

Electronic supplementary information (ESI)

Poly(dimethylsiloxane) (PDMS) surface patterning by biocompatible photo-crosslinking block copolymers[†]

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Synthesis of PMPC₁₂₀.

MPC (10.0 g, 33.9 mmol), CPD (79.2 mg, 0.28 mmol), and V-501 (39.6 mg, 0.14 mmol) were dissolved in a mixture of methanol and water (33.9 mL, 9/1 = v/v). The solution was deoxygenated with Ar gas for 30 min. The solution was stirred at 70 °C for 4 h. After polymerization, the solution was dialyzed against pure water for 3 days. The resulting polymer (PMPC₁₂₀) was recovered using freeze-drying (10.0 g, 99.0%). Number-average molecular weight (M_n (NMR)) and degree of polymerization (DP) were 3.57×10^4 and 120, respectively, estimated from ¹H NMR. Molecular weight distribution (M_w/M_n) was 1.16, estimated from gel-permeation chromatography (GPC).

Table S1 Surface elemental compositions from XPS and calculation

	Bare PDMS XPS (%)	Bare PDMS Calculated (%)	Polymer-coated PDMS XPS (%)	Polymer-coated PDMS Calculated (%)
C	50.24	50.00	59.30	65.47
N	-	-	1.16	3.37
O	25.09	25.00	24.25	23.11
P	-	-	1.75	3.37
Si	24.66	25.00	13.55	4.38

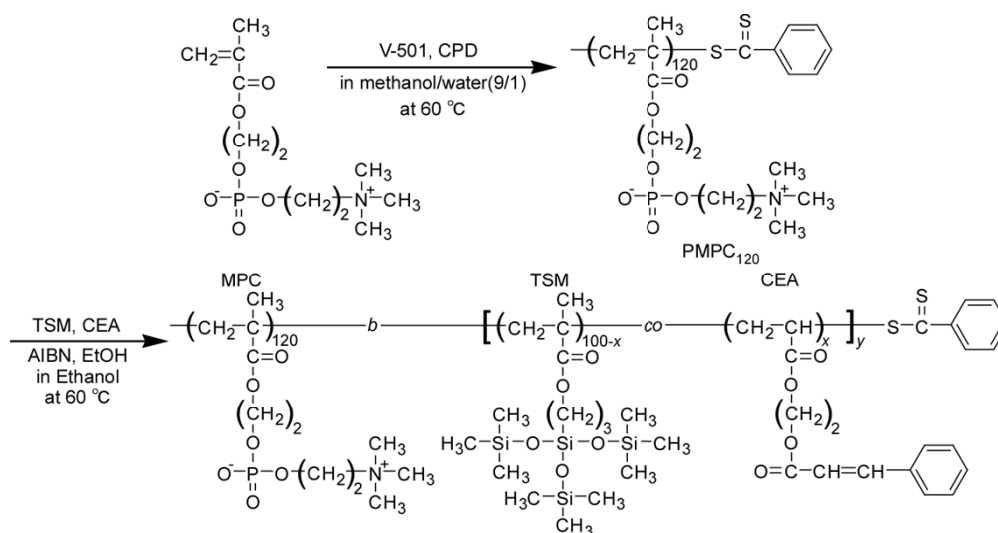


Fig. S1 Synthetic route of PMPC₁₂₀-P(TSM/CEA_x)_y.

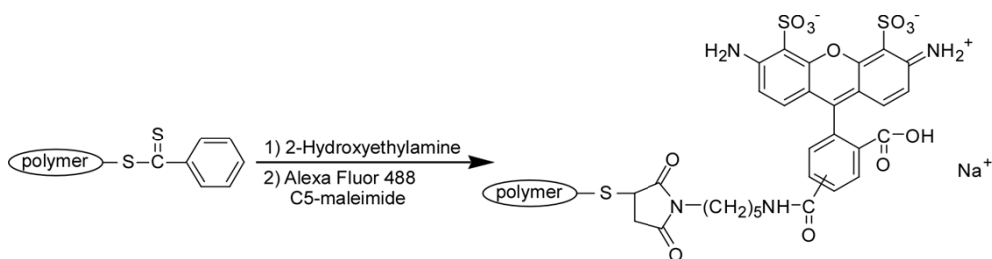


Fig. S2 Fluorescence labelling of the end group of the polymers.

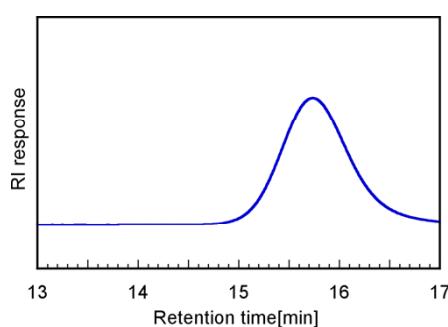


Fig. S3 GPC elution curve for PMPC₁₂₀ using a mixed solution of phosphate buffer (pH 9) and acetonitrile (9/1, v/v) as an eluent.

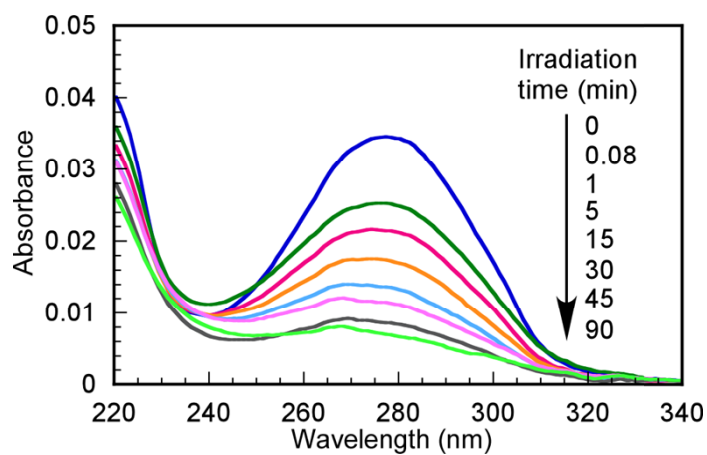


Fig. S4 Changes in UV-Vis adsorption spectra of PMPC₁₂₀-P(TSM/CEA10)₅₈ film prepared on a quartz glass substrate upon UV irradiation (time indicated in the figure).

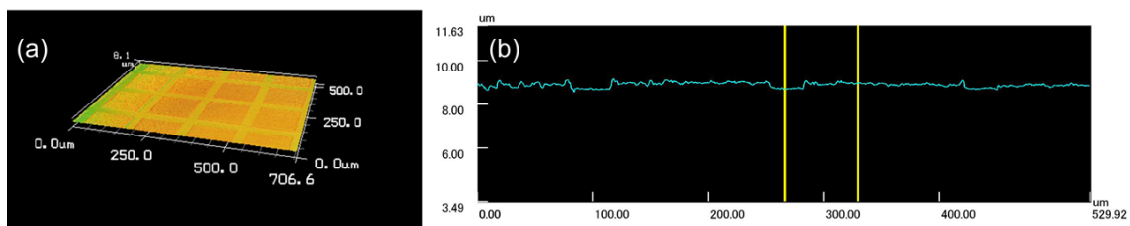


Fig. S5 Laser micrograph of (a) $\text{PMPC}_{120}\text{-P(TSM/CEA10)}_{58}$ coated on a PDMS substrate and (b) film thickness measurement.

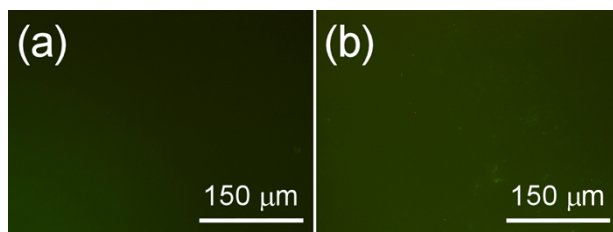


Fig. S6 Fluorescence micrographs of (a) $\text{PMPC}_{120}\text{F}$ and (b) $\text{PMPC}_{120}\text{-TSM}_{68}\text{F}$ coated on a PDMS substrate.

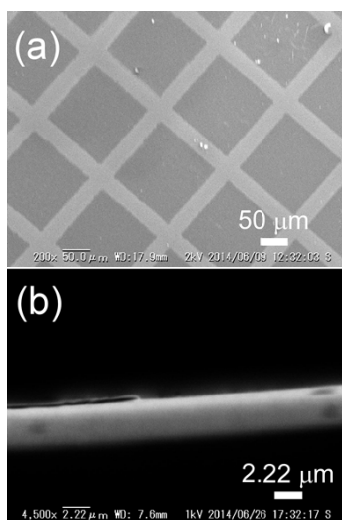


Fig. S7 SEM images of (a) $\text{PMPC}_{120}\text{-P(TSM/CEA10)}_{58}$ lattice pattern on PDMS substrate and (b) its cross section.

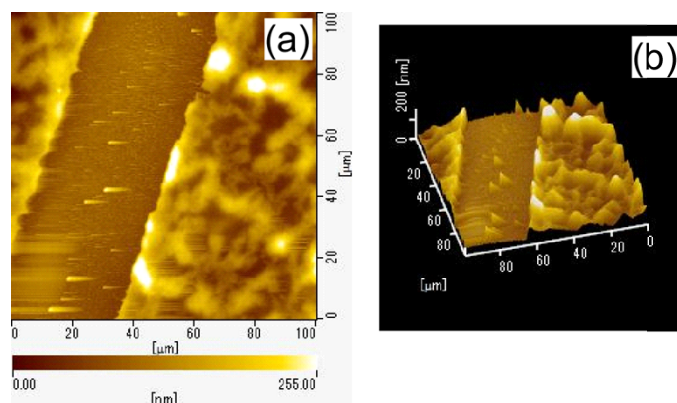


Fig. S8 Representative AFM height (a) and topographical (b) images of PMPC₁₂₀-P(TSM/CEA10)₅₈ coated on a PDMS substrate.

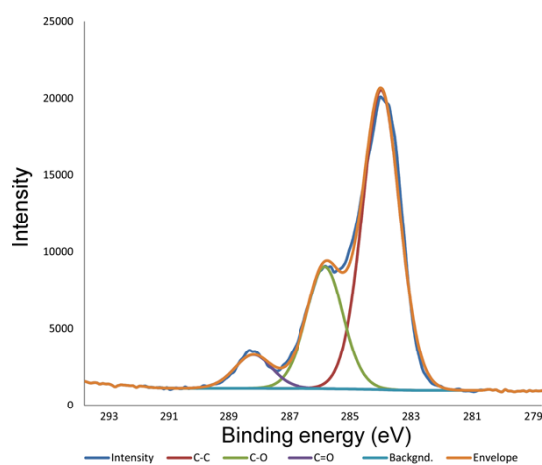


Fig. S9 XPS spectrum of C_{1s} for PMPC₁₂₀-P(TSM/CEA10)₅₈ coated on a PDMS substrate.

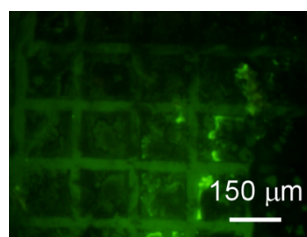


Fig. S10 Fluorescence micrograph of PMPC₁₂₀-P(TSM/CEA9)₂₆ coated on a PDMS substrate after soaking in an aqueous 488-BSA solution.

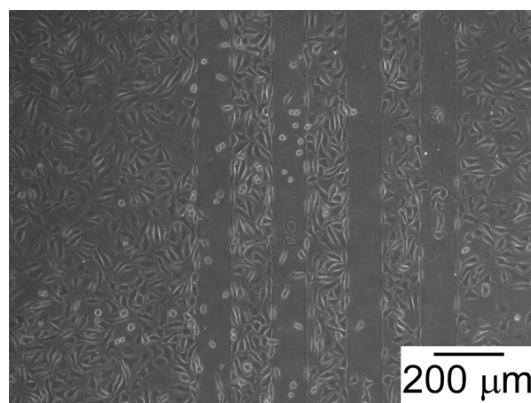


Fig. S11 Typical behavior of L929 cells on a slit PMPC-patterned PDMS substrate.