Electronic Supplementary Material (ESI) for RSC Advances

Single Molecule Diffusion on Hard, Soft and Fluid Surfaces

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Supplemental Information

To determine the lateral diffusion of lipid bilayers, fluorescent 1,2-dioleoyl-sn-glycero-3-phosphoethanolamine-N-(lissamine rhodamine B sulfonyl) ammonium (LR-PE), purchased from Avanti Polar Lipids, is used to mix with L-α-phosphatidylcholine (α-PC) at a molar ratio of $1:10^5$ to form a smooth and uniform lipid bilayer, whose morphology is displayed in Supplemental Fig. 1b. By using fluorescence correlation spectroscopy (FCS), an auto-correlation function of LR-PE in α-PC lipid bilayer in Phosphate buffered saline (PBS) buffer solution is obtained as shown in Fig. 1c, yielding D_s= 3.0 μm^2 in PBS aqueous solution as the lateral diffusion coefficient of α-PC lipid bilayer by fitting $G(\tau)$ with Eq 1.

Supplemental Figure 1. (a) The chemical structure of α-PC and LR-PE, (b) fluorescence micrograph of mixed α-PC and LR-PE lipid bilayer, and (c) measured normalized $G(\tau)$ by G(0) of LR-PE in the mixed lipid bilayer.