Zwitterion-like, Charge-Balanced Ultrathin Layers on Polymeric Membranes for Antifouling Property

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Figure S1. Schematic diagram of the experimental setup for membrane performance test unit. Both the separation performance and dynamic filtration experiments were conducted at 25 °C, 1.6 MPa.1 The membrane samples were set in this customized cross-flow RO filtration unit with a membrane area of 38.46 cm². All the membrane samples were pre-compressed for 1 h under 1.6 MPa. The filtration experiment was carried at 25 °C, 1.6 MPa. The purpose of the heat exchanger is to keep the feeding solution at 25 °C. The separation performances of the membrane samples for 2000 ppm NaCl aqueous solution were tested by investigating their salt rejections (R) and water fluxes (F). The permeate and retentate were recycled back into the feed tank to keep the feed constant. A running time of 30 min at operating pressure was allowed before the rejection and flux tests. The accuracy concentrations of the feed and
permeate were measured using a conductivity meter (DDS-307A, Shanghai INESA Scientific Instrument Co., Ltd.). The water flux $F$ (L•m$^{-2}$•h$^{-1}$) was calculated from the water volume $V_P$ (L) permeated through the membrane of area $S$ (m$^2$) at time $\Delta t$ (h), e.g. $F = V_P / S \Delta t$.

**Figure S2.** Changes of permeate flux of bare PA and AD$_{150}$-PEI-PA membranes with time in dynamic N,N,N-trimethyl-1-dodecanaminium bromide (DTAB) foulant fouling experiment (25 °C, 1.6 MPa, 2,000 ppm NaCl feed solution with 50 ppm DTAB, pH=7.5).

**Figure S3.** Changes of permeate flux of bare PA and AD$_{150}$-PEI-PA membranes with time in dynamic humic acid (HA) foulant fouling experiment (25 °C, 1.6 MPa, 2,000 ppm NaCl feed solution with 50 ppm HA, pH=7.5).
Reference: