



Contribution ID: 179

Type: **Poster**

Influence of salt (NaCl) on structure and dynamics of phospholipid membranes

Wednesday, 9 December 2020 17:40 (20 minutes)

Phospholipid membranes are the construction material of cell membranes and solutions of phospholipid vesicles find a range of applications in technical, medical and biological applications.

We previously showed the structure (neutron reflectometry, GISANS) and the dynamic behavior (GINSES) of L- α -phosphatidylcholine (SoyPC) phospholipid membranes. [1,2] We established a multi-lamellar structure as well as a surface mode, attributed to transient waves in the membranes.

We extended those studies to investigate the influence salt (NaCl) concentration in the system, both in order to ascertain the difference between previously investigated strongly hydrophobic additives as well as better represent an in-vivo biological membrane.

Two features of the membrane system were revealed: (1) The thickening of the membrane layers as reported by SAXS measurements is due to an enriched counter-ion area close to the head group of the phospholipid membranes, and not, as for hydrophobic molecules an actual swelling of the membrane. (2) The in-plane dynamics of the membranes is enhanced by the addition of NaCl, while retaining the previously reported surface mode.

Those features can play an important role in the understanding of membrane functions, such as the formation of ion channels, and thus their biological function on a fundamental level.

[1] S. Jaksch, H. Frielinghaus et al, Phys. Rev. E 91(2), 2015, 022716.

[2] S. Jaksch, H. Frielinghaus et al, Scientific Reports 7(1), 2017, 4417.

Primary authors: JAKSCH, Sebastian (Physicist); FRIELINGHAUS, Henrich (JCNS); HOLDERER, Olaf; Dr KOUTSIUBAS, Alexandros (MLZ & JCNS); ZOLNIERCZUK, Piotr

Presenter: JAKSCH, Sebastian (Physicist)

Session Classification: Joint poster session of MLZ User Meeting and DN2020

Track Classification: DN: Life Science/ Biology