Supporting Information

Application of $Ti_3C_2T_X$ MXene-coated Membrane for Removal of Selected Natural Organic Matter and Pharmaceuticals

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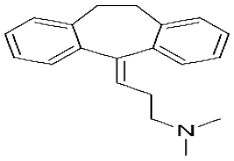
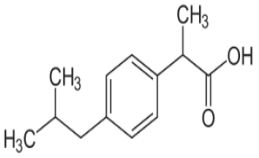
Table S1. Characteristics of HA and TA as NOM at three different ratios.

Parameters	NOM 1	NOM 2	NOM 3
HA : TA (%)	100:0	50:50	0:100
pH	7	7	7
DOC (mg/L)	5 ± 0.1	5 ± 0.1	5 ± 0.1
UV_{254} (1/cm)	0.221	0.256	0.226
Conductivity (μS/cm)	3.15	1.51	1.54
Turbidity (NTU)	0.26 ± 0.02	0.36 ± 0.05	0.16 ± 0.04

Table S2. Physicochemical properties of AMT and IBP.

Pharmaceuticals		**Amitriptyline [AMT]**	**Ibuprofen [IBP]**
Chemical structure[a]			
Uses		Treat depression / ADHD[b]	Relieve pain
Formula		$C_{20}H_{23}N$	$C_{13}H_{18}O_2$
Molecular weight (g/mol)		277.4	206.3
Hydrogen bond	Acceptor	1	2
	Donor	0	1
pK_a[a]		Strongest basic 9.76	Strongest acidic 4.85
Log *Kow*[c]		4.81	3.84
Water solubility (mg/mL at pH 7)[c]		6.56	8.37

[a] Chemicalize.org by ChemAxon.
[b] Attention Deficit Hyperactivity Disorder (ADHD)
[c] PubChem; https://pubchem.ncbi.nlm.nih.gov/

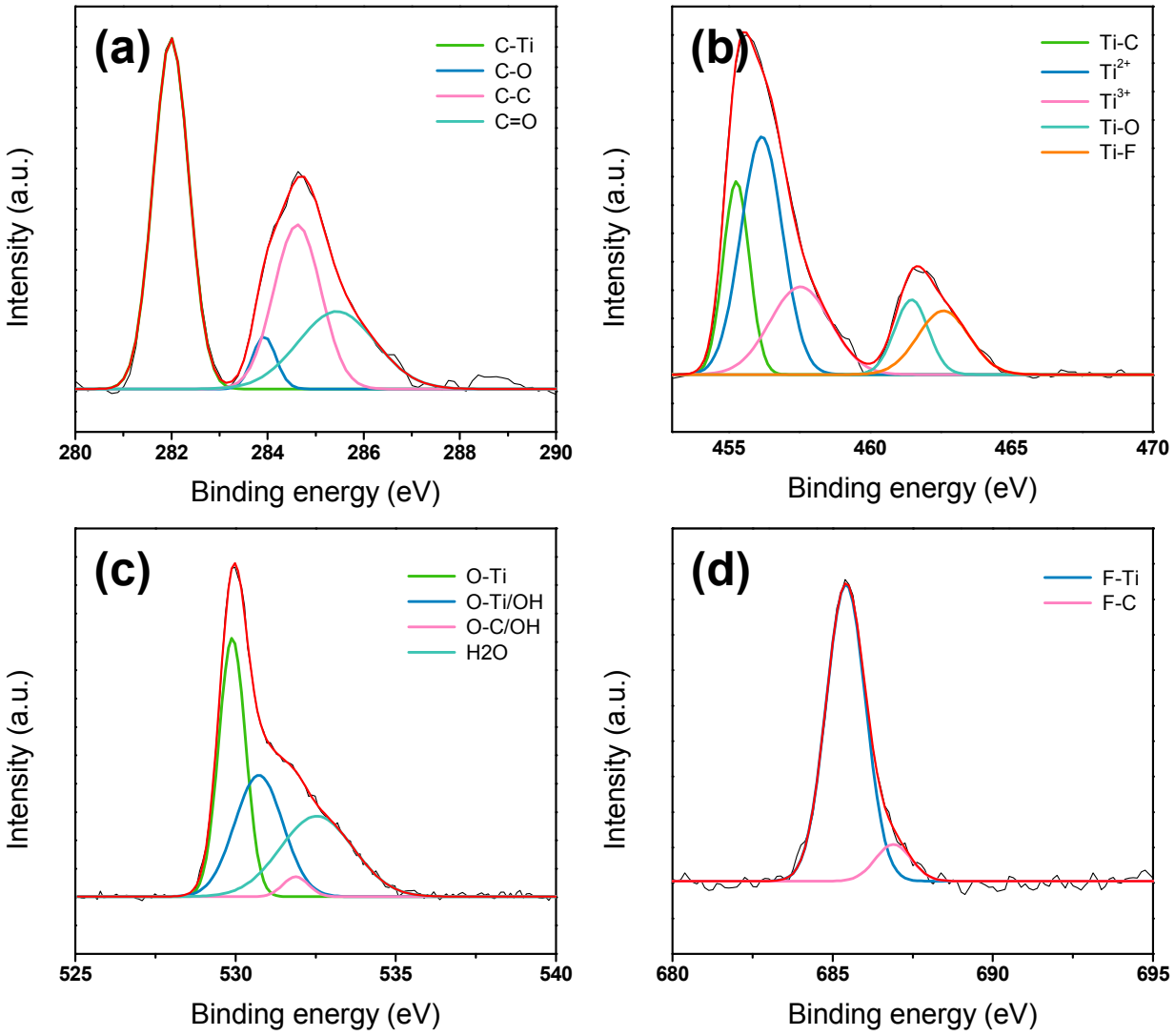


Figure S1. XPS spectrum of the $Ti_3C_2T_X$ MXene-coated membrane; (a) C1s, (b) Ti2P, (c) O1s, and (d) F1s.

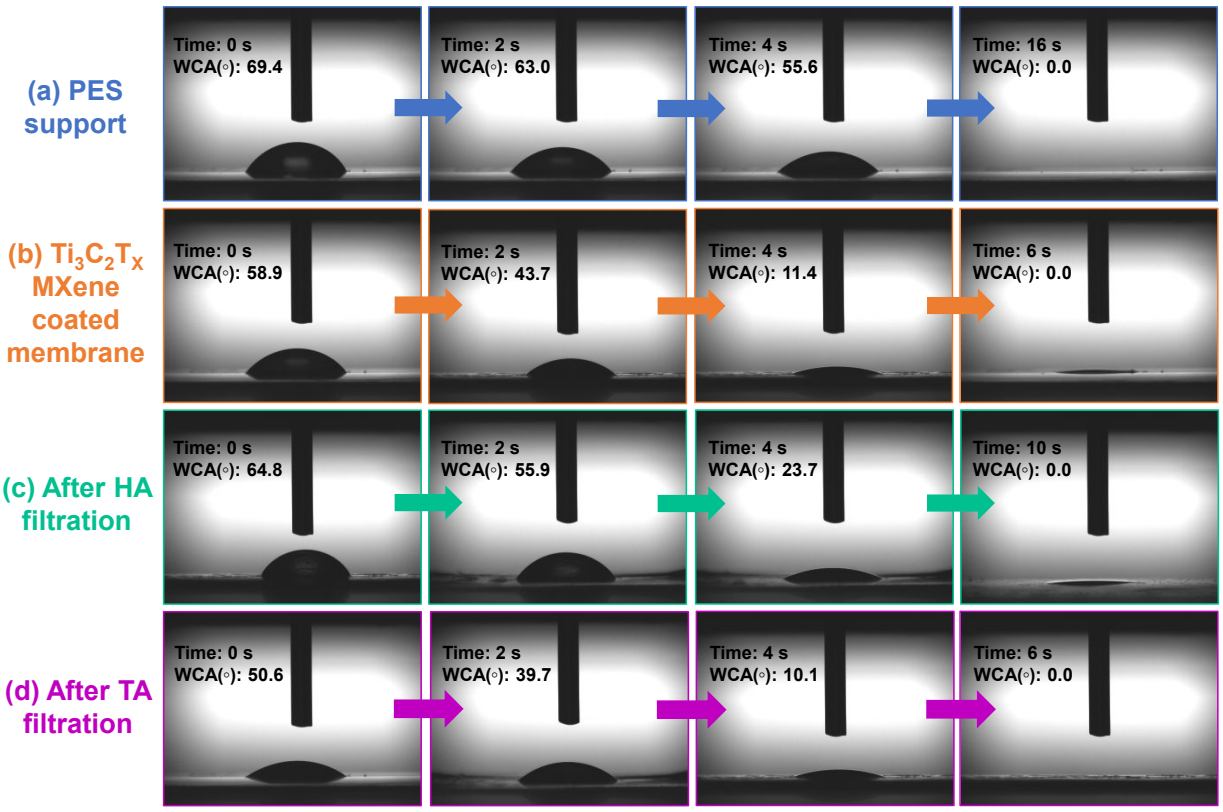


Figure S2. Spreading of water contact angle in the (a) PES support, (b) $Ti_3C_2T_X$ MXene-coated membrane, (c) after HA filtration, and (d) after TA filtration.

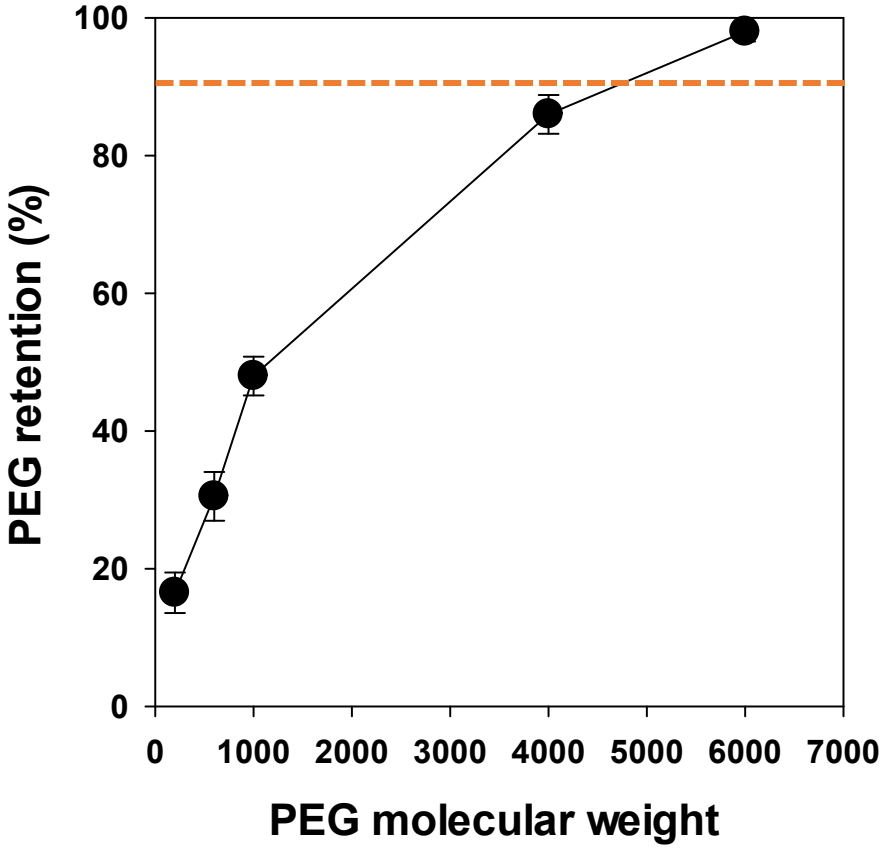


Figure S3. PEG rejection by $Ti_3C_2T_X$ MXene-coated membrane.