

Supplementary Material

Cellulose Triacetate-Based Mixed-Matrix Membranes with MXene 2D Filler—CO₂/CH₄ Separation Performance and Comparison with TiO₂-Based 1D and 0D Fillers

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Results and Discussions

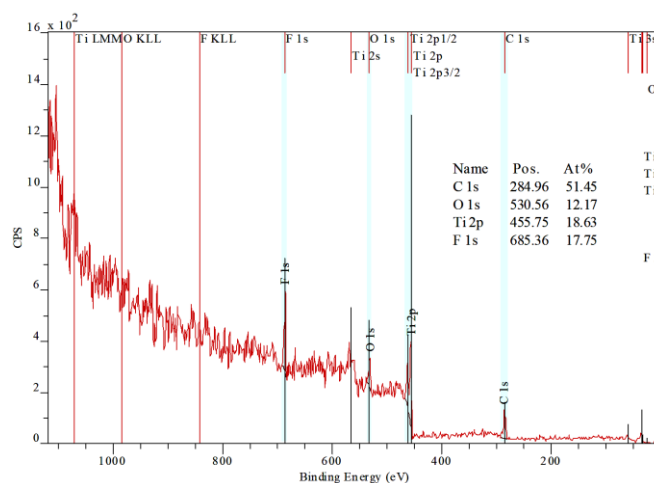


Figure S1 XPS survey spectrum of MXene nanosheets.

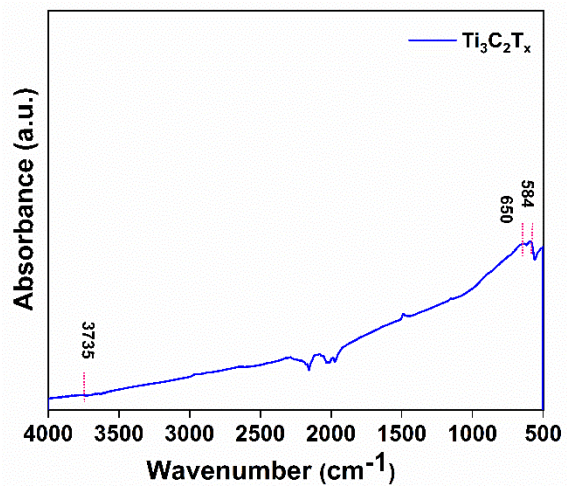


Figure S2 FTIR spectra of MXene nanosheets.

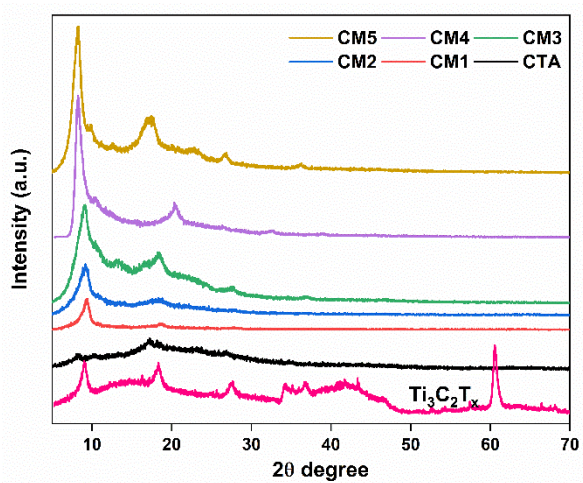


Figure S3 XRD patterns of synthesized MMMs with different loading concentrations of MXene.

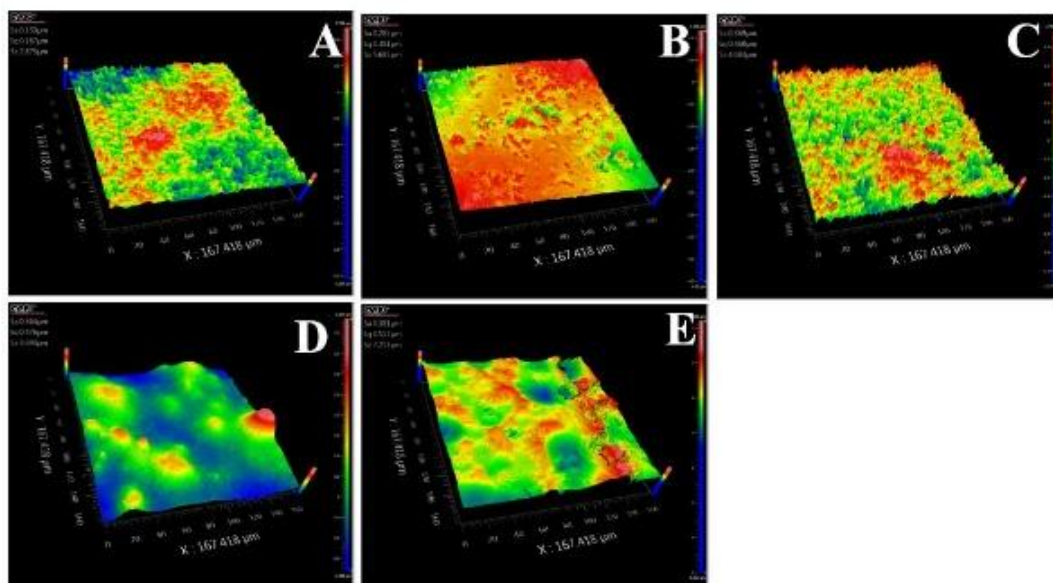


Figure S4 Surface topography analysis of the prepared MMMs containing different loading concentrations of MXene filler.

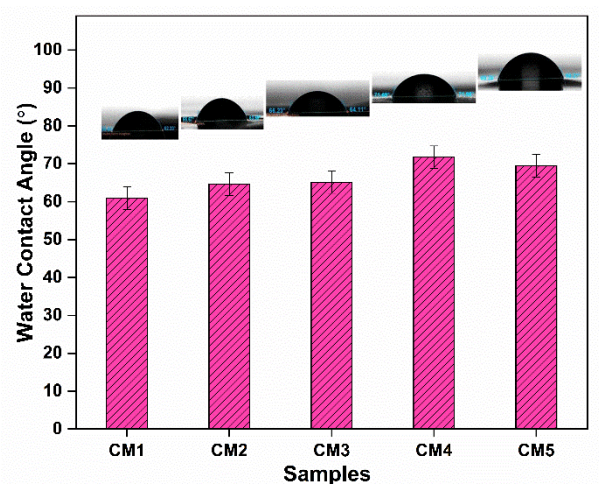


Figure S5 Water contact angle evaluation of MMMs synthesized with different MXene loading concentrations.

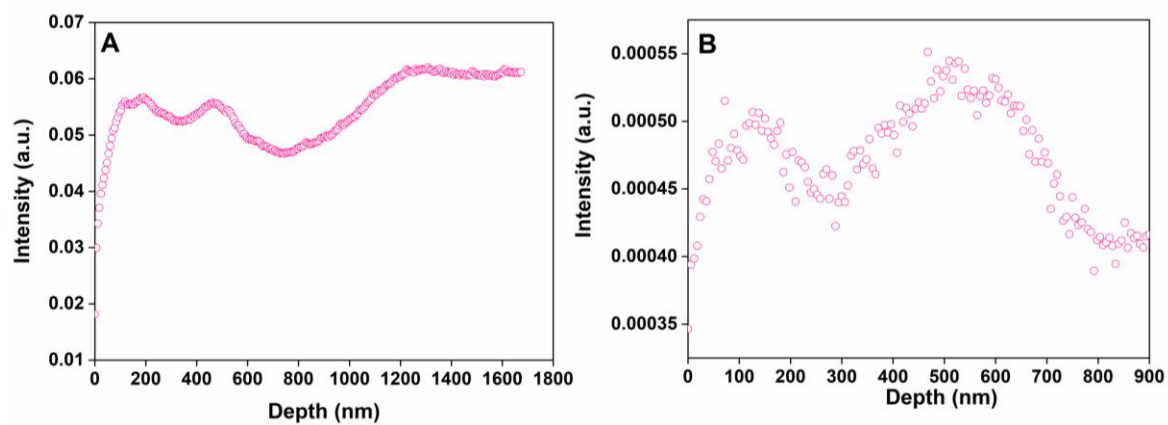


Figure S6 Depth profile analysis of Ti element distribution in CM3 sample A) surface and B) cross-section.

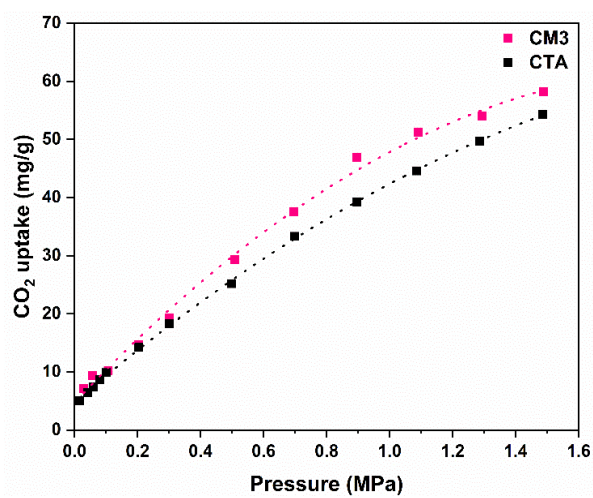


Figure S7 CO₂ uptake comparison between pristine polymer and MMM with MXene filler.

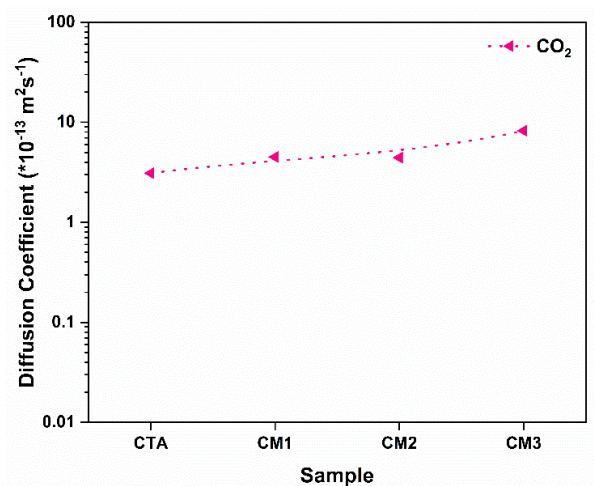


Figure S8 Diffusion coefficient as a function of MXene fillers concentration.

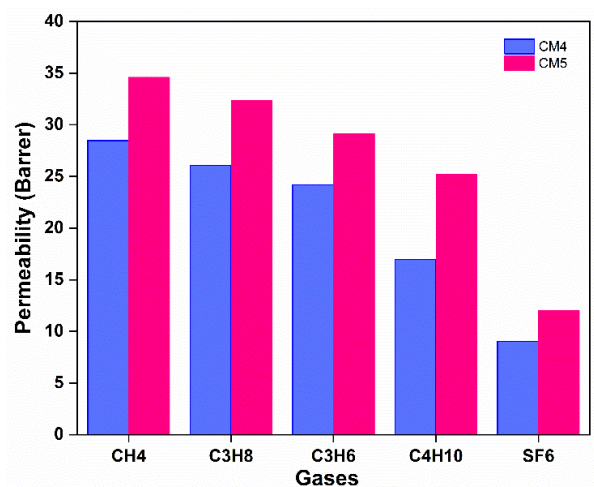


Figure S9 Permeability comparison of different hydrocarbon and SF6 via CM4 and CM5 membranes.