P.09 Influence of Ibupropfen on the structure of phospholipid layers

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Nonsteroidal anti-inflammatory drugs (NSAID) such as Ibuprofen have a wide range of medical applications, ranging from pain relieve over Alzheimer's [1] to cancer treatment [2]. However, some applications require long-term application, which can lead to gastrointenstinal complications and even fatal ulcers [3]. Neutron reflectometry and grazing incidence neutron scattering (GISANS) investigations of lipid films, which are excellent model systems for naturally occurring cell membranes, revealed a change in layer thickness upon the introduction of Ibuprofen[4]. This change in layer thickness can be attributed to a different apparent hydration of the film [5].

We investigated the influence of ibuprofen on phospholipid layers of L-α-phosphatidylcholine (SoyPC) between 0 and 33 wt% of ibuprofen. Our investigations have revealed that ibuprofen induces a two-step ordering in such films depending on the concentration. This ordering coincides with an initial increase and subsequent decrease in thickness, which can be attributed to a difference in the hydration of the layers (Fig. 1 a). Additionally, while there is no ordering for the pure SoyPC film, at 20 wt% ordering occurs. This ordering we identified as hexagonal with a superstructure. This superstructure vanishes at 25wt% of ibuprofen (Fig. 1 b) through d)), leaving a simple hexagonal structure.

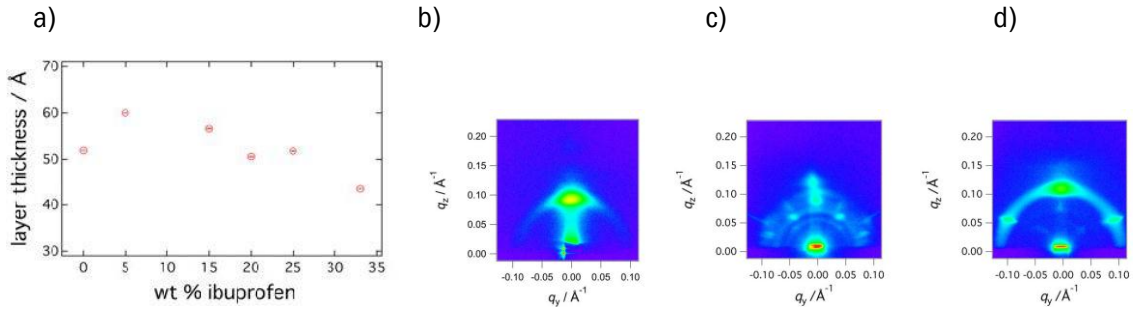

Fig.1. *a)thickness of layers in ibuprofen films at various ibuprofen concentrations,GISANS images at an incident angle of 0.2° for b) 0wt% ibuprofen, c) 20wt% ibuprofen and d) 25 wt% ibuprofen.*

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