

Supporting information

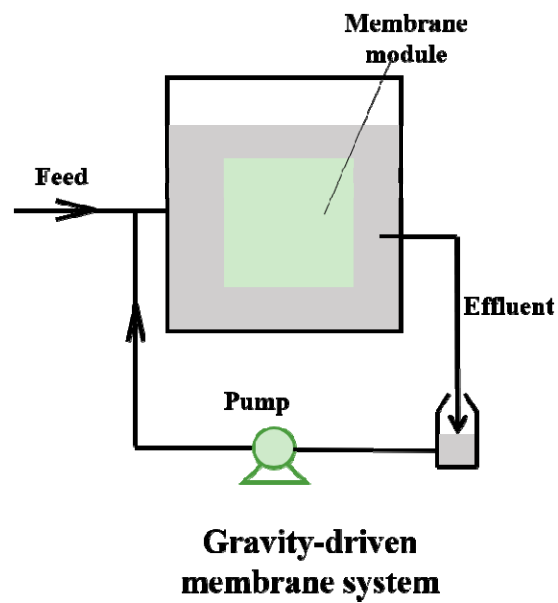


Fig. S1 Schematic diagram of the four membrane systems investigated: GDM 1 was the control system; and GDM

2/3/4 were the systems with TCS addition

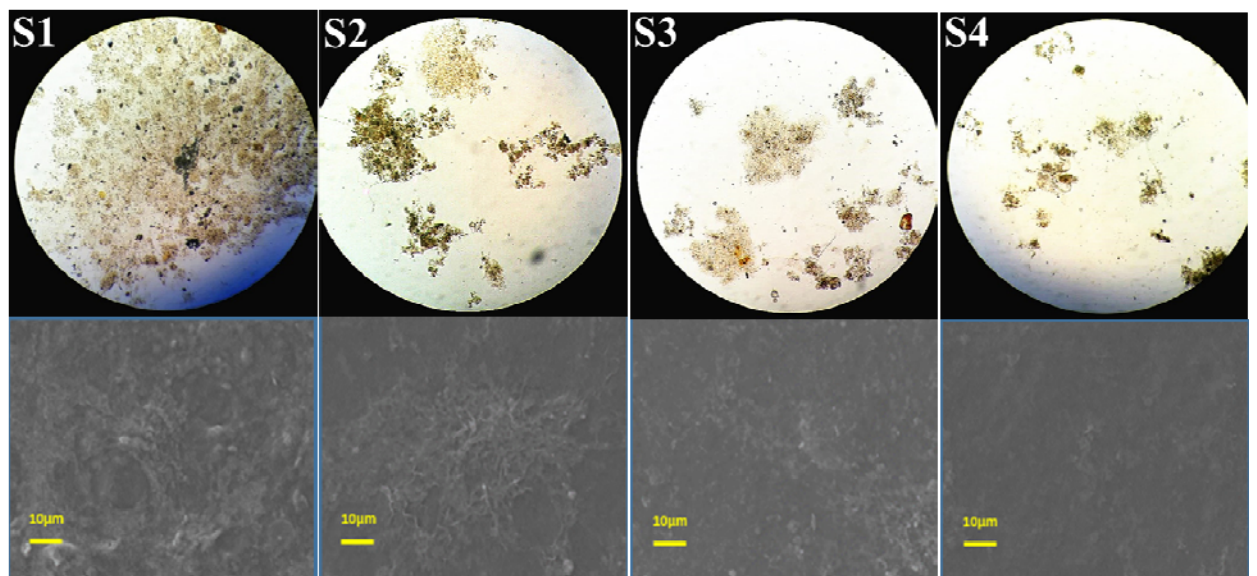


Fig. S2 Images of the resuspended fouling layer on them membrane observed by electron microscope with the

magnification times of 200 (upper part); and scanning electron microscope with the magnification times of 400

(lower part)

Table S1 Fluorescence spectral parameters of EPS in different samples on Day 22

Sample	Peak A		PeakB		Peak C		Peak D	
	E _x /E _m	Intensity	E _x /E _m	Intensity	E _x /E _m	Intensity	E _x /E _m	Intensity
S1	240/350	4903.2	275/328	6022.4	—	—	—	—
S2	240/340	2532.1	276/325	2679.2	—	—	—	—
S3	235/345	2176.3	280/330	2311.5	—	—	—	—
S4	235/355	2189.3	275/330	2273.2	—	—	—	—

Table S2 Fluorescence spectral parameters of SMP in different samples on Day 22

Sample	Peak A		PeakB		Peak C		Peak D	
	E _x /E _m	Intensity	E _x /E _m	Intensity	E _x /E _m	Intensity	E _x /E _m	Intensity
S1	235/350	653.4	275/325	701.4	245/400	308.1	320/409	268.4
S2	235/340	805.2	280/330	865.1	250/398	315.3	320/410	288.6
S3	234/340	953.5	280/330	801.2	250/421	329	320/412	312.7
S4	235/346	409.6	280/330	867.5	240/390	325.2	330/412	375.2

Text S1. ATP measurement

ATP content of the suspended sludge and bio-fouling layer were measured using the BacTiter-Glo (Promega Corporation) kit and protocol. The steps were as follows (Berney et al. 2008, Habermacher et al. 2015, Hammes et al. 2010): 100 µL of suspended sludge sample was mixed with 100 µL of reagent. The fouling layer was scraped carefully from the membrane surface by a glass stick at the end of the operation and re-suspended with ultrapure water, and then homogenized. The reaction was carried out at 38 °C with 10 s incubation time on a vortex mixer. All samples were measured in duplicate.

References

- Berney, M., Vital, M., Hülshoff, I., Weilenmann, H.-U., Egli, T. and Hammes, F. (2008) Rapid, cultivation-independent assessment of microbial viability in drinking water. *Water Res* 42(14), 4010-4018.
- Habermacher, J., Benetti, A.D., Derlon, N. and Morgenroth, E. (2015) The effect of different aeration conditions in activated sludge – Side-stream system on sludge production, sludge degradation rates, active biomass and extracellular polymeric substances. *Water Res* 85, 46-56.
- Hammes, F., Goldschmidt, F., Vital, M., Wang, Y. and Egli, T. (2010) Measurement and interpretation of microbial adenosine tri-phosphate (ATP) in aquatic environments. *Water Res* 44(13), 3915-3923.