Hybrid lipid/polymer giant unilamellar vesicles: Effects of incorporated biocompatible PIB-PEO block copolymers on vesicle properties†

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Figure S1. Confocal microscopy images of hybrid GUVs with incorporated amphiphilic block copolymer chains (PIB_{37}-PEO_{48})(3b). (A) Overview of mixed vesicles at room temperature obtained from a mixture of 30 mol% of 3b. Panel (B) depicts the corresponding 3D-reconstruction of a single vesicle, which shows a vesicle with a highly ragged surface. Panel (C) and (D) illustrate hybrid vesicles prepared from an initial mixing ratio of 40 mol% of PIB_{37}-PEO_{48}. The 3D-reconstruction (D) clearly shows large open fragments of the hybrid membrane.
**Figure S2.** Confocal microscopy images of hybrid GUVs with incorporated amphiphilic block copolymer chains obtained from a mixture of 20 mol% of PIB$_{87}$-PEO$_{17}$ using DiDC$_{18}$ for labeling phase heterogeneities. (A) and (B) depict the 3D-reconstructions of hybrid giant unilamellar vesicles, which exhibit irregularly shaped domains (black patches), indicating a phase separated state of the binary mixed system.

**Figure S3.** Confocal microscopy images of hybrid GUVs with incorporated amphiphilic block copolymer chains obtained from a mixture of 20 mol% of PIB$_{87}$-PEO$_{17}$ using Rh-DHPE for labeling phase heterogeneities. Panel (A) shows an overview and panel (B) depicts a 3D-reconstruction of hybrid giant unilamellar vesicles. The same type of irregularly shaped, dark domains, are observed as with DiDC$_{18}$ as the fluorescent label in Fig.S2.
Figure S4. Confocal microscopy images of hybrid GUVs with incorporated amphiphilic block copolymer chains using 30 mol% (A-C) and 20 mol% of BCP (3a) (D-F). Hybrid GUVs were visualized with two different membrane labels (Rh-DHPE and DiDC$_{18}$ (0.5 mol%)) to show differences in the phase labeling. Panel (A) and (D) depict a single GUV image where the DiDC$_{18}$ dye was exclusively excited; Panel (B) and (E) were the Rh-DHPE dye was exclusively excited. Panel (C) and (F) show an overlay of both images, indicating no differences in the phase labeling behavior of both membrane dyes. Panel (D), (E) and (F) are presented as 3D-reconstruction to show the different phases.
**Figure S5.** Fluorescence microscopy images of a pure DPPC monolayer at the air/water interface at 20°C recorded at different surface pressures: (A) 7.3 mN/m; (B) 8.0 mN/m; (C) 8.4 mN/m; (D) 12.2 mN/m and (E) 33.8 mN/m.
Figure S6. Fluorescence microscopy images of a mixed monolayer of DPPC/ Pluronic P87-PEO17 (80 mol%) at the air/water interface at 20°C recorded at different surface pressures: (A) 3.0 mN/m; (B) 8.0 mN/m; (C) 12.2 mN/m; (D) 30.1 mN/m.