

## Supporting Information for

### Surface plasmon resonance study of the binding of PEO-PPO-PEO triblock copolymer and PEO homopolymer to supported lipid bilayers

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## Supplementary Materials and Methods

### Small-angle neutron scattering

The small angle neutron scattering (SANS) experiments were performed on the NG-7 30 m SANS beamline at the National Institute of Standards and Technology (NIST) Center for Neutron Research, Gaithersburg, MD. Data were acquired using an instrument configuration with a wavelength of 8.09 Å, a wavelength spread ( $\Delta\lambda/\lambda$ ) of 0.22, and a sample-to-detector distance of 15 m, 4 m and 1 m ( $q$  is the scattering wave vector, defined as  $q = 4\pi \sin(\theta/2)/\lambda$ ). The 1 mm quartz cells containing the samples were placed and heated to 37 °C on a 7-position temperature-controlled heating block provided by NIST, which was capable of maintaining the temperature within  $\pm 1$  °C.

### Dynamic light scattering

Dynamic light scattering measurements were performed on a Brookhaven BI-200SM DLS (Brookhaven Instruments Corporation, Holtsville, NY) at 90° scattering angle using a 633 nm HeNe laser operating at 20 mW. Block copolymers in physiological buffer (140 mM NaCl, 5 mM KCl, 2.5 mM CaCl<sub>2</sub>, 2 mM MgCl<sub>2</sub>, and 10 mM HEPES) were incubated for 20 minutes at 37 °C before the measurements. Scattering data were collected for 5 minutes from 1 μs to 4 s delay times at 37 °C. Hydrodynamic radii were obtained by fitting autocorrelation function by the method of cumulant.

## Supplementary Figures

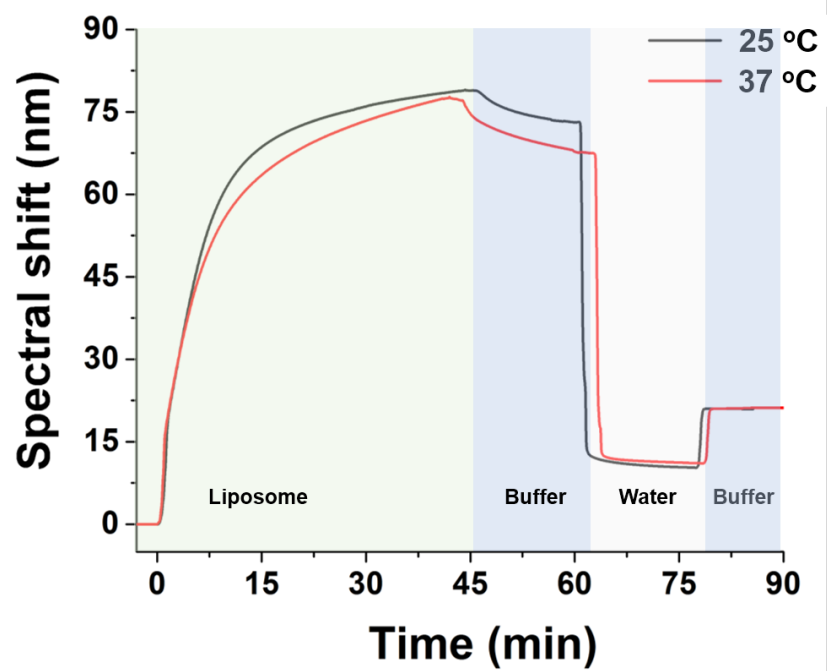
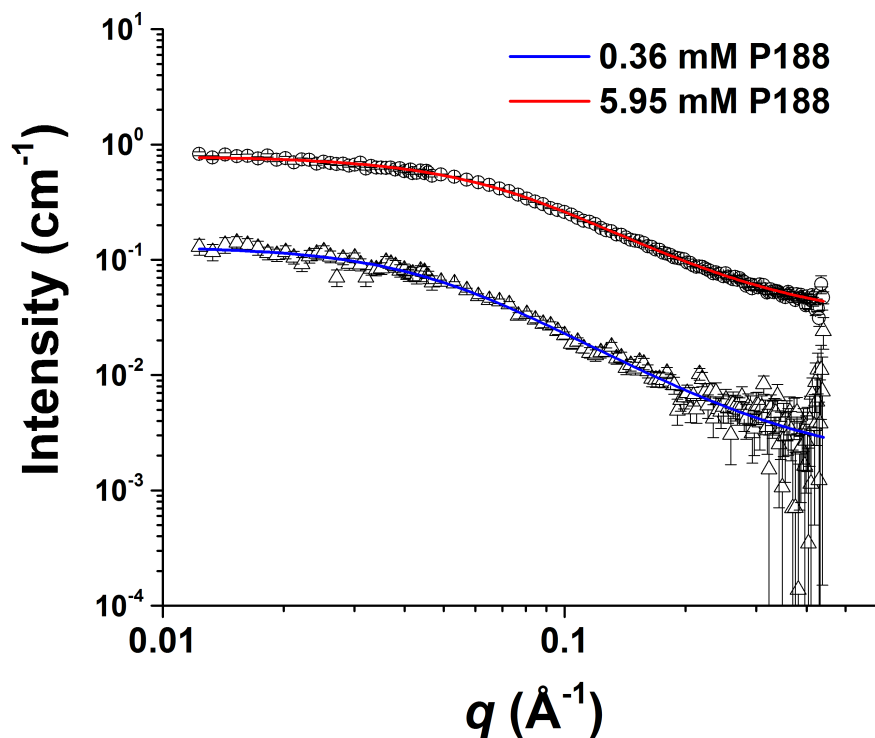
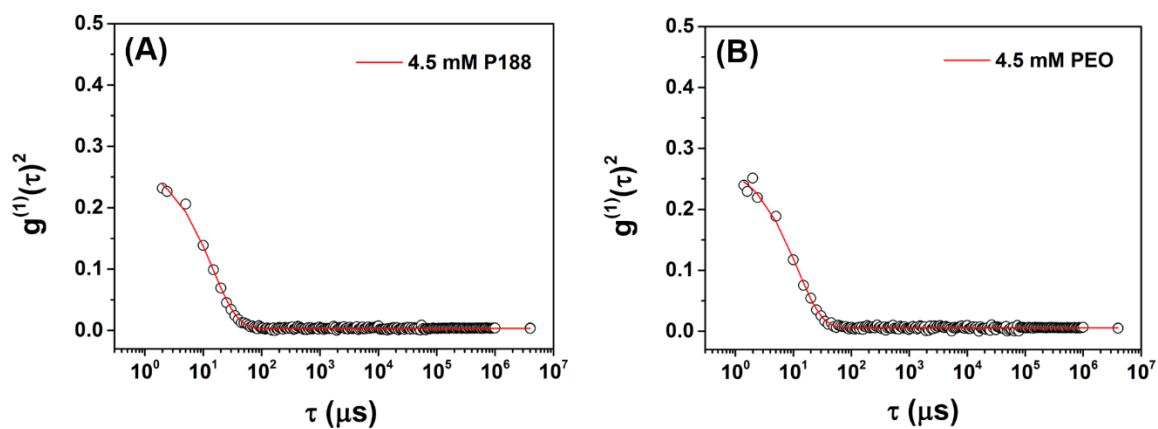


Figure S1. Supported lipid bilayer formation at 25 and 37 °C.

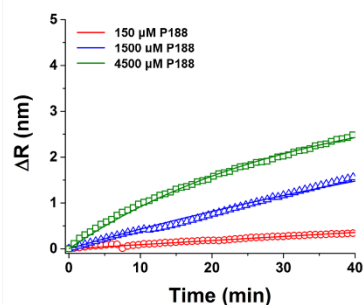
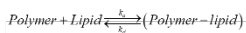


**Figure S2.** Small angle neutron scattering profiles of P188 at 37 °C in D<sub>2</sub>O. Symbols are experimental data and solid lines are fit by the Debye formula. Obtained radius of gyration ( $R_g$ ) of P188 at 0.36 mM and 5.95 mM is  $33.3 \pm 0.8 \text{ \AA}$  and  $23.1 \pm 0.1 \text{ \AA}$ , respectively. The  $R_g$  values are close to estimated  $R_g$  of random coil conformation of P188 assuming equal statistical segment lengths of PEO and PPO,  $b = 6.0 \text{ \AA}$ .

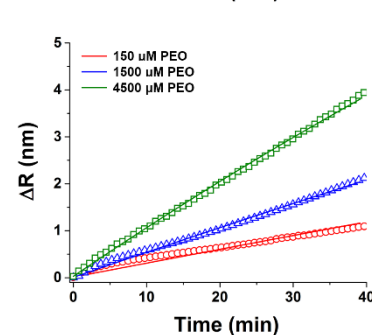
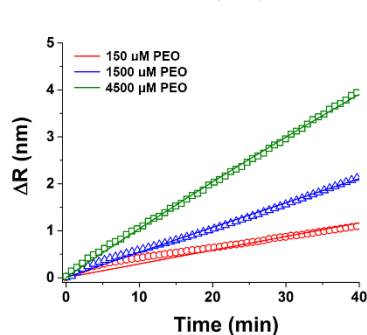
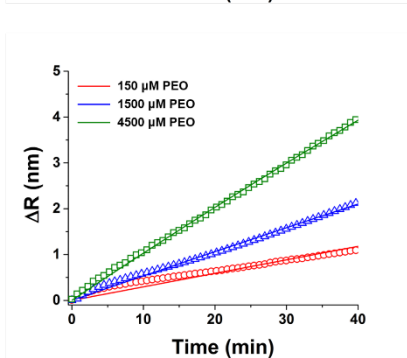
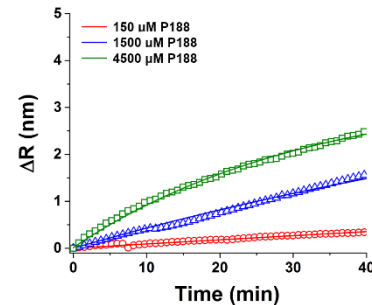
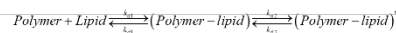
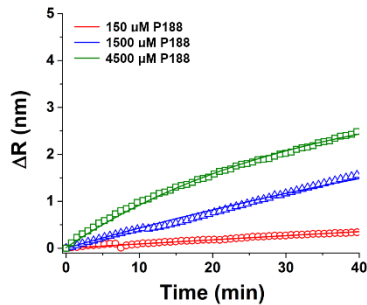
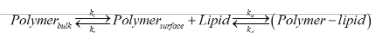


**Figure S3.** Autocorrelation function of (A) P188 and (B) PEO obtained by dynamic light scattering at 37 °C. Symbols are experimental data and solid lines are fits by the method of cumulants. Hydrodynamic radii for P188 and PEO were 2.5 nm and 2.0 nm, respectively.

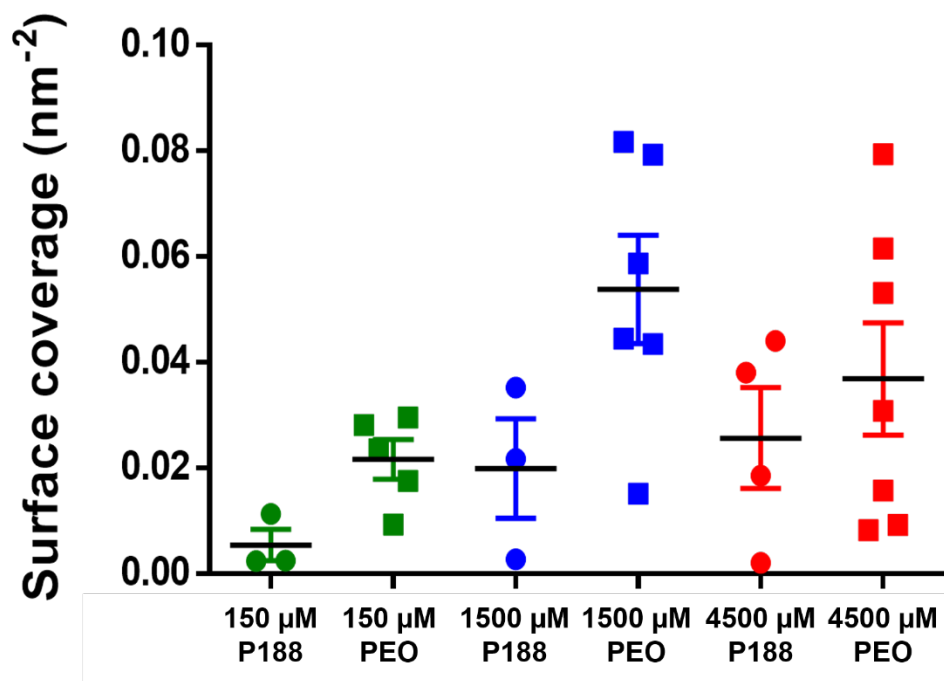
(1) One-to-one binding



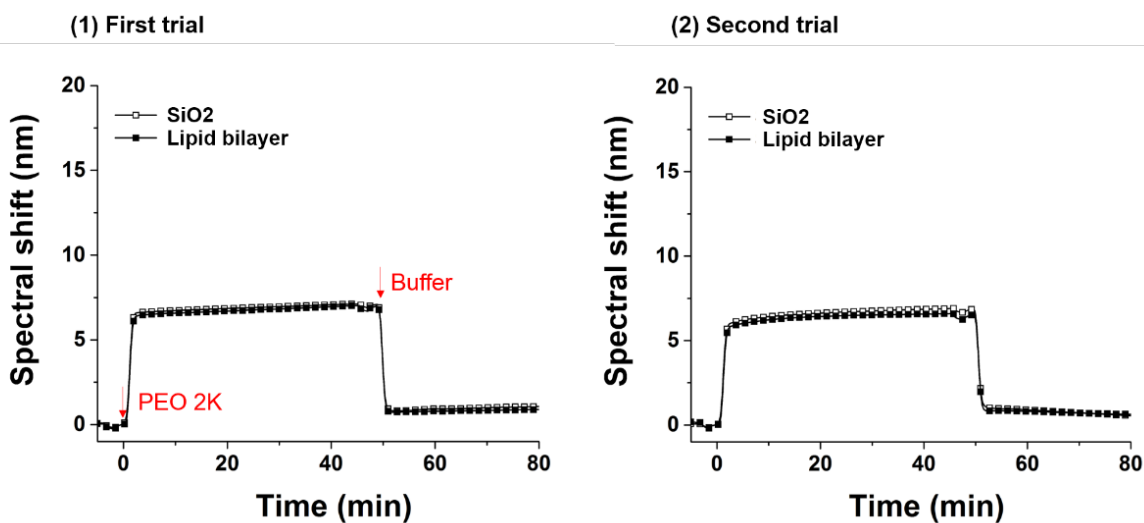
(2) One-to-one binding with mass transfer (3) Two-state binding



**Figure S4.** Comparison of fitting results using various binding models: (1) simple one-to-one binding model (identical to Figure 8), (2) one-to-one binding model considering mass transfer, and (3) two-state binding model.



**Figure S5.** Surface coverage comparison between P188 and PEO at 150, 1500, and 4500  $\mu\text{M}$ . The difference between the surface coverage of P188 and PEO at the same concentration are not statistically significant (i.e.,  $p > 0.05$ ).



**Figure S6.** Spectral shift upon PEO 2100 g/mol injection on lipid bilayer at 4500  $\mu$ M. Filled symbols indicate polymers on lipid bilayers and open symbols indicate polymers on the bare SiO<sub>2</sub> surface. The measurements were done at 37 °C. PEO 2100 g/mol (BioUltra grade) was purchased from Sigma, and molecular weight and dispersity (1.03) was characterized by MALDI-TOF.