

(water affinity and eventual ionisation) as well on the number, length, unsaturation of the chains. All these properties determine the overall polarity of the molecules, their solubilities in water and the eventual formation of liquid crystalline structures. A complex polymorphism generated by the fact that lipid molecules display multiple possibilities of self-association frequently complexifies the study of lipid structures. Moreover, this polymorphism is modulated for the lyotropic substances by their water affinities which are variable as a function of head groups, pH and ionic strength of aqueous solutions, etc and presence of added substances.

In living systems, while neutral lipids, like triglycerides, constitute energy storage, formation of compartments and delimitation of functions is mainly achieved by polar lipids. The separation of active compartments is made in eucaryotic cells by the self assembly of polar lipids bearing two long chains, mainly phospholipids, that form single layered, bilayered or trilayered membranes. Bilayer, that delimit all compartments of living systems from organelles to cytoplasm membranes, is the most frequent organisation of lipids. The corresponding model derived from natural lipidic organisations by biomimetism and used for drug delivery, is the lipid vesicle. On another hand, single-layered and triple-layered membranes delimiting oil compartments in living systems correspond to emulsions. Both types of aggregates have quasiplanar interfaces at the molecule scale. However, as lipid and their mixtures or mixtures with other components such proteins, nucleic acids, bile salts, or pharmaceutical products might adapt any interface curvature they form an infinity of structures from aggregates to mesophases. The structural characterisation of their organisations at the molecular and supramolecular scales and the determination of their associated thermal properties is simultaneously possible by the coupling of Differential Scanning Calorimetry (DSC) and SWAX-ray diffraction techniques [1-4].

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#### MS12 P04

**Near-Surface Structures and Dynamics of Complex Liquids** Andreas Magerl<sup>a</sup>, Marco Walz<sup>a</sup>, Nicole Voss<sup>a</sup>, Hartmut Zabel<sup>b</sup>, Max Wolff<sup>b</sup>, <sup>a</sup>*Crystallography and Structural Physics, University of Erlangen, Germany*, <sup>b</sup>*Institute of Solid State Physics, University of Bochum, Germany*. E-mail: magerl@krist.uni-erlangen.de

**Keywords:** structures, liquids, neutron diffraction

Complex liquids like block copolymers made up from polyethylenoxide and polypropylenoxide building blocks dissolved in water have rich structural phase diagrams. Different orderings are evidenced macroscopically by the viscosity. We report on a microscopic structural characterization of the tri-block copolymer Pluronic® P123 by neutron diffraction with particular emphasis on near-surface orderings and on the influence of the chemical termination of the contacting solid. Further, the influence of adding salt to the solutions has been considered. When subjected to flow the microscopic diffusion dynamics as probed by quasielastic neutron scattering becomes anisotropic