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AND STRUCTURE**

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Advances in neutron scattering from biomembranes

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Biological membrane mimetics, such as liposomes, lipid bilayers and model membranes, are used in a broad range of scientific and technological applications due to the unique physical properties of these amphiphilic aggregates. They serve as platforms for studying the soft matter physics of membranes and membrane dynamics, interactions of bilayers with drugs or DNA, and effects of various additives or environmental changes. The modern state-of-the-art research takes advantage of joining brilliance of X-ray scattering sources with some peculiar properties of neutrons, and combines results with the power of computer simulations. The advances in chemistry and deuteration possibilities in particular, allow for better experimental spatial resolution and possibility to pin-point labels within membranes. It is only a matter of time for various technological applications to follow these advances and utilize the amphiphiles in e.g., liposome-based nanoparticles for drug delivery, formulation of liposomes for prolonged *in vivo* circulation and functionalization for medical purposes, novel drug delivery systems for increased drug loading, and the use of tethered membranes for bio-sensing applications. The use of liposomes in textile dyeing, and a role of lipidic nanoparticles in the food industry is already happening future.