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Crystallization of Reaction Centre from *Rhodobacter Sphaeroides* in Bicontinuous Lipid Systems. A. Wöhri, P. Wadsten, A. Snijder, S. Engström, R. Neutze, Dept. of Chemical and Biological Engineering, Chalmers Univ. of Technology, Gothenburg, Sweden.

Plants and some bacteria can convert light into chemical energy (photosynthesis). One such bacterium is *Rhodobacter sphaeroides* where the light driven reaction takes place in the membrane bound protein reaction centre (RC). Since the protein is normally surrounded by membrane bilayers, RC has been crystallized using the lipidic cubic phase (LCP) and a new crystal form (type I) was obtained using monoolein (MO) as the bilayered host. At room temperature MO forms a lamellar crystalline phase (L_c) and changes its phase behaviour with its water content. Depending on the hydration level a lamellar liquid phase (L_α), cubic phases ($Ia3d$ and $Pn3m$) or a liquid phase (L_3) will form.



In this work we show the crystallization of RC from *R. sphaeroides* (2,1 Å) using jeffamine as a precipitant, which leads to phase transition to a liquid phase (L_3). This phase has an inner structure in resemblance with the LCP with less curved lipid bilayers and larger aqueous pores, which makes it a better host for membrane proteins with larger hydrophilic domains such as RC. Since the L_3 phase is a liquid, one can take the advantage of performing a vapour diffusion experiment and one will be more confident in using this new method compared to the LCP.