Characterisation of dissolved organic matter to optimise powdered activated carbon and clarification removal efficiency

Shutova Y.[1], Rao N.R.H.[1], Zamyadi A.[2], Baker A.[3], Bridgeman J.[4], Lau B.[1], Henderson R.K.[1,*]

[1] *School of Chemical Engineering, UNSW Sydney, Australia*

[2] *Water Research Centre, School of Civil and Environmental Engineering UNSW Sydney, Australia*

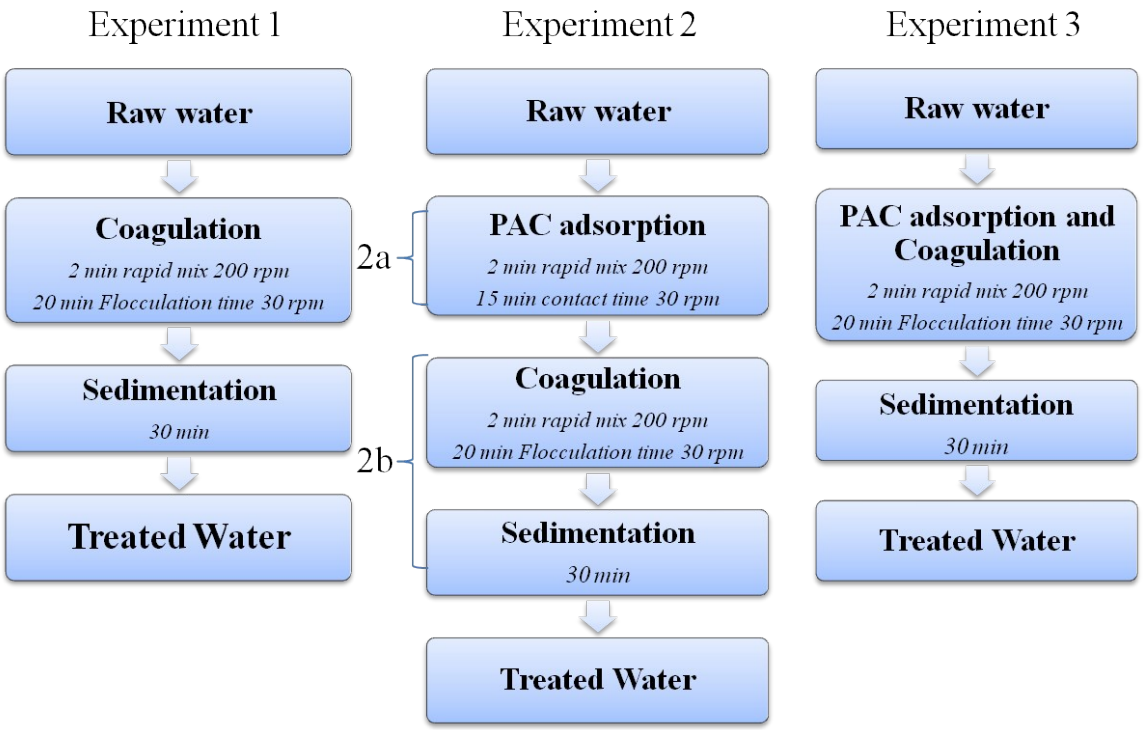
[3] *Connected Waters Initiative Research Centre, UNSW, Sydney, Australia*

[4] *Faculty of Engineering and Informatics, University of Bradford, Bradford, United Kingdom*

* Corresponding author – r.henderson@unsw.edu.au

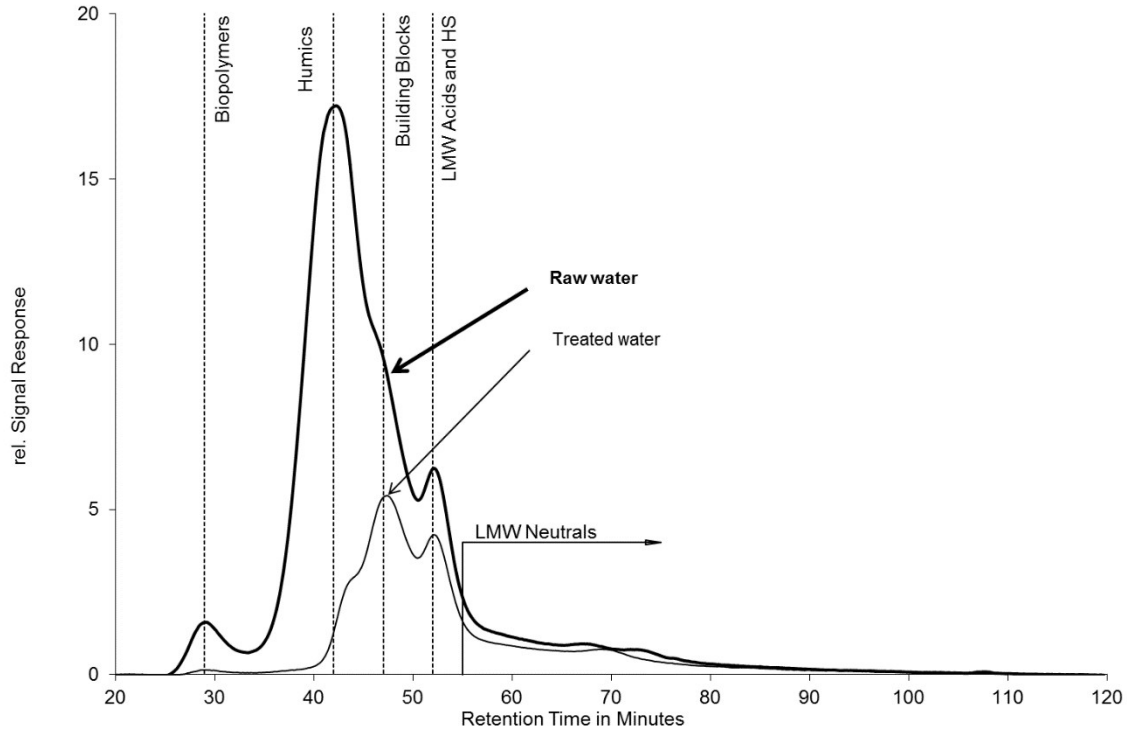
Supporting information

15



16

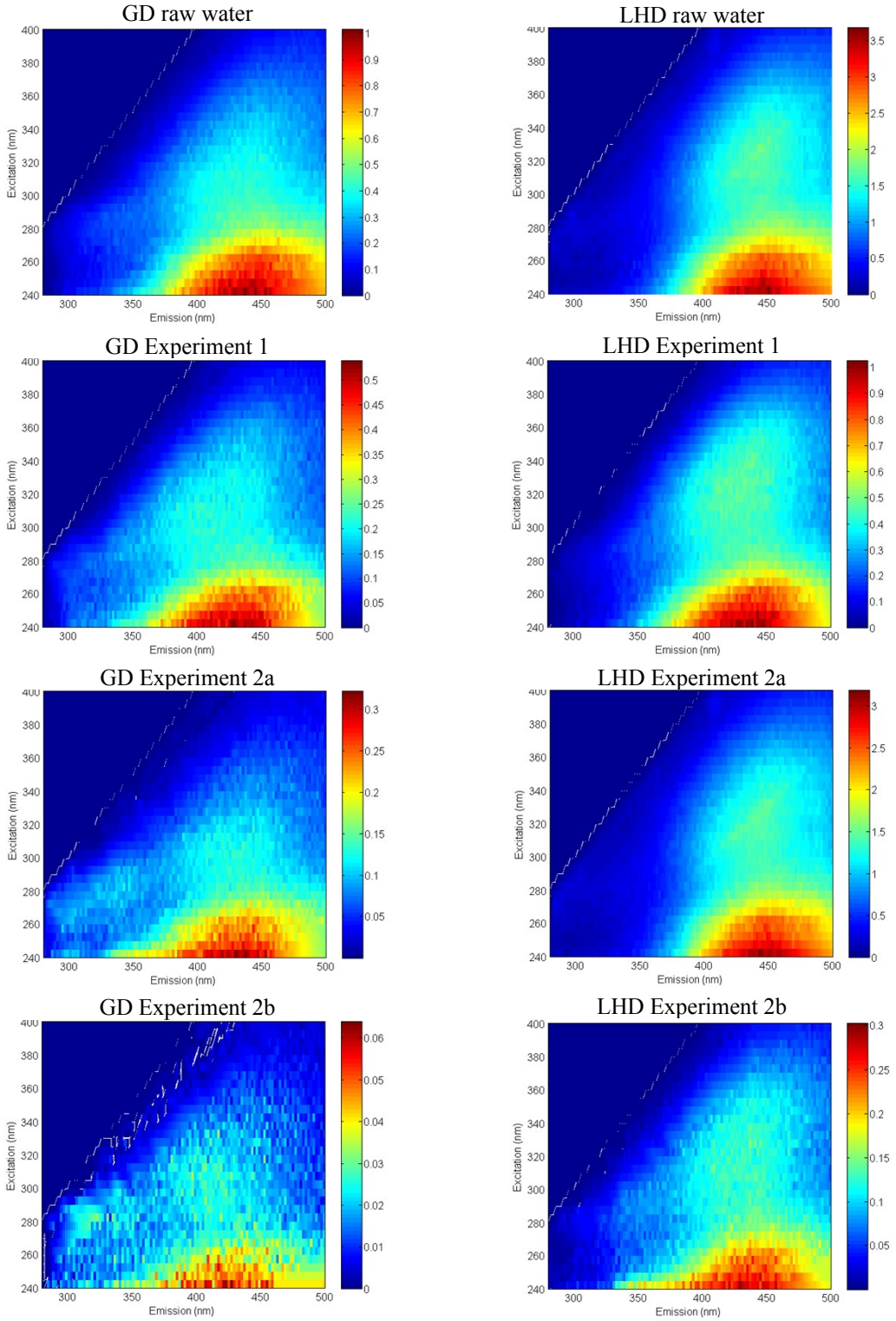
17 *Figure S1 Jar tests experiment flow chart. Experiment 1 included coagulation/*
18 *sedimentation; Experiment 2 included two sub-experiments PAC absorption (2a) followed by*
19 *coagulation/sedimentation (2b); Experiment 3 combined PAC absorption and*
20 *coagulation/sedimentation processes*



21

22 *Figure S2 Example of LC-OCD chromatogram of DOC signal of LHD raw and treated water*
23 *(Experiment 1, 16 mgAl/L)*

24



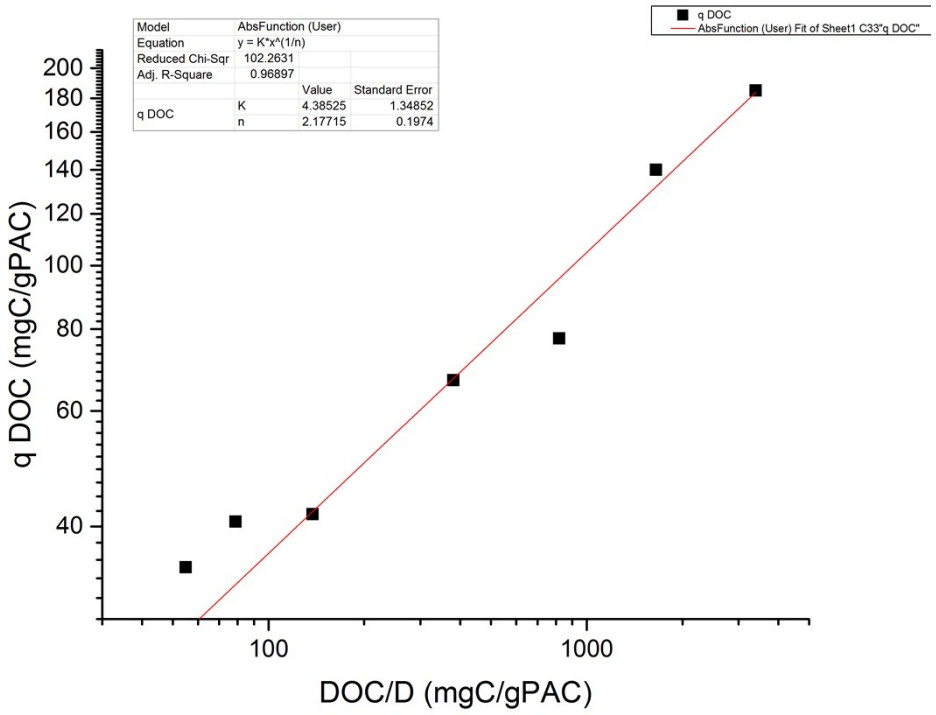
25

26 *Figure S3 Examples of EEM in raw water and treated water samples at the optimum doses in*
27 *Experiments 1&2*

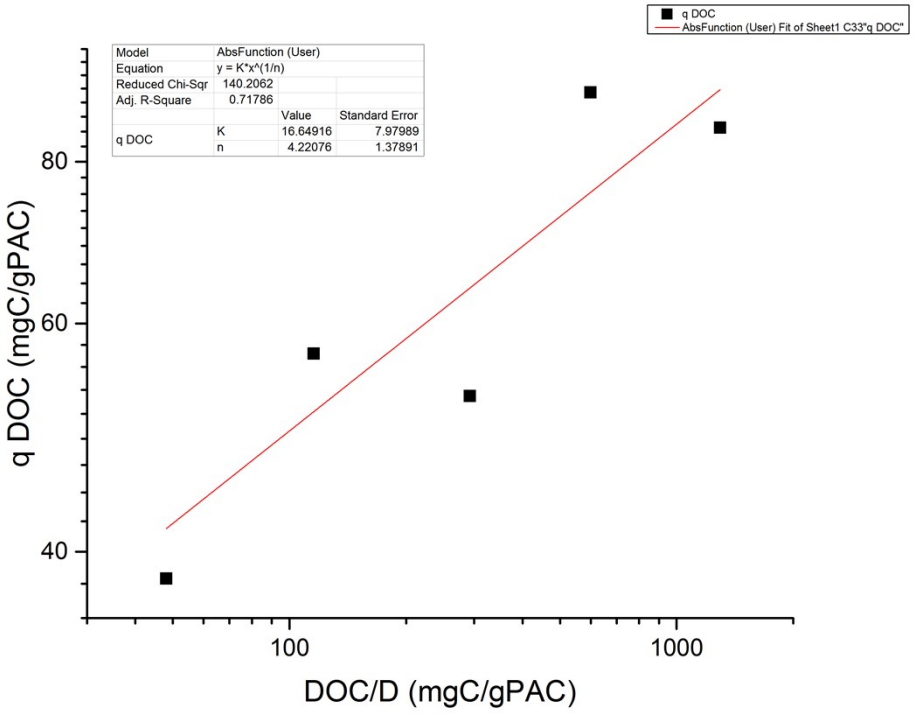
28

29

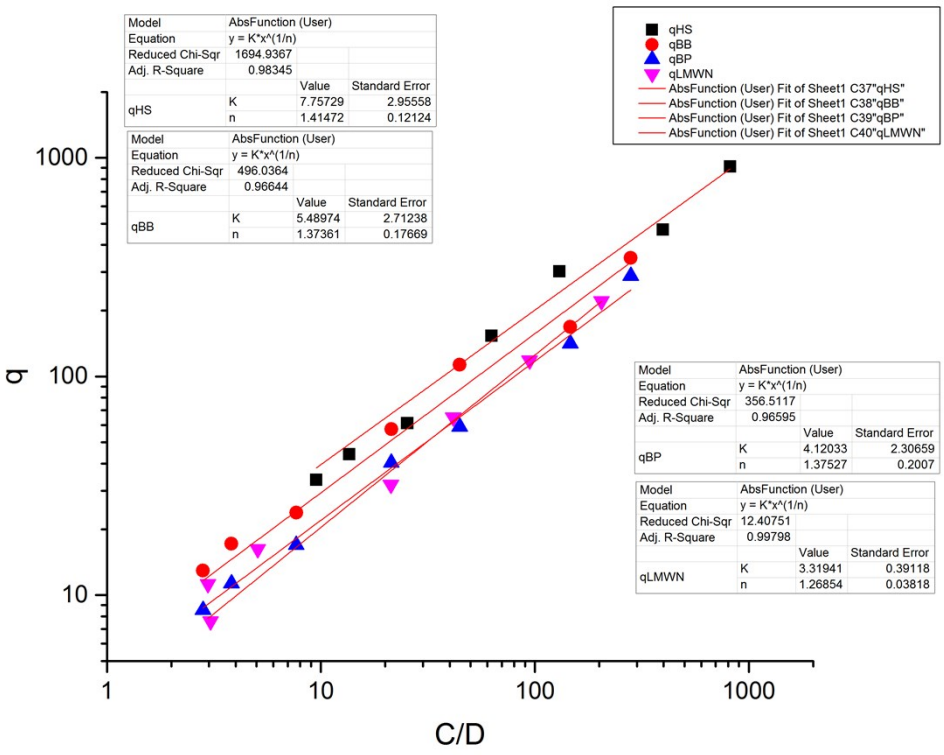
a) DOC adsorption GD experiments



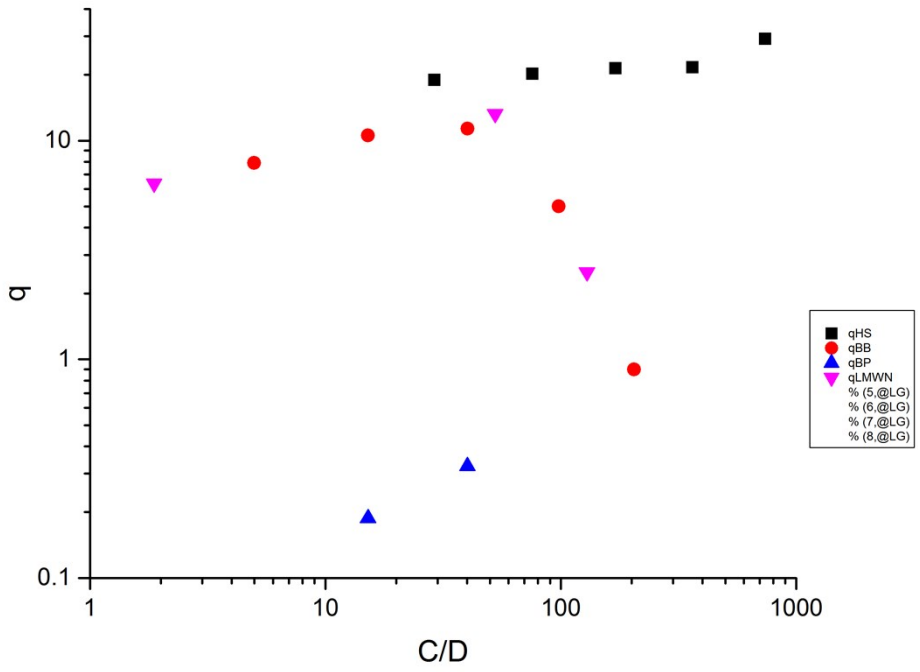
b) DOC adsorption LHD experiments



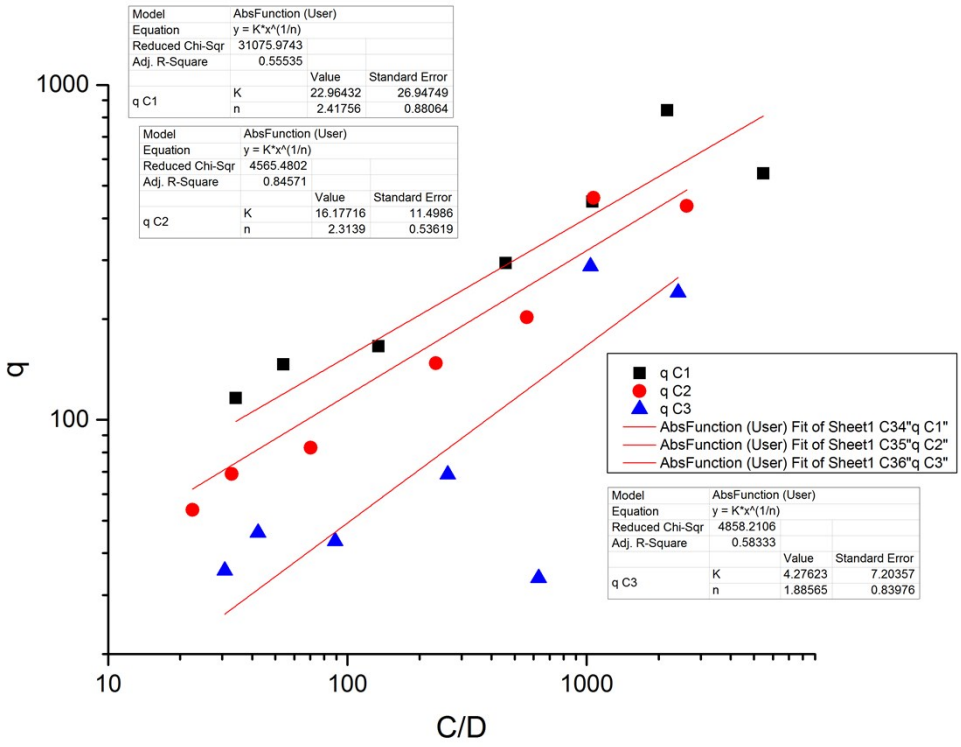
c) DOC fractions adsorption GD experiments



d) DOC fractions adsorption LHD experiments



e) Fluorescence components adsorption GD experiments



f) Fluorescence components adsorption LHD experiments

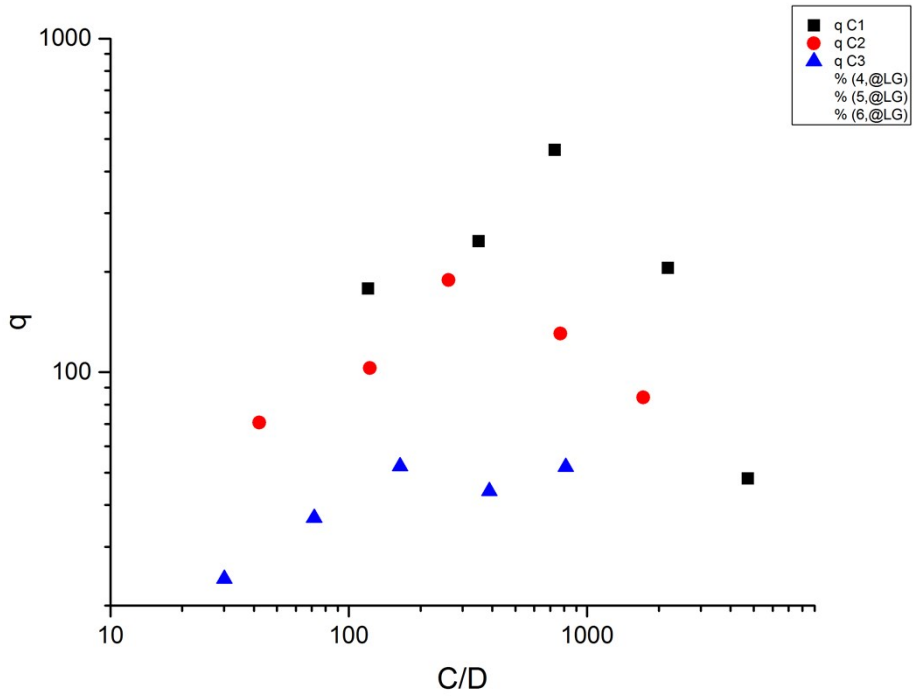
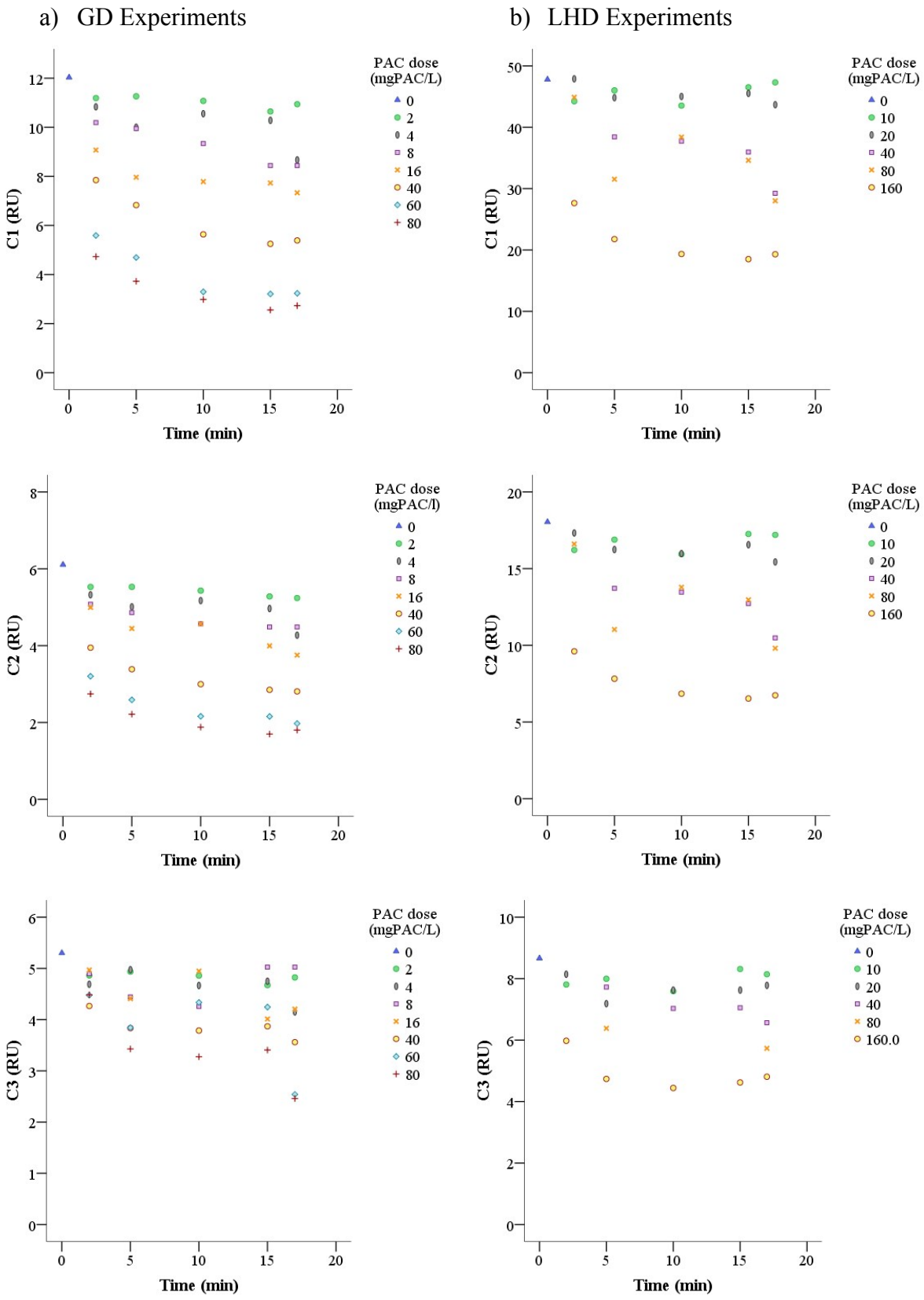


Figure S4 Modified Freundlich isotherm fitting for adsorption of OM fractions in GD and LHD Experiments 2a



47 *Figure S5 Fluorescence components C1, C2, C3changes during the Experiments 2a*

48

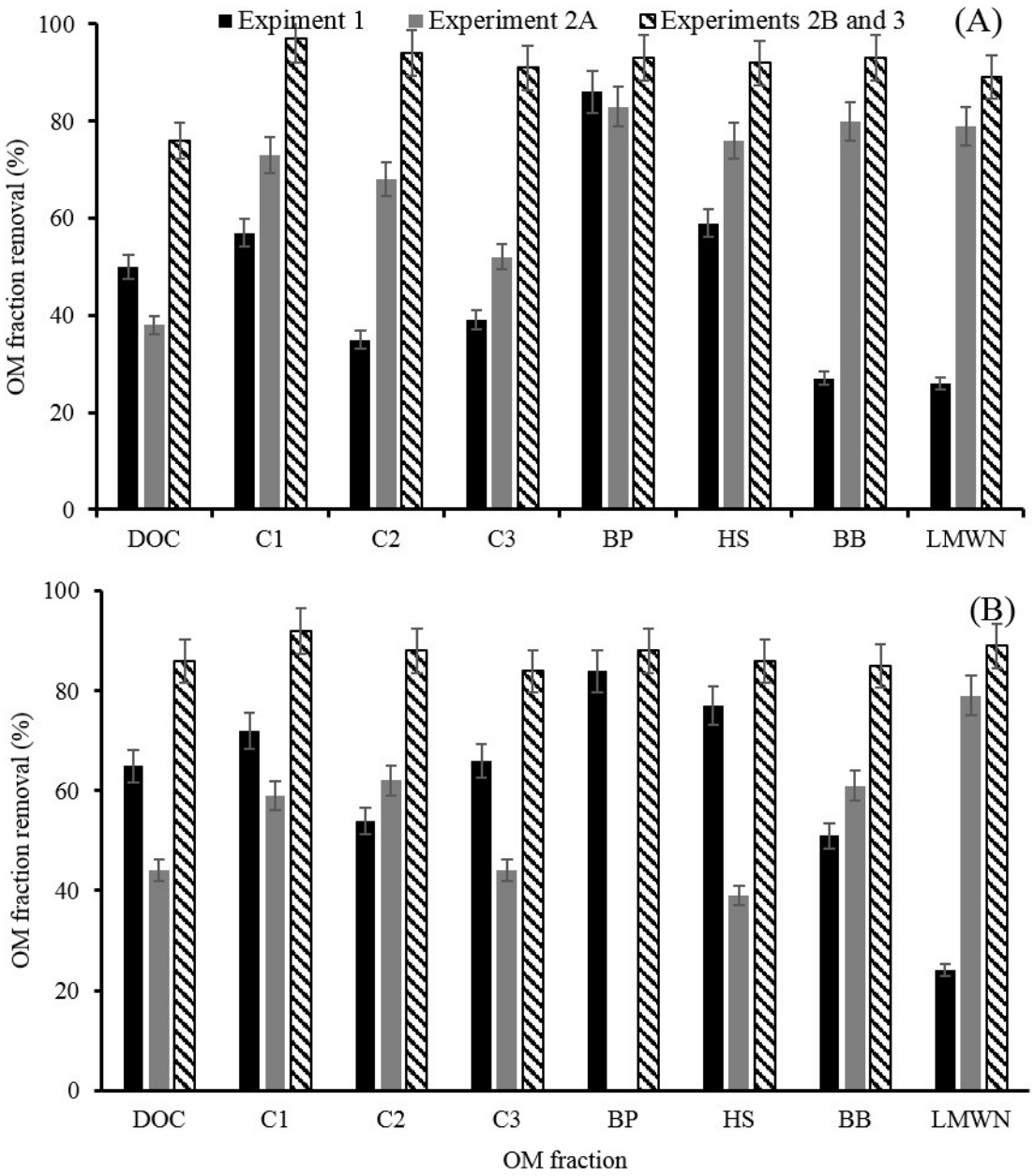


Figure S6. Removal of OM fractions at the optimum doses of the coagulant and PAC in (A) GD and (B) LHD waters via Experiment 1, Experiment 2A and, Experiments 2B and 3.