

The possibilities of neutron diffraction to study lipid membranes

Tuesday, 16 April 2019 17:00 (2 hours)

In this paper, the internal structure of the lipid membrane was investigated by neutron diffraction method. Lipid membrane consists of a mixture of dipalmitoylphosphatidylcholine and cholesterol in a ratio of 80/20 by weight. An important methodological issue was the dependence of the neutron scattering length density $\rho(x)$ on the number of diffraction peaks taken into account in the calculations and their minimum number required to obtain information about the internal structure of the lipid bilayer. To find the answer to this question, the calculations of the function $\rho(x)$ for the different number of diffraction reflection orders taken into account at 8%, 20% and 50% D₂O (heavy water) in vapors hydrating the membrane were performed. The use of contrast variation allowed to determine the function of water distribution inside the lipid bilayer in the direction of normal to the bilayer.

Summary

The accuracy of the information extracted from neutron diffraction experiments on multilayer lipid membranes from the number of diffraction reflection orders measured in the experiment is investigated.

Primary author: Mrs NURKASOVA, Aru (JINR)

Presenter: Mrs NURKASOVA, Aru (JINR)

Session Classification: Poster session