

Antimicrobial thin-film composite membranes with chemically decorated ultra-small silver nanoclusters

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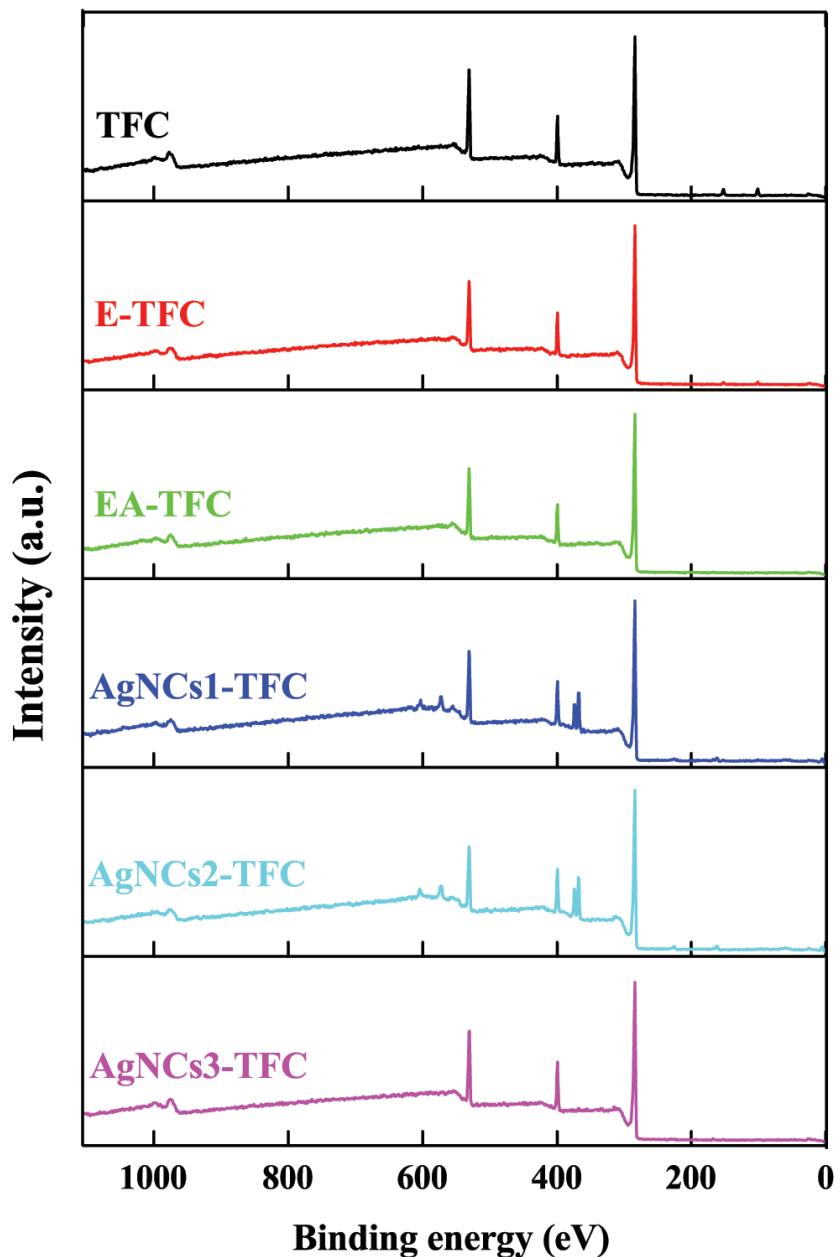


Figure S1. XPS survey for the as-fabricated membranes.

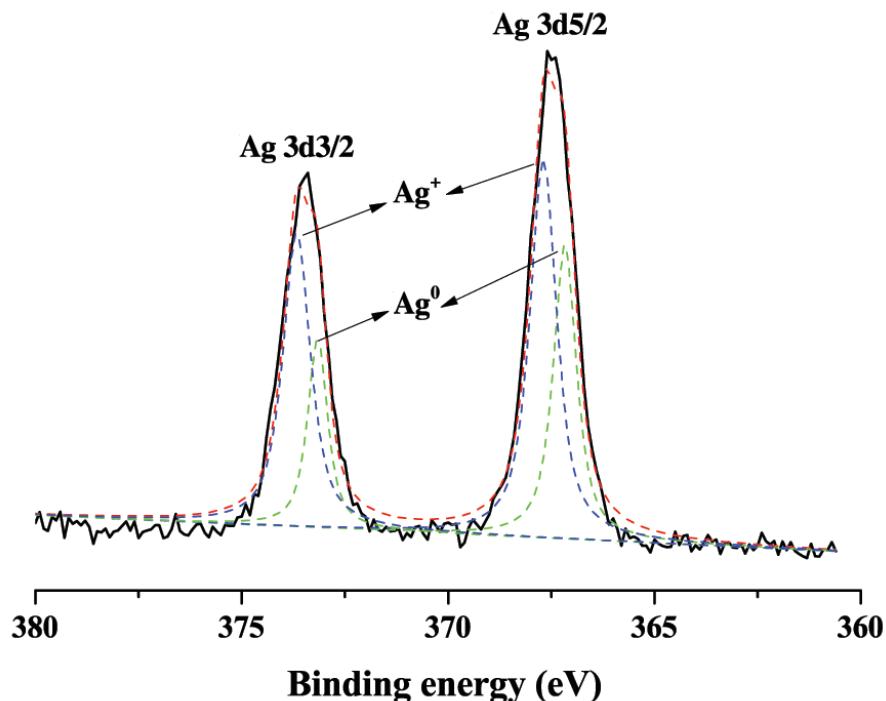


Figure S2. The fitting of the XPS band of Ag on the AgNCs1-TFC membrane.

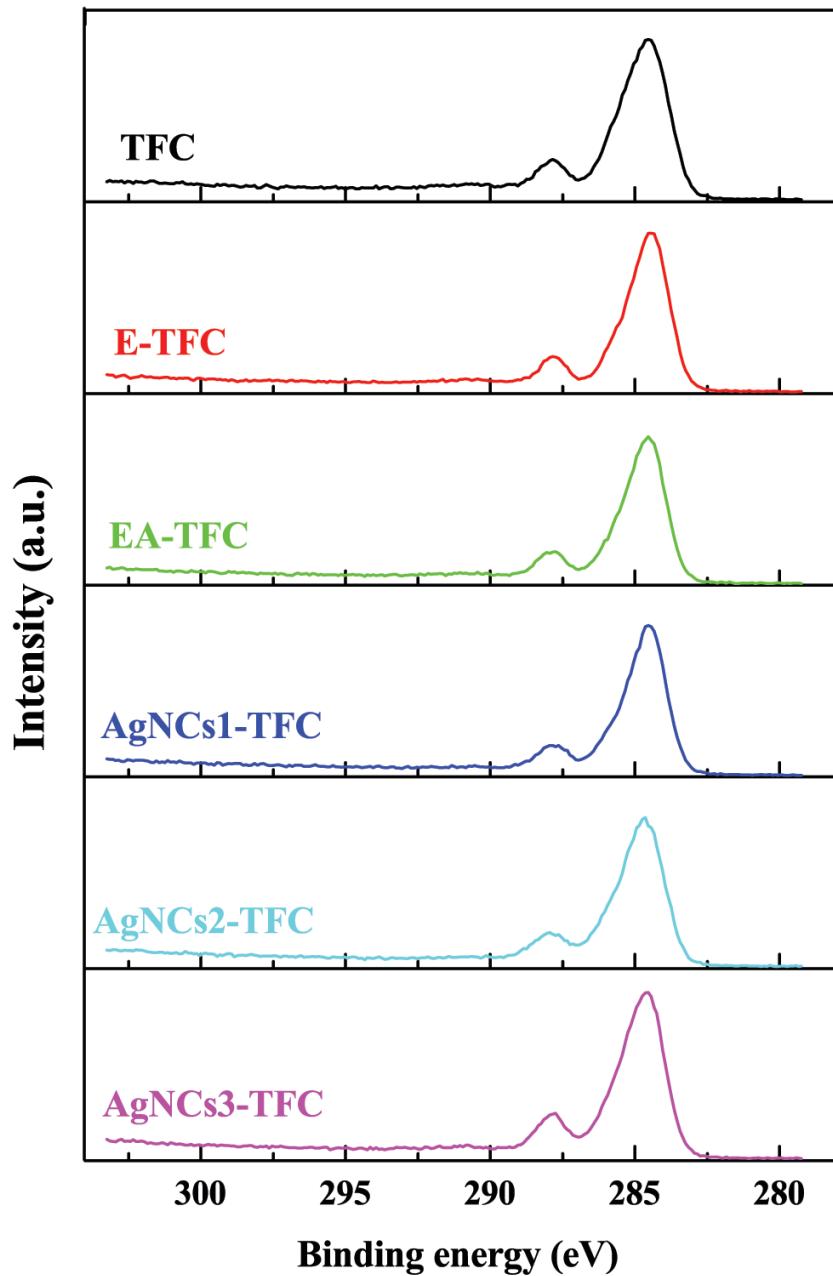


Figure S3. XPS spectra of C for the as-fabricated membranes.

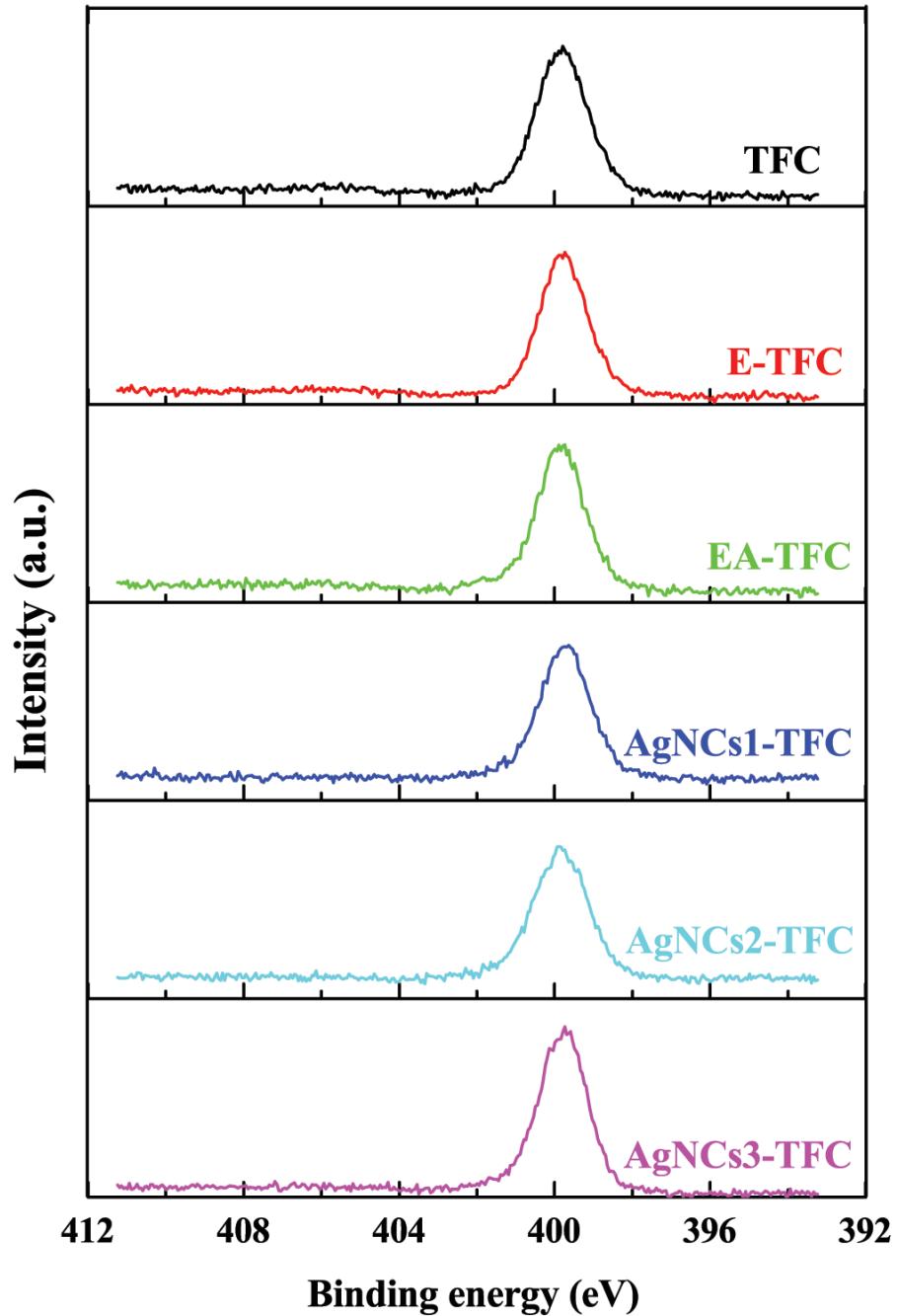


Figure S4. XPS spectra of N for the as-fabricated membranes.

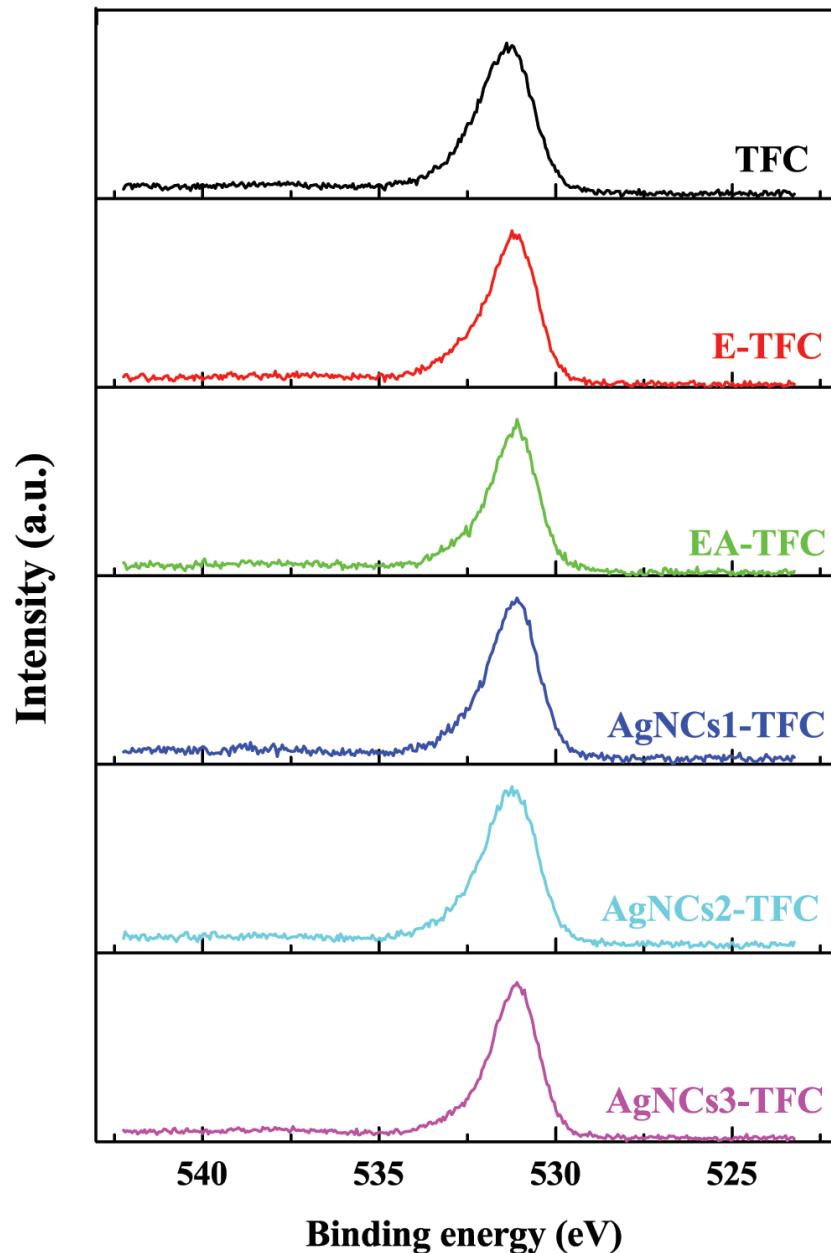


Figure S5. XPS spectra of O for the as-fabricated membranes.

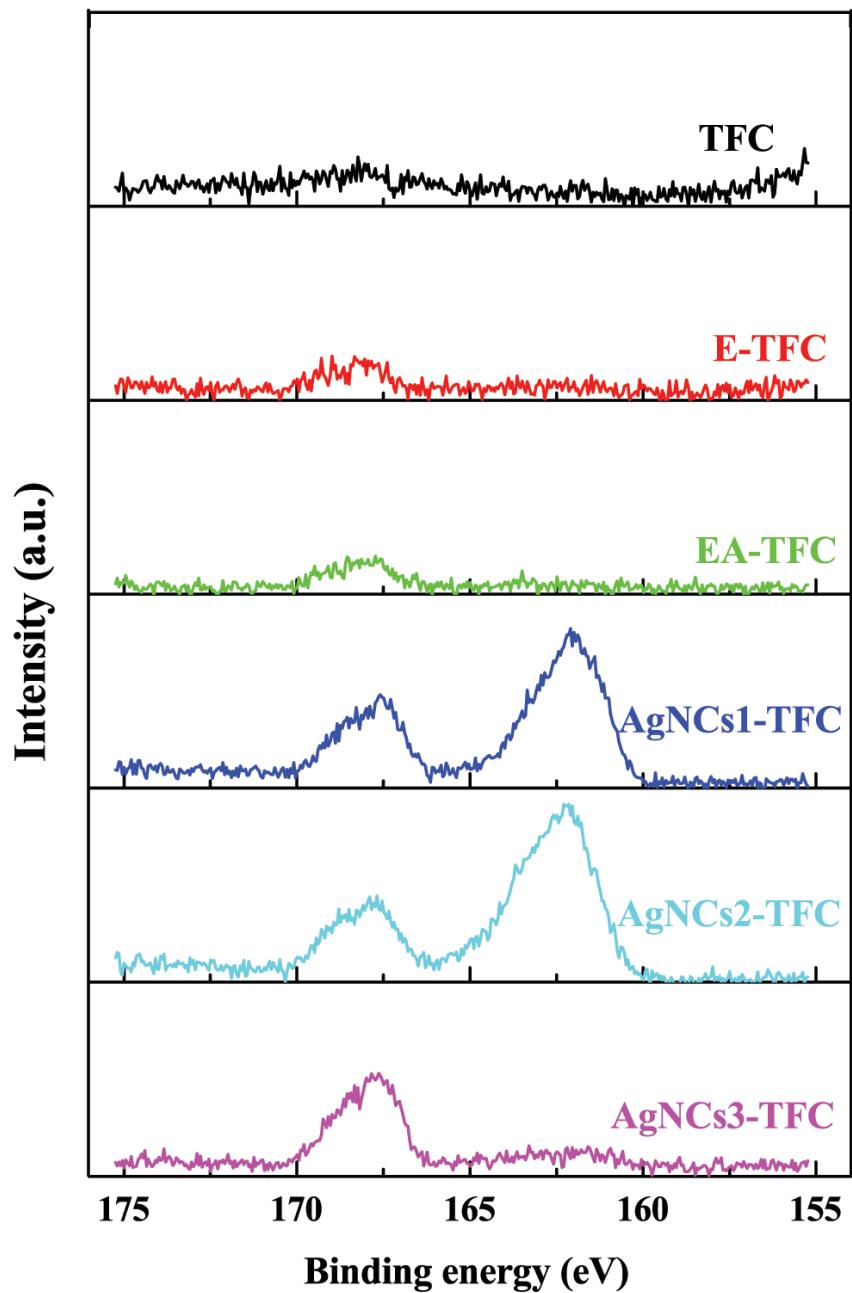


Figure S6. XPS spectra of S for the as-fabricated membranes.

Table S1: Chemical compositions of the AgNCS-TFC membrane top surfaces

Samples	Atom %				
	C	N	O	S	Ag
AgNCS1-TFC	49.9	11.9	20.8	1.3	16.1
AgNCS2-TFC	52.2	12.3	21.9	1.0	12.6
AgNCS3-TFC	56.3	14.8	25.3	0.3	3.3

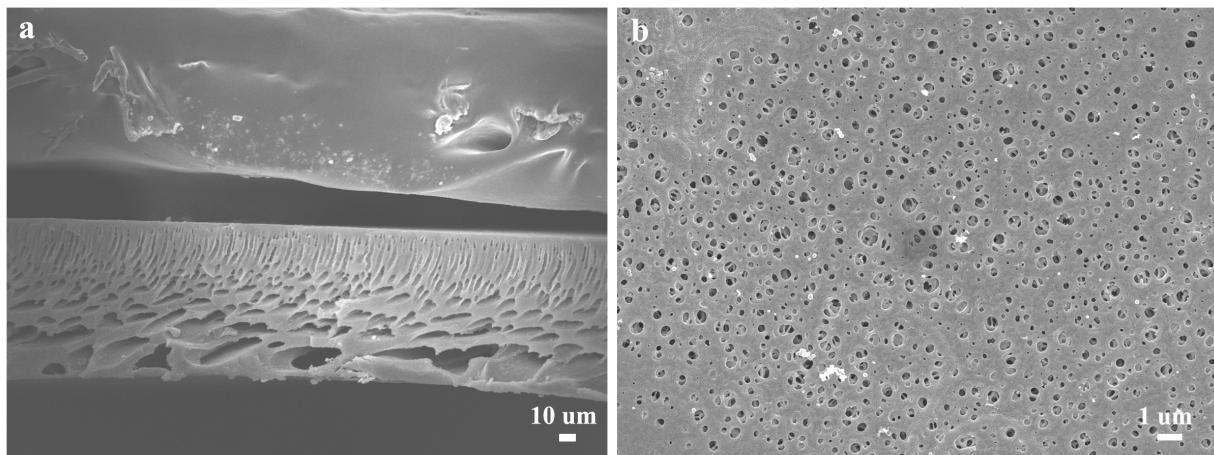


Figure S7. SEM images of the pristine TFC membrane (a) cross-section and (b) bottom surface.

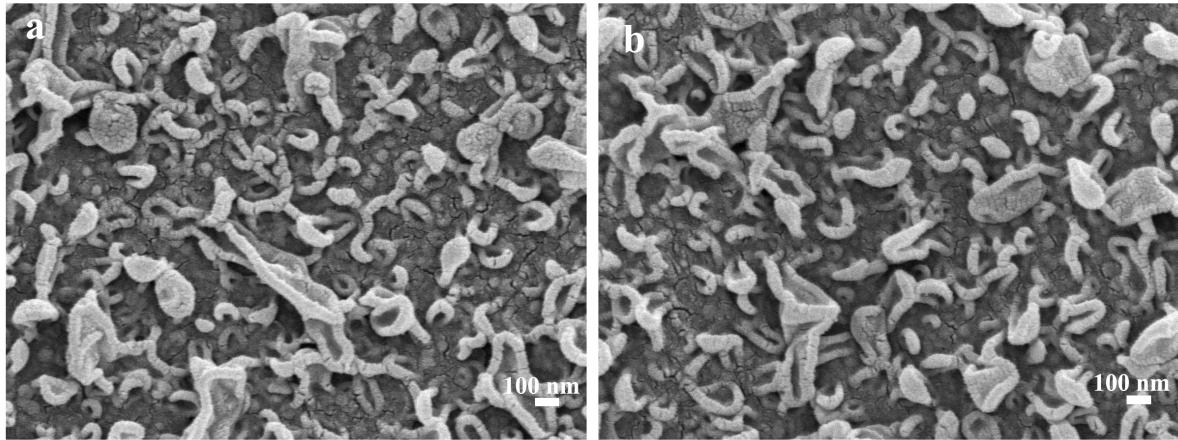


Figure S8. SEM images of (a) AgNCs2-TFC membrane and (b) AgNCs3-TFC membrane.

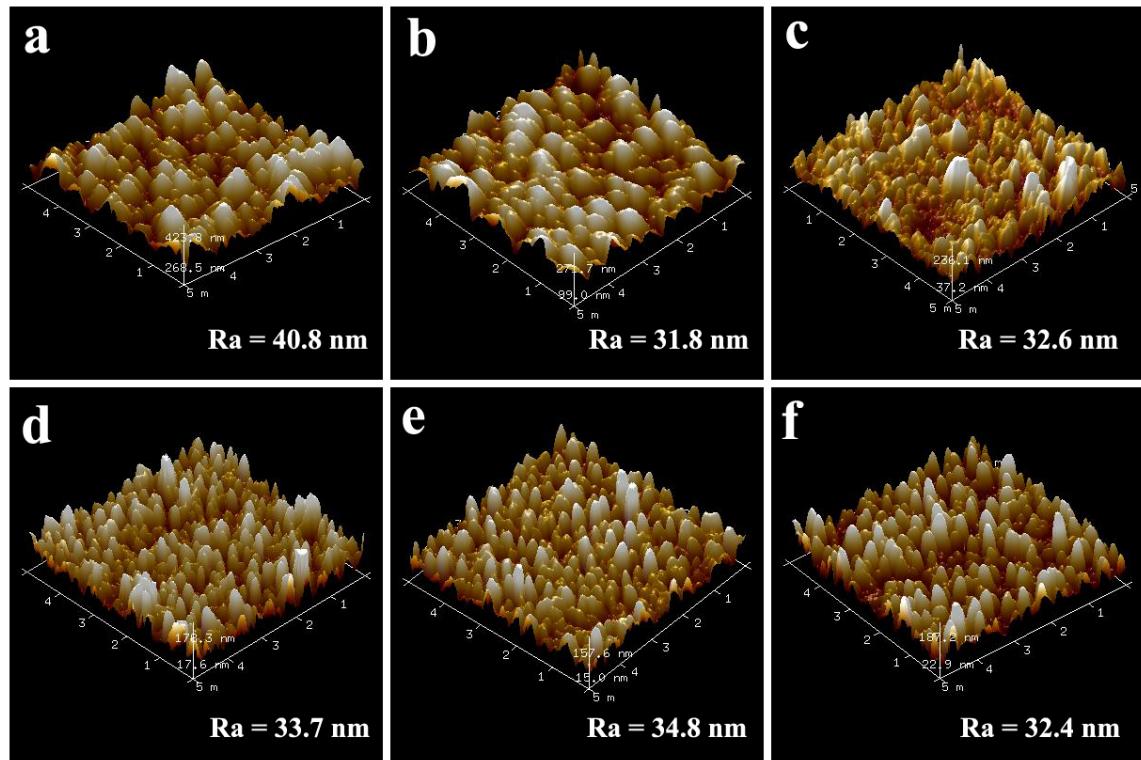


Figure S9. Atomic force microscopy (AFM) images of (a) the pristine TFC membrane (b) E-TFC membrane (c) EA-TFC membrane (d) AgNCs1-TFC membrane (e) AgNCs2-TFC membrane (f) AgNCs3-TFC membrane.

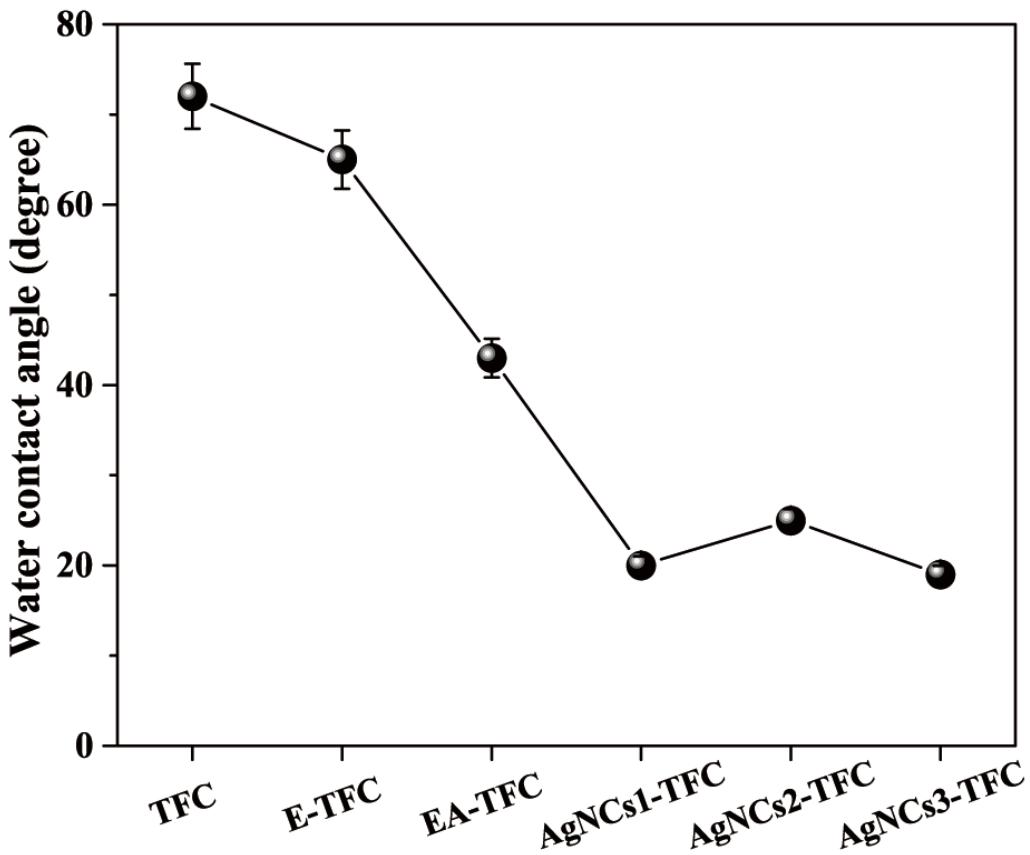


Figure S10. Comparisons of water contact angles of the as-fabricated membranes.

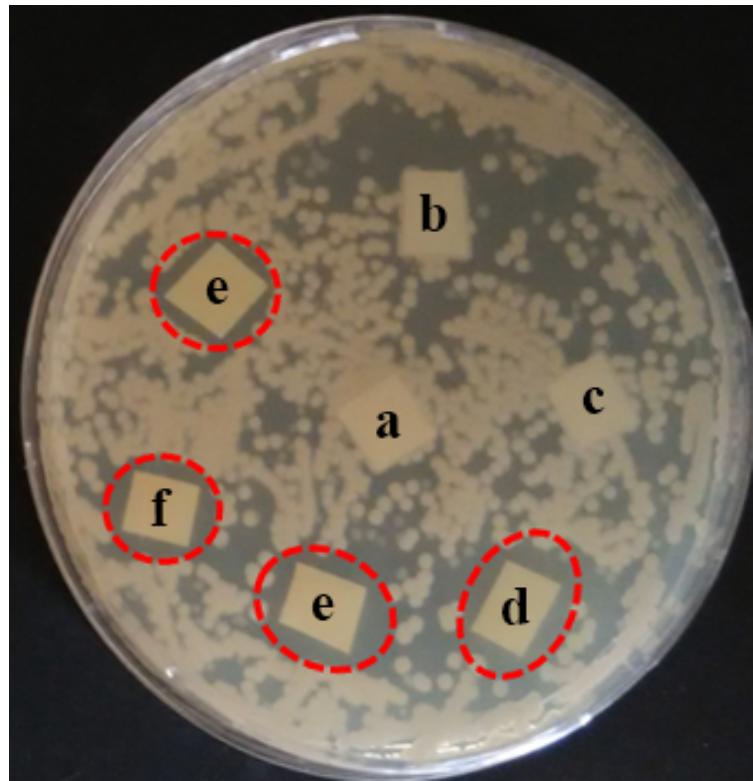


Figure S11. Anti-bacterial test after one month storage, a: TFC membrane, b: E-TFC membrane, c: EA-TFC membrane, d: AgNCs1-TFC membrane, e: AgNCs2-TFC membrane, f: AgNCs3-TFC membrane.

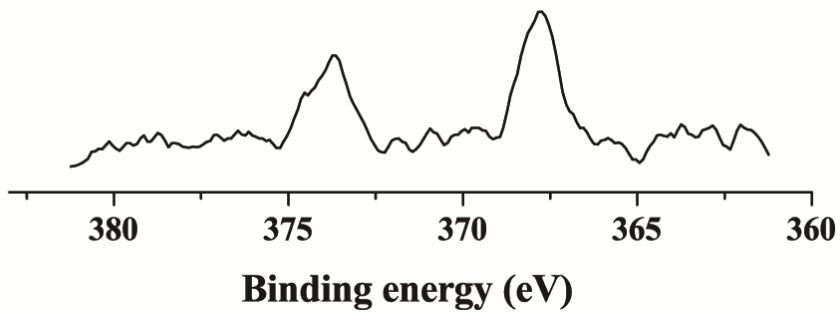


Figure S12. XPS spectrum of Ag for the AgNCs1-TFC membrane after one-month storage in DI water.