

Supporting Information

Improved Antifouling Properties of Polymer Membranes Using a 'Layer-by-layer' Mediated Method

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Reference coatings on silicon wafers were done as follows: a silicon wafer was pretreated with aminosilane to have a positively charged surface. First, a quarter of the 4" wafer was soaked in 'piranha' solution (5 ml of H₂O₂ in 15 ml of H₂SO₄) for 2 hours at room temperature to remove organic materials. It was then washed thoroughly with water and isopropanol and blown dry with nitrogen gas. The wafer was immediately soaked in the aminosilane solution (0.02 ml of ATS in 20 ml of dry toluene) for 10 minutes. After the reaction was finished, the wafer was washed with toluene, a toluene/methanol mixture and methanol under sonication. Then it was washed thoroughly with water and isopropanol and blown dry with nitrogen gas. LBL film was then coated on the silicon wafer by an identical procedure as RO membranes, except that the wafer was soaked in PSS solution first.

Transmission IR spectra were measured by sticking the membrane facedown onto the salt plate which was soaked in THF for three times to not only dissolve the non-crosslinking polysulfone supporting layer, but also the excess of polymer brushes that were physically absorbed.

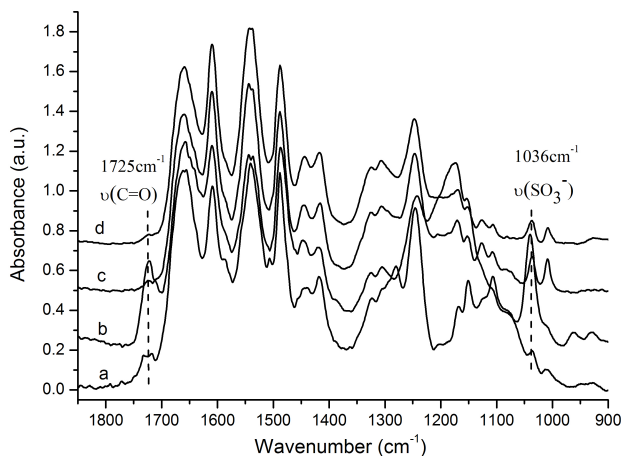


Figure S1. Transmission IR spectra of membranes modified with polymer brushes: a-graft to_PEGMA; b-graft to_SBMA; c-graft from_PEGMA ; d-graft from_SBMA.

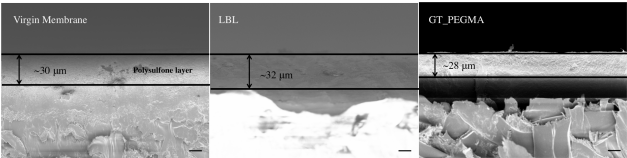


Figure S2. SEM images of RO membranes.

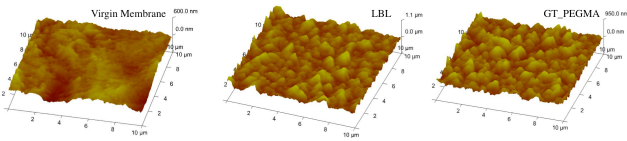


Figure S3. AFM images of RO membranes.

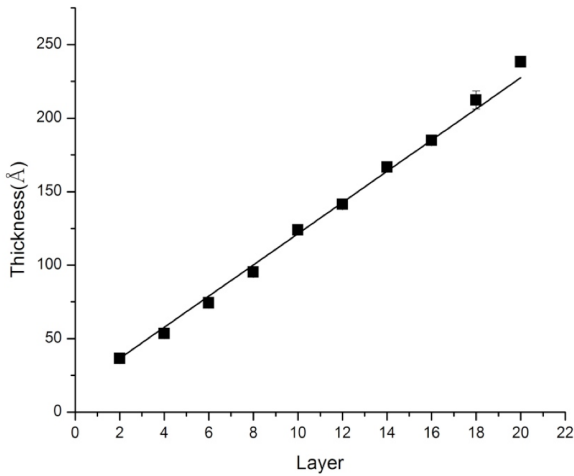


Figure S4. LBL film growth on silicon wafers.

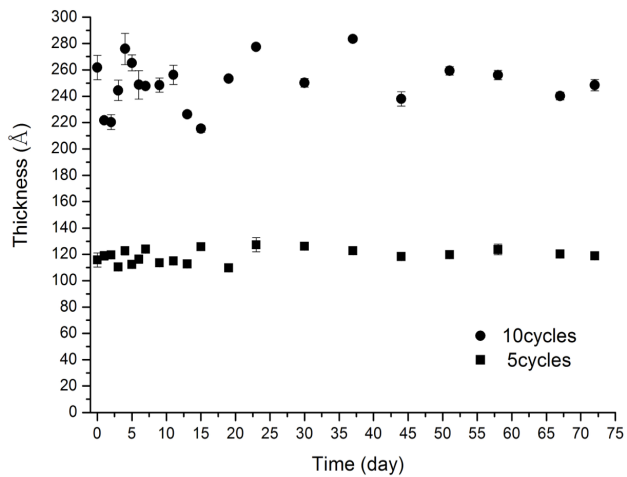


Figure S5. Stability test of LBL films on silicon wafers. One cycle refers to one bi-layer applied.