

When lipids meet water – structure and processes at the lipid-aqueous interface.

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The nature of the lipid/water-interphase is key not only in a physiological context, but has implications for applications such as drug delivery and more technical applications such as detergency. The structure of the interface largely depends on the polarity of the lipids involved, but also their molecular shape and packing that both control the self-assembly structures formed. Of particular interest is to understand the processes that can occur during lipolysis that transfer edible oils into polar lipids. Small angle x-ray scattering (SAXS) and cryogenic transmission electron microscopy (cryo-TEM) allowed us to determine the phase behaviour and structure of the formed dispersions. Neutron and x-ray data as well as spectroscopic methods and optical reflectometry techniques, like ellipsometry can give us insight on the nature of the oil/water-interphase and how the processes that can occur during lipolysis can change the structure and composition in the interfacial layer. The structural changes are often controlled by the pH. We will show that a combination of bulk studies using scattering techniques and studies of oil film using surface sensitive techniques will give insights on the structure of the oil-water that provide the basis for a range of applications.