Optimization of Critical Factors Affecting Dynamic Membrane Formation in a Gravity-Driven Self-Forming Dynamic Membrane Bioreactor towards Low-Cost and Low-Maintenance Wastewater Treatment

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Table S1 A nomenclature list

acronyms	full names
SFDMBR	self-forming dynamic membrane bioreactor
SFDM	self-forming dynamic membrane
COD	chemical oxygen demand
SCOD	soluble chemical oxygen demand
NH_4^+-N	ammonia nitrogen
MBR	Membrane bioreactors
HRT	hydraulic retention time
SRT	sludge retention time
DM	dynamic membrane
PCDM	precoated dynamic membrane
WWTP	wastewater treatment plant
TN	total nitrogen
TP	total phosphorus
AAO-MBR	anaerobic-anoxic-oxic-MBR
MLSS	mixed liquor suspended solids
DO	dissolved oxygen
CVM	control variable method
MLVSS	mixed liquor volatile suspended solids
R_t	total filtration resistance
R_m	intrinsic resistance
R_c	cake layer resistance
R_p	pore blocking resistance
SEM	scanning electron microscope
EDX	energy-dispersive X-ray analyzer
LMH	$L/m^2\ h$

Results and discussion

3.5.2 Pollutants removal performance

Table S2 Operational Performance Comparison of SFDMBRs

operating condition			Wastewater type	Filtration performance			Pollutant removal performance		**Reference**
Supporting material	MLSS (g/L)	Gravity head (cm)		Stable flux (LMH)	Effluent turbidity (NTU)	SFDM formation time (min)	COD	NH$_4^+$-N	
48 μm stainless steel mesh	5-6	15	Real domestic sewage	30-50	1	< 5	93.3%	95.5%	This study
100 μm dacron mesh	3.5	< 5	Municipal wastewater	-	-	-	84.2%	98.0%	Fan and Huang [11]
30 μm Woven polyester filaments	8-9	-	Real domestic sewage		5	30	90-95%	95-99%	Loderer et al. [14]
industrial filter-cloth	6		Municipal wastewater	17-21	9	-	80%	74%	Chu et al. [20]
25 μm nylon mesh	3-5	5	Synthetic wastewater	66.4	2	-	20 mg/L		Cai et al. [26]
80 μm nylon mesh	3.89	25	Municipal wastewater	-	2	-	83.3%	98.1%	Wang et al. [35]
75 μm nylon mes	-	20	Real domestic sewage	4.2-16	1	5	88%	98.2%	Yang et al. [36]