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Supporting Information

High-performance Graphene Oxide Nanofiltration Membrane with Continuous Nanochannels Prepared by in Situ Oxidation of MXene

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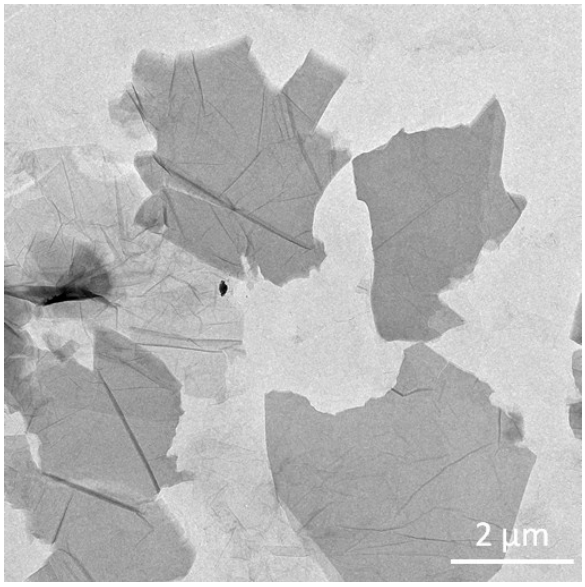

Figure S1. TEM image of GO

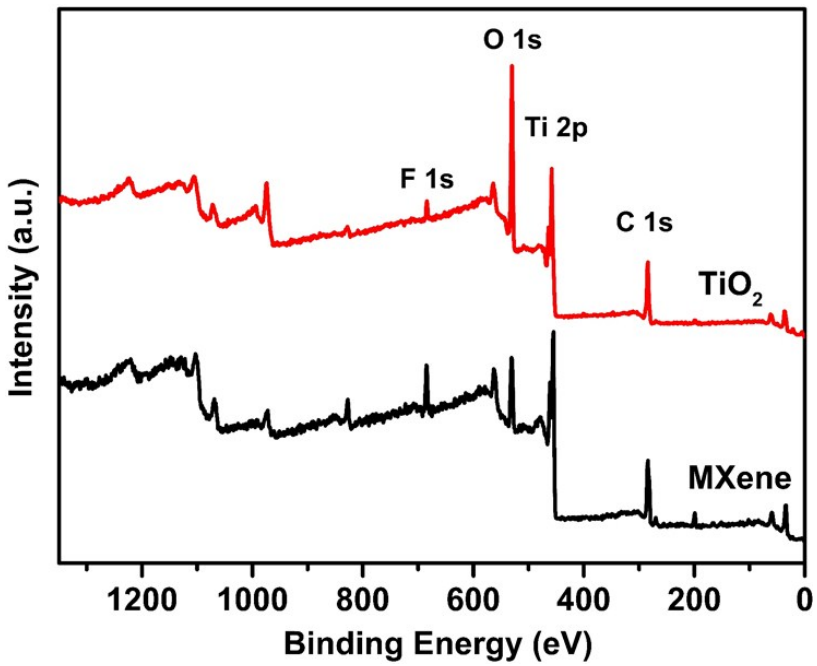

Figure S2. XPS spectra of MXene and TiO_2 derived from oxidation of MXene.

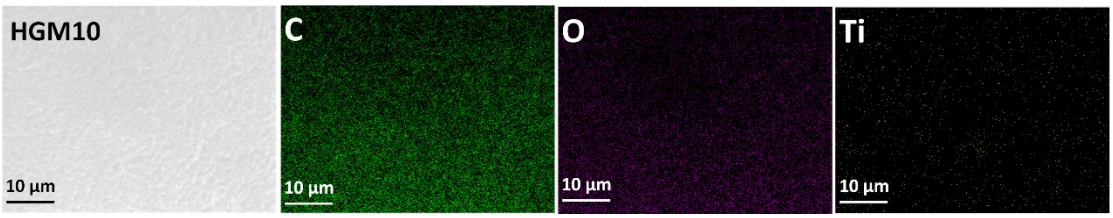

Figure S3. The EDS mapping of surface of HGM10.

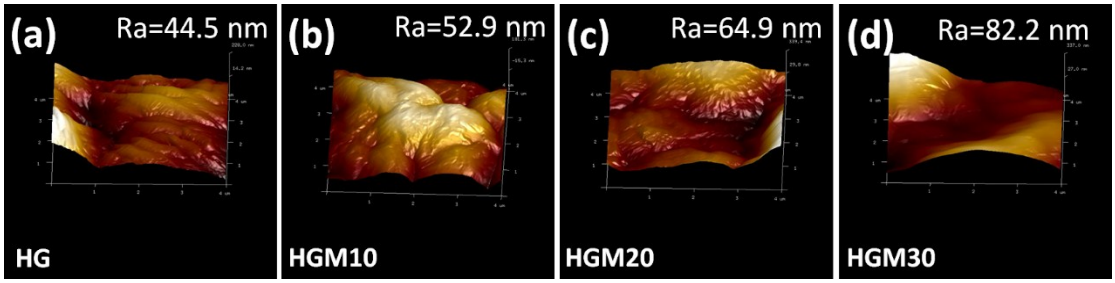

Figure S4. 3D height AFM images of (a) HG, (b) HGM10, (c) HGM20, (d) HGM30.

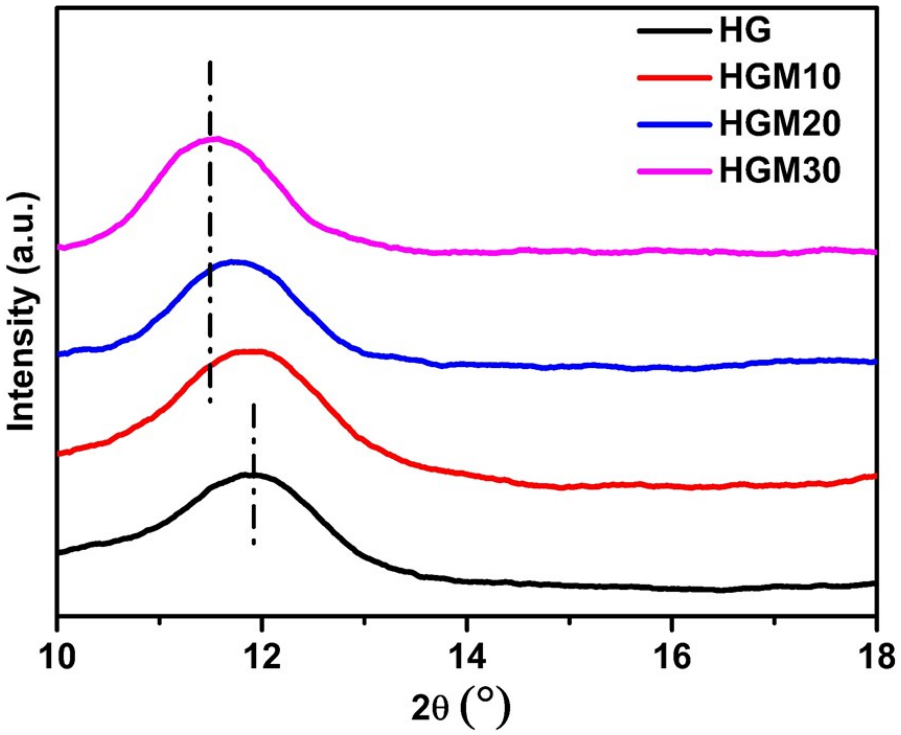

Figure S5. XRD patterns with partial enlarged detail of HG, HGM10, HGM20, HGM30.

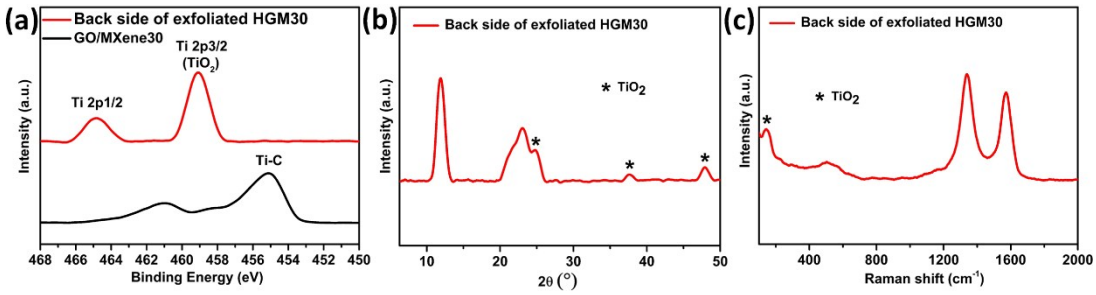

Figure S6. (a) Ti 2p XPS spectra of GO/MXene30 and back side of exfoliated HGM30, (b) XRD patterns, (c) Raman spectra of back side of exfoliated HGM30.

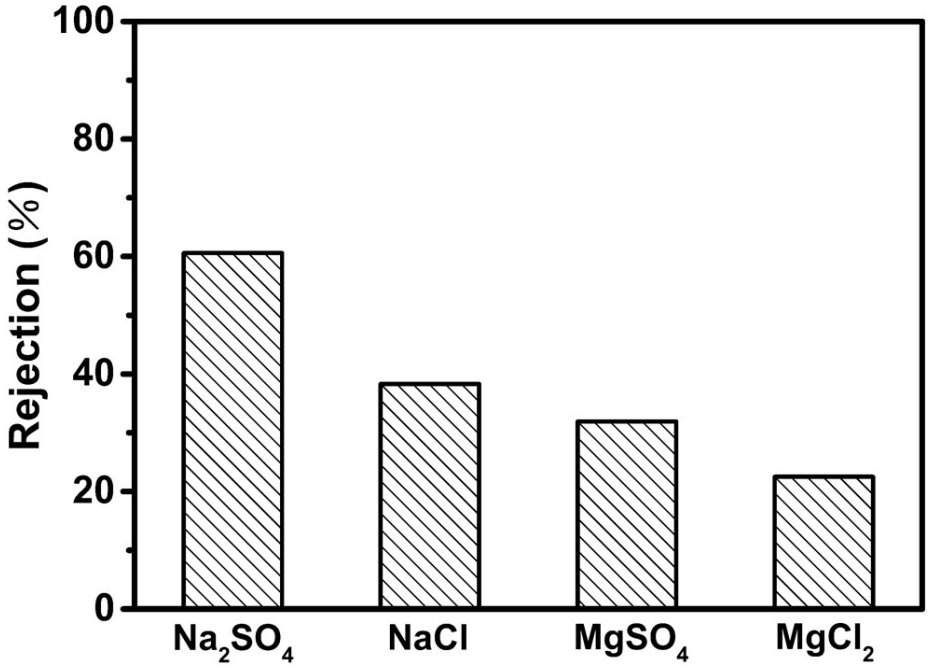

Figure S7. Rejection rate of HGM30 for four different salt ions.

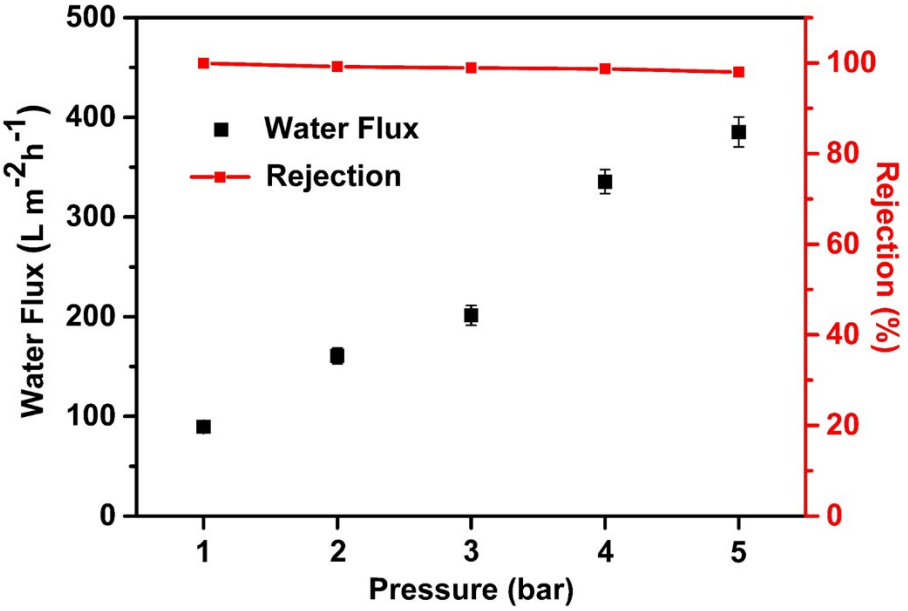

Figure S8. Pure water flux and rejection rate of HGM30 for RhB under different pressure.

Table S1. Separation performance of HGM30 and other representative works published recently.

Membranes	**Fabrication method**	**Water Permeability ($L\ m^{-2}h^{-1}bar^{-1}$)**	**Feed solution**	**Rejection (%)**	**Ref.**
rGO-MWCNT /PC	Pressure-assisted filtration	52.7	MB (0.01 g L^{-1})	99.8	[1]
			AO7 (0.03 × 10^{-3} M)	99.4	
			RhB (0.02 × 10^{-3} M)	100	
Base-refluxed rGO/PVDF	Vacuum filtration	21.8	MB (0.02 × 10^{-3} M)	99.8	[2]
			DR 81 (0.02 × 10^{-3} M)	99.9	
			RhB (0.02 × 10^{-3} M)	78	
rGO-MWNT /PVDF	Vacuum filtration	11.3	DY (0.02 × 10^{-3} M)	99	[3]
			MO (0.05 g L^{-1})	96	
CDs-GO/MCE	Vacuum filtration	408–434	MB (10ppm)	99.5	[4]
			MO (10ppm)	99.2	
			RhB (10ppm)	99.7	
GO/Modified - PAN	GO ink Printing	15-85	MO (0.02 × 10^{-3} M)	95.9	[5]
			AB 45 (0.02×10^{-3} M)	99.9	
GO-TiO_2/PC	Vacuum filtration	~7	MO (10 ppm)	100	[6]
			RhB (10 ppm)	100	
Nanostrand channeled GO/PC	Vacuum filtration	695	EB (15 × 10^{-6} M)	83.5	[7]
GO/Nylon 66	Shear alignment	71	MR (10ppm)	90	[8]
			MO,OG,MB (10ppm)	>90	
HGM30	Vacuum filtration	89.6	RhB (10ppm)	99.3	This work
			MB (10ppm)	97.6	
			CV (10ppm)	99.1	
			NR (10ppm)	98.6	

References

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