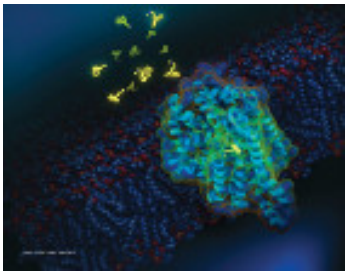

Contribution ID: **9** Type: **not specified**

Keynote 4 - Collective dynamics of membranes in and out-of thermal equilibrium

Wednesday 12 September 2018 17:05 (40 minutes)

Biological membranes are intrinsically out-of-thermal equilibrium, driven by a vast range of external forces, excerted for example by motor proteins, ion channels, or interactions with other membranes such as in membrane fusion. We woul like to gain a quantitative understanding in the generic differenced of membrane dynamics under such out-of-equilibrium conditions. To this end, we have used different diffraction experiments probing the collective dynamics of well controlled model membranes, in particular aligned lipid membrane stacks, both in thermal equilibrium as well as in an active state, subjected to external driving forces (optical or acoustoelectric). While the equilibrium collective membrane dynamics (in plane density waves, undulations) can be well captured by ineleastic neutron scattering in terms of characterisitc dispersion relations [1], we turned to time-resolved x-ray diffraction in order to probe the relaxation pathway of membranes which are driven out of thermal equilibrium [2,3]. Beyond dynamics of multilamellar phases, I will then present ongoing work on membrane shape transformation and in particular membrane fusion in vesicle suspensions, using advanced x-ray optics and microfluidic devices. I will finish with an outlook on novel oppertunities by the x-ray free electron lasers as well as the European Spallation Source (ESS).

Presenter: Prof. SALDITT, Tim (University of Göttingen, Germany)

Session Classification: Biointerfaces: Afternoon sessions