

Electronic supplementary information

Slow polymer diffusion on brush-patterned surfaces in aqueous solution

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Additional figures and tables

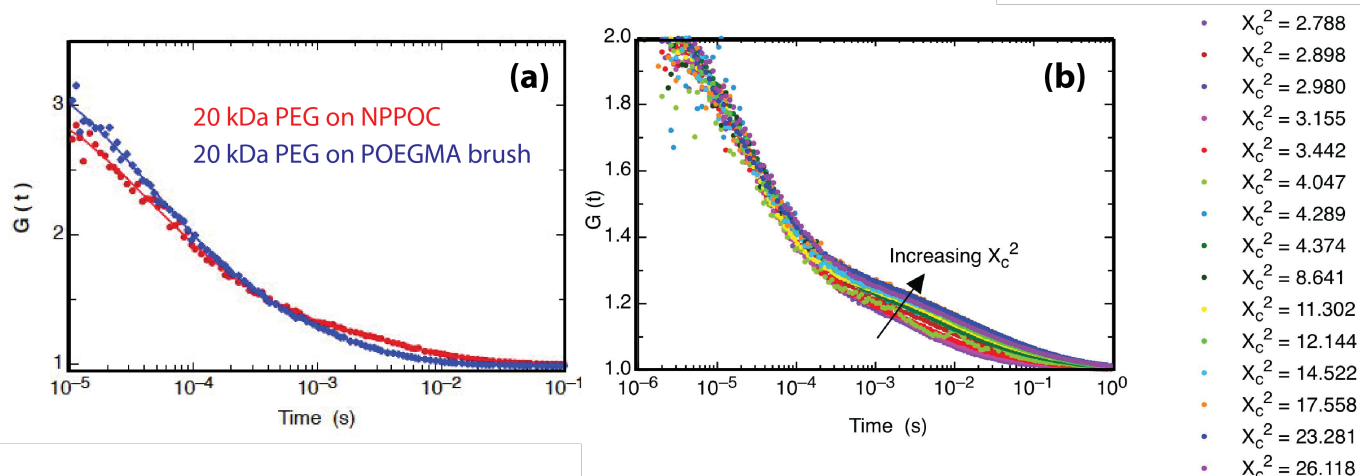


Figure S1. (a) FCS data and fits (to eqn 1) for the control experiments of PEG diffusing on the protected SAM and PEG in a brush of POEGMA. (b) Normalized autocorrelation data for the diffusion of 1 kDa PEG chains on different patterned polymeric grid surfaces, with respect to the confinement parameter that defines each surface. This figure includes the data shown in Figure 3

Table S1. Confinement parameters and corresponding well perimeters used in this work

Confinement parameter, X_c^2	Well perimeter in focal volume, w_p (μm)
2.8±0.3	0.70±0.07
2.9±0.3	0.68±0.07
3.0±0.3	0.69±0.07
3.2±0.3	0.94±0.09
3.4±0.3	0.84±0.08
4.0±0.4	0.81±0.08
4.3±0.4	0.82±0.08
4.4±0.4	0.88±0.08
8.3±0.8	0.92±0.09
8.6±0.8	0.81±0.08
11±1	1.1±0.1
12±1	1.4±0.1
15±1	0.90±0.09
18±2	1.6±0.2
23±2	1.5±0.1
26±1	2.3±0.2

Table S2. Diffusion coefficients in cell membranes (shaded) are slower than those in artificial analogues

Probe protein	Artificial membrane or cell type	Method/label	Effective diffusion coefficient ($\mu\text{m}^2/\text{s}$)	Time window for diffusion measurement (s)	Temperature ($^\circ\text{C}$)	Reference
integrin $\alpha\text{IIb}\beta_3$	DMPG:DMPC (1:1)	FRAP/FITC	0.70 ± 0.06	~5	33	62
β_1 integrin	AG01518	FRAP/FITC	0.05 ± 0.02	3	37	59
Thy-1	DOPC:SM (1:1)	FRAP/FITC	0.5 ± 0.2	1.5	24	61
Thy-1	C3H 10T1/2	SPT/Au	0.081 ± 0.007	< 6.6	37	65
AchR	DMPC	FRAP/FITC	2.4 ± 0.8	2.6	36	66
AchR	rat myotube	FRAP/rhodamine	0.016 ± 0.003	44	35	60
glycophorin	DMPC	FRAP/FITC	2	3	30	67
glycophorin	DMPC	FRAP/FITC	4 ± 2	1.5	30	64
glycophorin	erythrocyte (intact)	FRAP/FITC	0.004 ± 0.002	100	37	63
glycophorin	erythrocyte (ghost)	FRAP/FITC	0.04 ± 0.02	100	37	63

DMPG: 1,2-dimyristoyl-*sn*-glycero-3-phosphoglycerol; DMPC: 1,2-dimyristoyl-*sn*-glycero-3-phosphocholine; FRAP: fluorescence recovery after photobleaching; FITC: fluorescein isothiocyanate; DOPC: 1,2-dioleoyl-*sn*-glycero-3-phosphocholine; SM: sphingomyelin; SPT: single particle tracking; AchR: acetylcholine receptor; AG01518 and C3H 10T1/2 are cell lines