum system equipment for continuous oil removal from water; (b) The device for continuous oil removal from water.

**Fig. S2.** (a) XRD patterns and (b) TG of GA-12.
Fig. S3. The electrical resistivity of GA-3, GA-5, GA-7, GA-9, GA-11 and GA-12.

Fig. S4. The photograph of GA-12.
**Fig. S5.** The photographs of (a) the hydrogel and (b) the aerogels of GA-5 prepared in the absence of VC.

**Fig. S6** Photographs of GA-5 (0.024g, 9 mg/cm$^3$, 1.5 cm in diameter, 1.5 cm in height) supporting a bunch of coins (the mass of each coin is ~6 g).
**Fig. S7.** FT-IR spectra of VC solution at different pH values.

**Fig. S8.** (a) The chemical reaction process of VC under acidic conditions; (b) The reaction pathway of VC under alkaline conditions.
**Fig. S9.** The photographs of GA-5 before and after continuous separation experiment.

**Fig. S10.** The structure of methyl blue, methylene blue (MB), methyl orange (MO) and rhodamine B (RhB).