Electronic Supplementary Material (ESI) for Polymer Chemistry.

Supporting Information

Synthesis of lipo-glycopolymers for cell surface engineering

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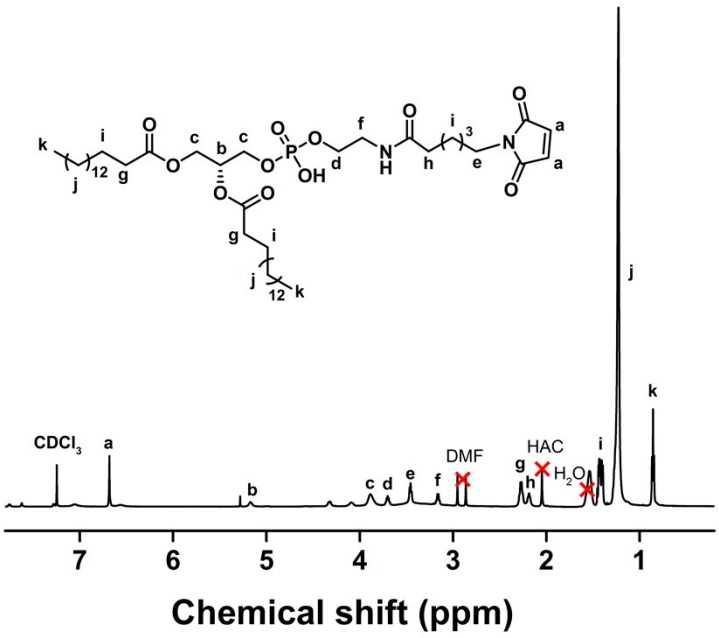

Figure S1. ^{1}H NMR spectrum of MAL-DPPE. MAL-DPPE: ^{1}H NMR (600 MHz, $CDCl_3$) δ 6.70 (s, 2H), 5.19 (s, 1H), 3.90 (s, 4H), 3.69-3.74 (m, J=6 Hz, 2H), 3.46-3.48 (m, 2H), 3.16-3.20 (q, J=6 Hz, 2H), 2.27-2.31 (q, J=6 Hz, 4H), 2.19-2.21 (m, 2H), 1.41-1.47 (m, 10H), 1.24-1.30 (m, 48H), 0.86-0.88 (t, J=6 Hz, 6H). MS for $C_{47}H_{85}N_2O_{11}P$ [M + H] $^{+}$ m/z: 886.1700 (calculated); 885.9731 (found). MS for $C_{47}H_{85}N_2O_{11}P$ [M + Na] $^{+}$ m/z: 908.1600 (calculated); 907.5648 (found).

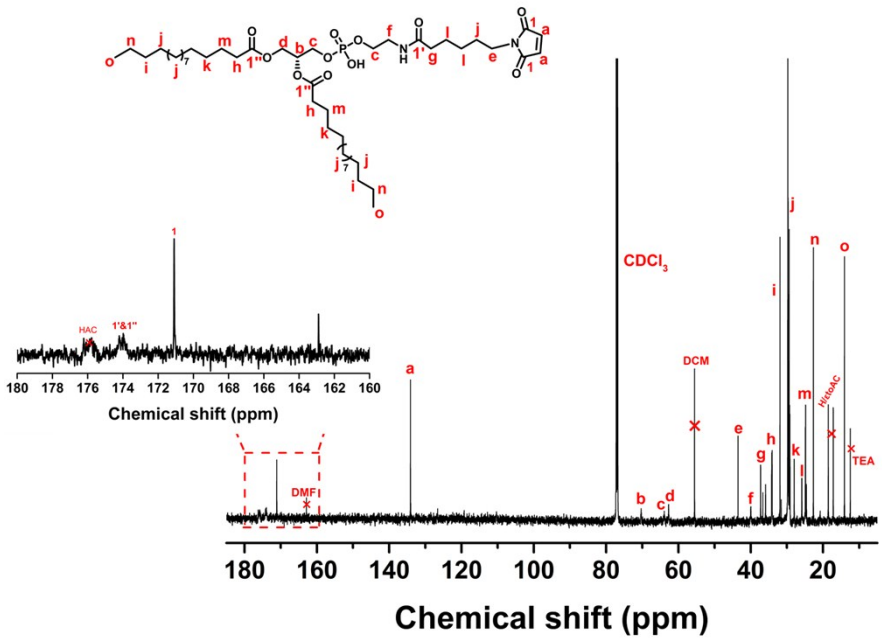

Figure S2. ^{13}C NMR spectrum of MAL-DPPE. MAL-DPPE: ^{13}C NMR (600 MHz, $CDCl_3$) δ 174.24, 173.97, 171.11, 134.12, 70.32, 63.93, 62.74, 43.52, 40.03, 37.28, 34.09-34.22, 31.92, 29.16-29.75, 28.00, 25.87, 24.92, 22.68, 14.10.

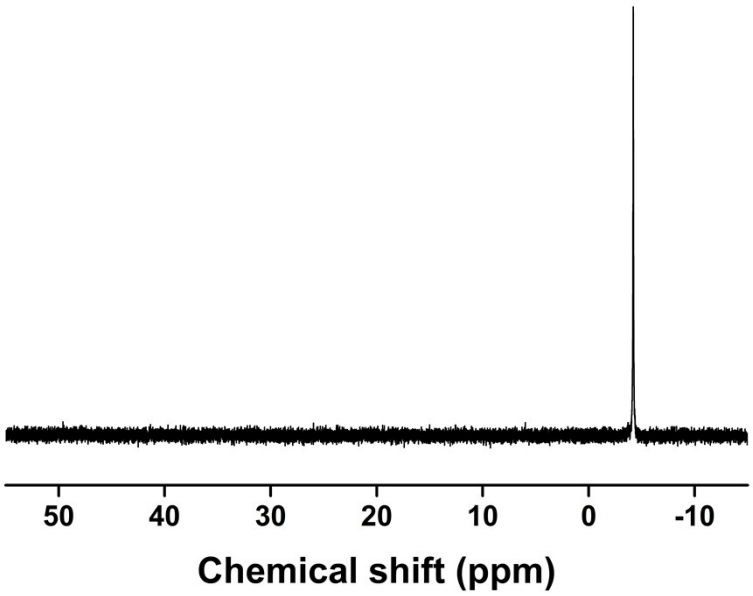

Figure S3. ^{31}P NMR spectrum of MAL-DPPE. ^{31}P NMR (600 MHz, $CDCl_3$) δ □4.21.

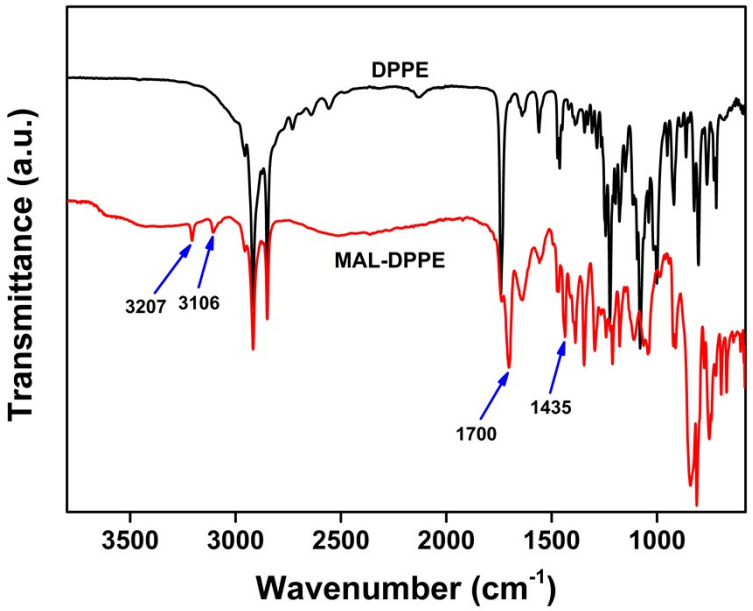

Figure S4. IR spectra of DPPE and MAL-DPPE. FT-IR spectrum showed that the peak at 1700 cm^{-1} attribute to C=O from amide bonds and C=C bonds, and the peaks at 3106 cm^{-1}, 3207 cm^{-1} and 1435 cm^{-1} correspond to CH stretches from carbon-carbon double bonds, N–H and C–N bonds, respectively.

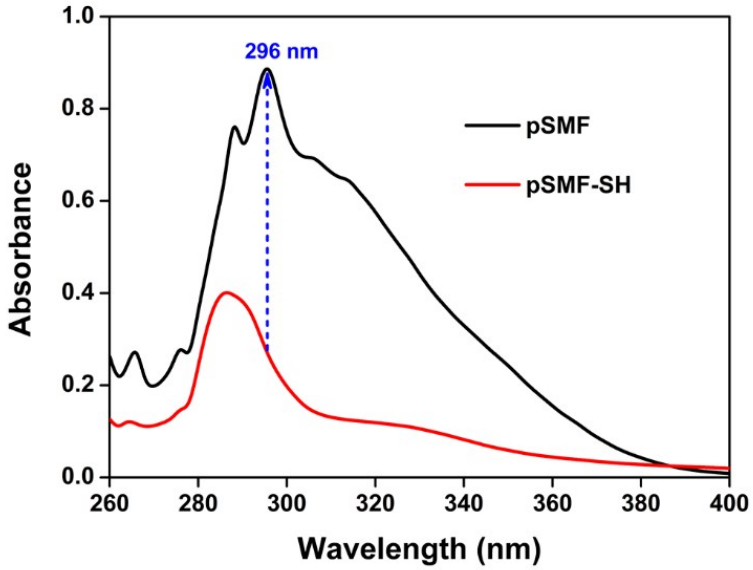

Figure S5. UV spectra of pSMF and pSMF-SH over a wavelength range of 260-400 nm. The disappearance of the peak of thioester groups at 296 nm demonstrated a successful reduction of copolymers.

Table S1. Molecular weight and composition of pSM.

Sample	Feed ratio (SS : MAG)	Ratio of ^{1}H-NMR (SS : MAG)	M_n (GPC)	PDI
pSM	1 : 1	1.4 : 1	4600	1.17

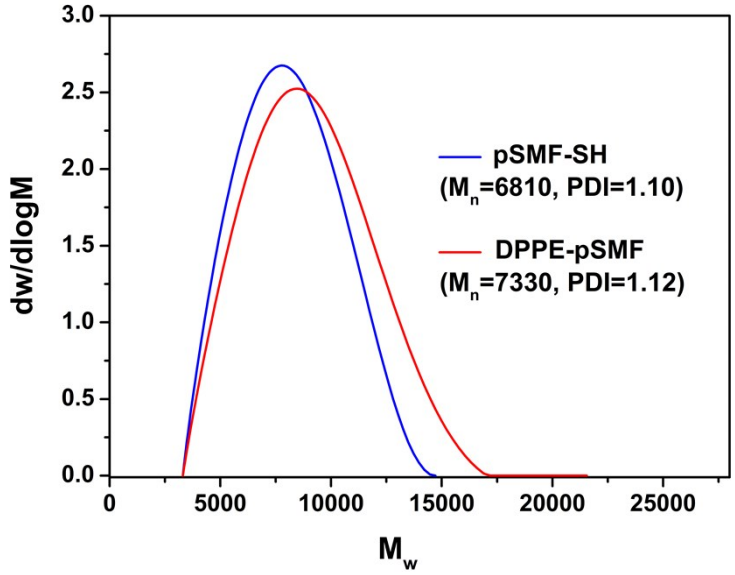

Figure S6. GPC traces of pSMF-SH and DPPE-pSMF.

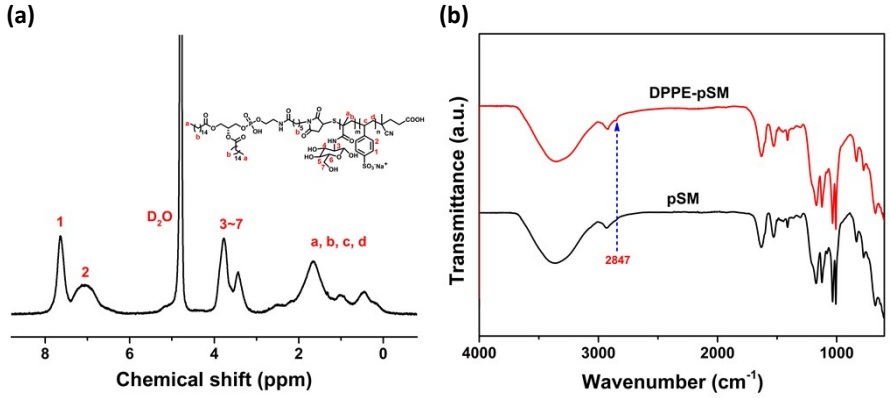

Figure S7. (a) ^{1}H-NMR spectrum of DPPE-pSM. (b) Infrared spectra of pSM and DPPE-pSM.

Table S2. The density of thiol groups of pSM-SH and DPPE-pSM.

Polymer samples	Density of thiol groups (mM)
pSM-SH	0.0697 ± 0.0014
DPPE-pSM	0.0076 ± 0.0006

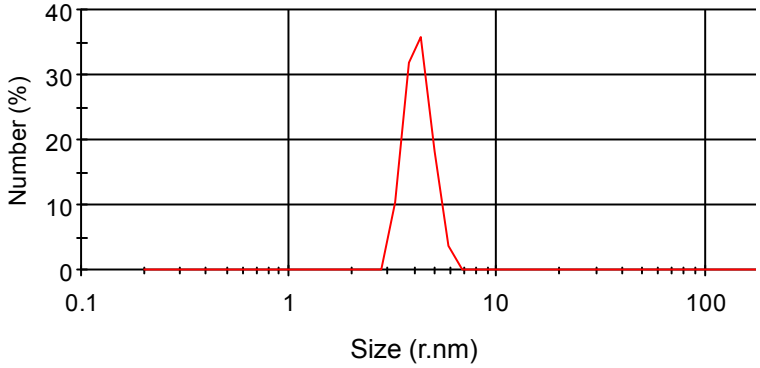

Figure S8. Dynamic light scattering plot of DPPE-pSM (C = 10 μM) at 37°C in water.

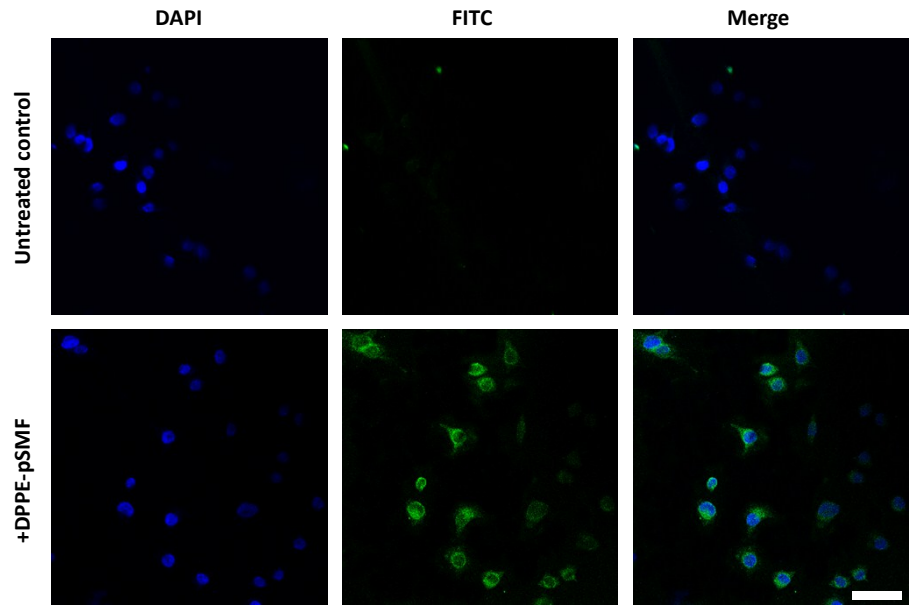

Figure S9. Confocal micrographs of HeLa cells incubated for 1 h with 3.4 μM of DPPE-pSMF. The cells were stained with DAPI, a nuclear counterstain, before imaging (scale bar: 20 μm).

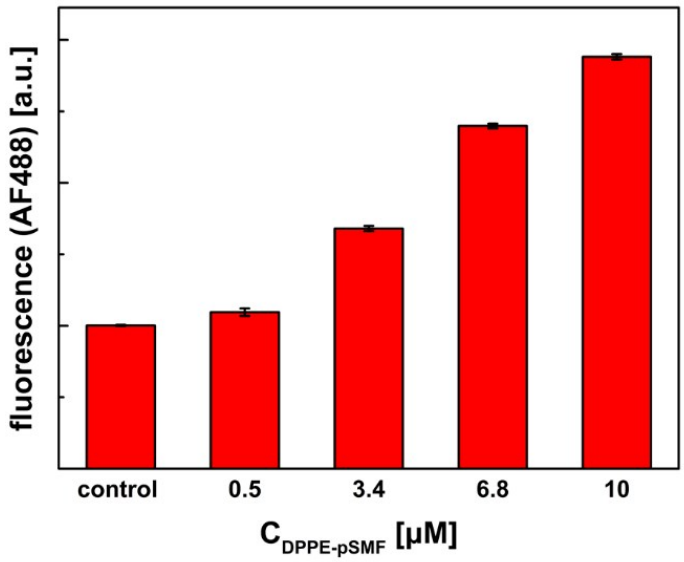

Figure S10. Flow cytometry analysis. HeLa cells were incubated with different concentrations of DPPE-pSMF and then analyzed by flow cytometry. Cell surface incorporation of lipid-anchored glycopolymers onto cell membranes depends on polymer concentrations.