

## **Supporting Information**

for

### **Reconstitution of the membrane protein OmpF into biomimetic block copolymer–phospholipid hybrid membranes**

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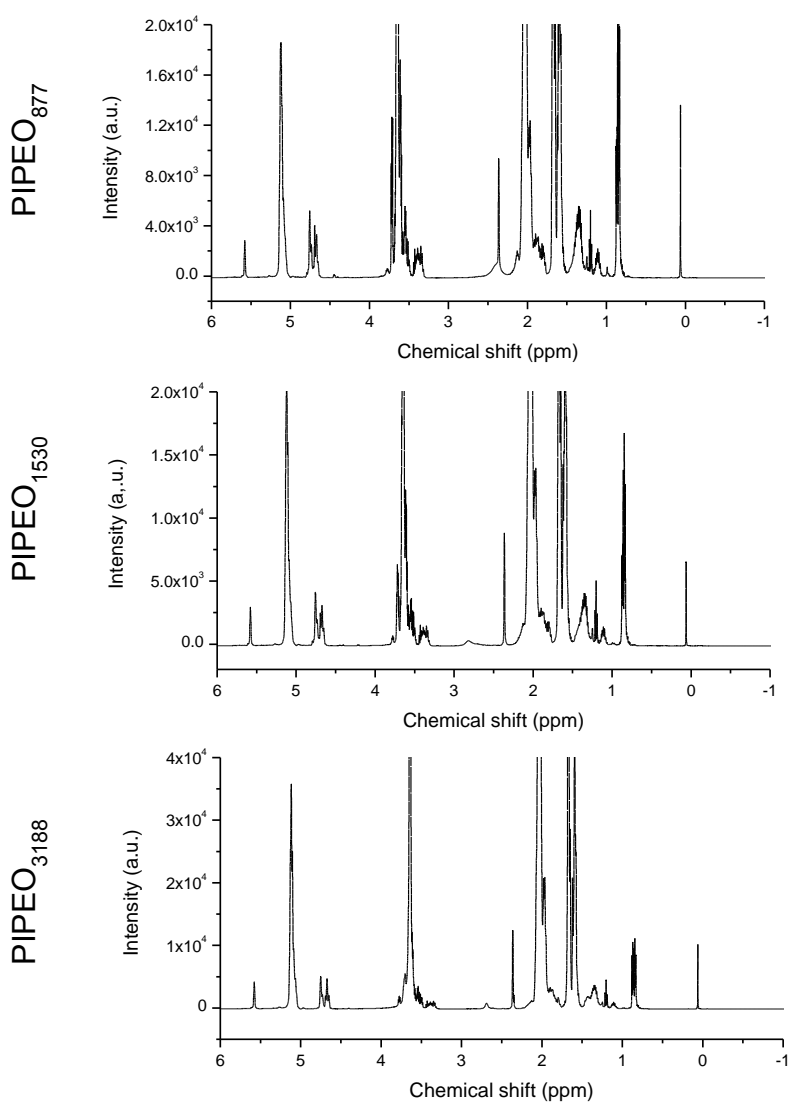
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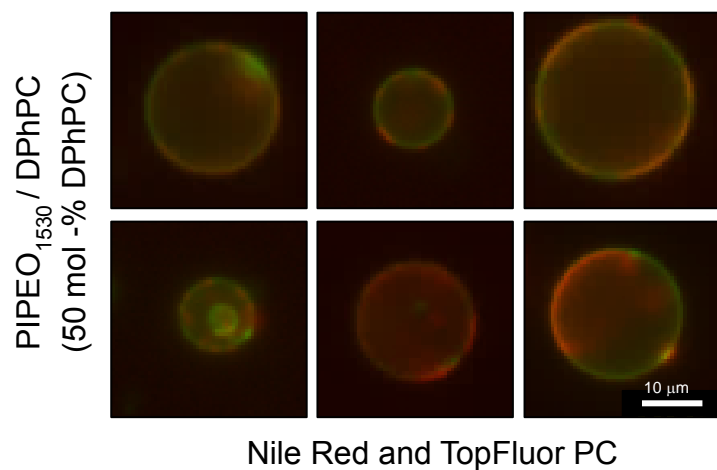
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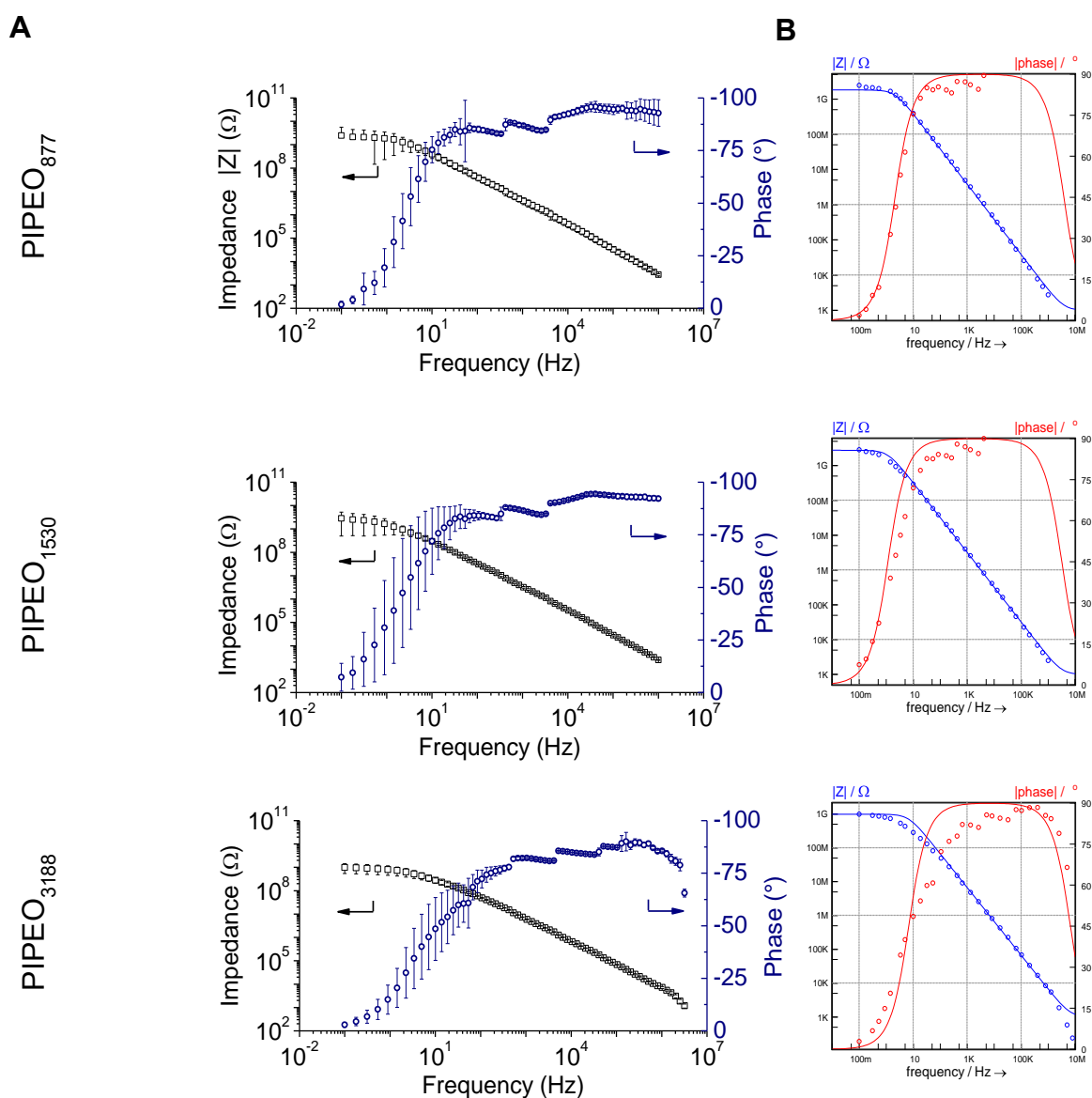
### **Additional experimental data**



**Figure S1:** <sup>1</sup>H NMR spectra of synthesized PIPEO block copolymers. Characteristic signals for this type of block copolymer are the ones at 5.6, 5.1, 4.8 and 3.6 ppm. The latter one represents the signal coming from the CH<sub>2</sub>-groups in the PEO repeating units, whereas the other signals come from the =C-H or =CH<sub>2</sub> groups within the isoprene repeating units. The amount of 1,4-isoprene repeating units has been determined by comparing the integrals of the signals at 5.6, 5.1 and 4.8 ppm. It must be noted here, that the signal at 5.1 ppm is due to one proton within a 1,4-repeating unit, whereas the other two isoprene signals are due to two protons each in 1,2-repeating units. The signals with chemical shifts between 3 and 1 ppm are due to proton resonance within the polymer backbone. The signal coming from the sec-butyl lithium residue of the initiator is observable at 0.85 ppm. Note, peak intensities were truncated, if greater than  $2.0 \times 10^4$  a.u. and  $4.0 \times 10^4$  a.u., respectively.



**Figure S2:** Optical micrographs of lipopolymerosome formed of PIPEO<sub>1530</sub> and 50 mol % DPhPC. Staining membranes with the dye Nile Red (red) and the fluorescent lipid TopFluorPC (green) reveal a heterogeneous distribution of both dyes indicating phase separation of PIPEO and DPhPC.



**Figure S3:** Analysis of the electrical properties of planar PIPEO polymer membranes based on impedance spectroscopy. (A) Bode representation of impedance  $|Z|$  ( $\square$ , black) and phase ( $\circ$ , navy blue) data of planar PIPEO<sub>877</sub>, PIPEO<sub>1530</sub> and PIPEO<sub>3188</sub> membranes in buffer containing 1 M KCl, respectively. (B) Fit of the impedance data shown in (A) based on equivalent circuits consisting of an ohmic resistance in series with a resistance–capacitance (RC) pair in parallel, corresponding to an electrolyte–membrane–electrolyte interface.