

**Table S1** Characteristics of secondary effluent quality.

Water quality parameters	Units	Ranges of concentration	Mean values
TOC	mg/L	8-10	9.12
BOD <sub>5</sub>	mg/L	4-6	5
TN	mg/L	15-20	16.4
TP	mg/L	0.6-0.8	0.7
Turbidity	NTU	2-5	3.6
Temperature	°C	18-22	20
pH	-	5-7	6.6

**Table S2** Fluorescence (EEM) intensity value of influent and effluent of UF process under different concentration conditions.

Fe(II)/PMS	Peak A				Peak B				Peak C				Peak D			
Dosage (μM/μM)	Influent		Effluent		Influent		Effluent		Influent		Effluent		Influent		Effluent	
	Ex/Em (nm/nm)	Intensity	Ex/Em (nm/nm)	Intensity	Ex/Em (nm/nm)	Intensity	Ex/Em (nm/nm)	Intensity	Ex/Em (nm/nm)	Intensity	Ex/Em (nm/nm)	Intensity	Ex/Em (nm/nm)	Intensity	Ex/Em (nm/nm)	Intensity
0/0	235/344	432.7	235/344	315.2	280/330	298.9	280/326	223.6	245/393	397.2	250/418	413.2	320/412	294.4	325/414	295.1
0/30	235/350	421.8	235/349	345.7	280/327	306.5	280/330	225.3	240/408	406	245/412	405.3	330/411	301.9	330/413	279.7
0/60	235/349	400.1	235/353	298.3	280/329	303.6	280/329	217.3	245/414	402.4	245/412	370.3	335/420	275.6	300/410	264.7
30/0	235/344	371.4	235/350	299.5	280/330	264.1	280/330	235.7	240/402	337.0	245/402	370.8	330/416	264.3	330/416	258.1
60/0	235/346	357.9	240/355	288.8	280/328	248.3	280/330	221.1	240/423	329.1	245/401	348.2	330/410	257.3	330/410	250.3
30/30	235/346	348.9	235/345	267.6	280/330	241.4	280/330	186.7	245/403	317.7	245/412	306.7	320/413	237.8	330/421	217.8
60/60	235/345	233.6	240/355	288.8	280/330	174.8	280/328	135.3	245/392	215.5	240/404	215.9	330/413	160.1	335/412	148.8
120/120	235/344	97.66	240/345	52.4	280/328	95.73	280/329	58.79	250/394	123.4	245/417	88.46	320/419	79.08	340/423	60.35

**Table S3** Correlation coefficient ( $R^2$ ) of membrane fouling models under different concentration conditions.

Dosage ( $\mu\text{M}/\mu\text{M}$ )	Cycle time	$R^2$			
		Complete blocking	Standard blocking	Incomplete blocking	Sediment filtration
0/0	1	0.9071	0.9989	0.9824	0.9967
	2	0.91188	0.9898	0.9811	0.9975
	3	0.9139	0.9864	0.9787	0.9977
0/30	1	0.8954	0.9986	0.9769	0.9979
	2	0.9159	0.9873	0.9797	0.9977
	3	0.9102	0.9935	0.9768	0.9978
0/60	1	0.9054	0.999	0.9817	0.997
	2	0.9031	0.9914	0.9801	0.9976
	3	0.8808	0.9889	0.9783	0.9977
30/0	1	0.9169	0.9991	0.9836	0.9966
	2	0.9323	0.9931	0.9839	0.9959
	3	0.9203	0.9905	0.9794	0.997
60/0	1	0.9202	0.9993	0.9841	0.9965
	2	0.929	0.9924	0.9829	0.9964
	3	0.9211	0.9903	0.9798	0.997
30/30	1	0.8674	0.9912	0.9816	0.9969
	2	0.9178	0.9882	0.9806	0.9976
	3	0.8893	0.9866	0.9783	0.9977
60/60	1	0.9416	0.9963	0.988	0.9948
	2	0.9362	0.9903	0.9752	0.9933
	3	0.9299	0.9942	0.9739	0.9939