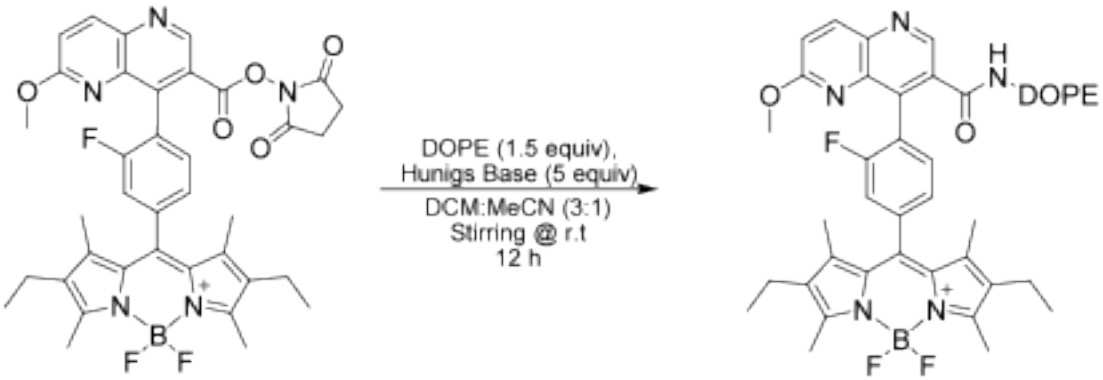
Electronic Supplementary Material (ESI) for Soft Matter

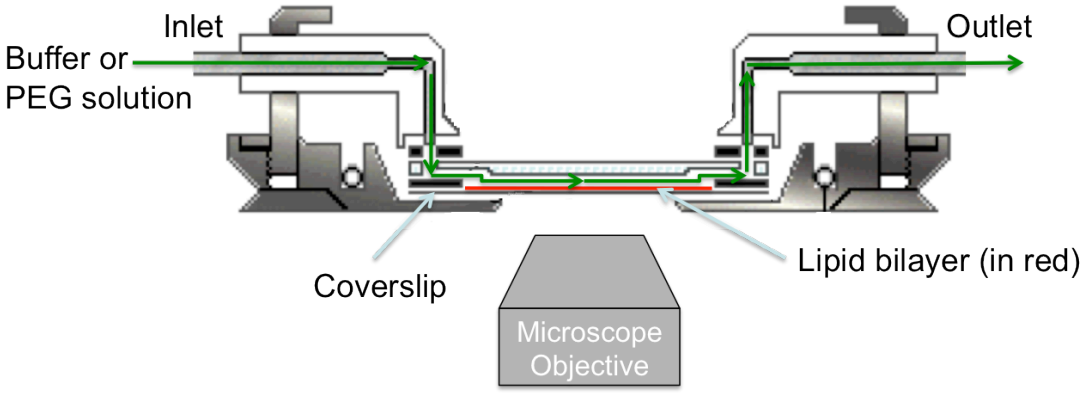
Supporting Information

Synthetic Chemistry:



Chamber

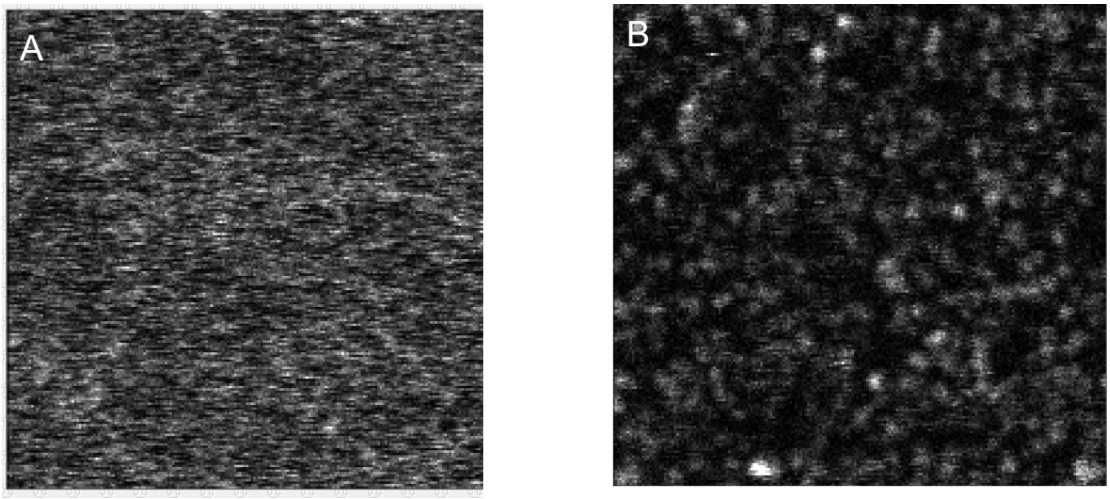
S1



Scheme of the chamber used to study the lipid films.

Lipid bilayer quality

S2

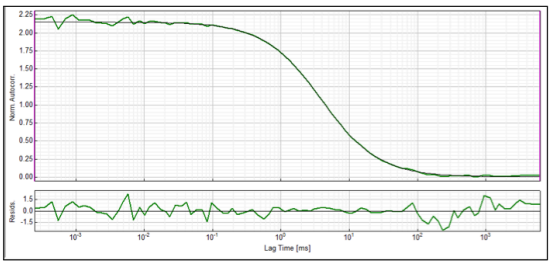


Fluorescence image of lipid bilayer supported composed of DOPC with Atto-655-DOPE on glass. The image corresponds to square area 80x80 µm . (A) shows a free defect bilayer with a homogenous fluorescence, the FCS measurement are identical on all the surface (with in the experiemental error). On (B) we observe spots and patches the fluorescence is not homogenous, some areas display a diffusion rate and some other do not.

Curve Fitting

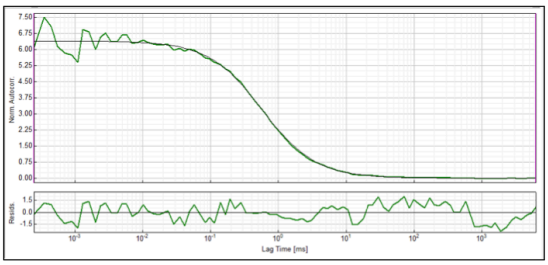
S3

A- Figure 1 (a) circles



χ^2=0.751

B- Figure 1 (a) triangles

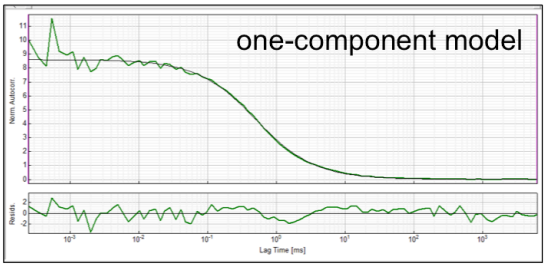


χ^2=1.178

Result of the fit from the Figure 1. The upper graph represent the FCS curves, in green the experimental data in black the fitting curve from Equation (1) using the one-component model. The lower graph is the residual trace representing the relative difference between the experimental curve and the fitting curve. The xi square (χ^2) is indicated as well. The χ^2 is better in the case B that in the case however the residual case is better centered on zero in the case A than in the case. To assess the validity of the fit in the case of FCS it is important to observe both (Ref Meseth, Vogel 1999, ref 36).

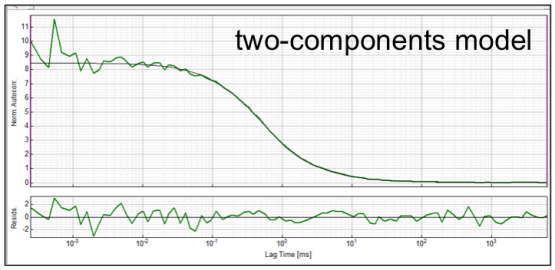
S4

A- Figure 1 (c)



χ^2=1.229

B- Figure 1 (c) Triangle



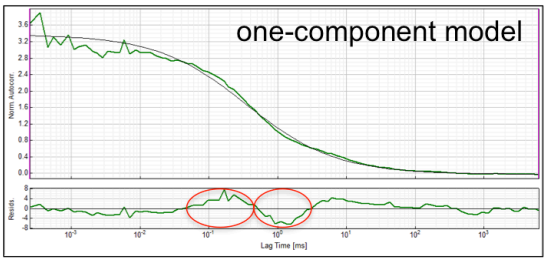
χ^2=0.978

Results of the fit for the data from DMPC after PEG exposure (Figure 1 (c), triangles). The data are fitted with the two models, (A) one-component and (B) two-components. Although the χ^2 is better for the two-

components model, the residual traces are equivalent in the both cases, the fit is considered as good for the 2 models.

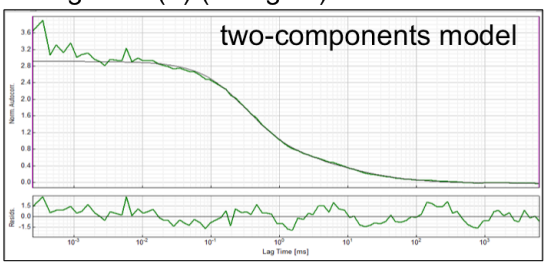
S5

A- Figure 1 (b)



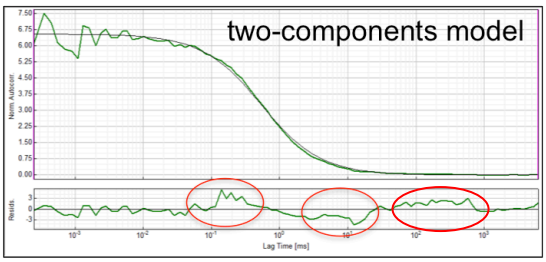
χ^2=6.670

B- Figure 1 (b) (triangles)



χ^2=1.215

C- Figure 1 (a)



χ^2=3.156

Results of the fit. (A) and (B) represents the curves of the experimental (green) and of the fit (black) for DMPC after PEG exposure (Figure 1 (c), triangles). In (A) the fit uses the one-component model in (B) the two-components model. In this situation only one fit is acceptable. In (A), the trends on the residual curve are circled in red, it is show the divergence between the experimental curve and the fit curve, the χ^2 is very high, 6.67. (C) shows the attempt to fit the FCS curve from Figure 1 (a) (DOPC after PEG exposure) with a two-components model, the residual trace displays trends which are circled in red, moreover the χ^2 (3.156) is far from 1.