

# MEMBRANES & MOLECULES

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### Surfactant/protein and micellar interactions as help for MP stabilization and crystallization

#### Abstract

Membrane proteins are difficult to manipulate and stabilize once they have been removed from their native membranes. The requirement for a specialized amphiphilic environment makes them difficult to study by biophysical and structural methods.

It is in this context that I am interested in describing the surfactant properties and the influence of surfactant structure on MP stabilization and crystallization. I have addressed these questions by using scattering techniques (employing light, X-rays in batch or on-line), which are particularly suitable to describe the structure and conformation of macromolecules in solution, as well as to assess weak interactions between particles (micelles or membrane protein complexes) implied in crystallization mechanisms.

Here I will present the physico-chemical characterizations and interactive properties of new surfactants which may be interesting alternatives to usual detergents for increasing MP stability and allowing crystallization.

#### Some related references

- Bonneté, F. and P.J. Loll, *Characterization of New Detergents and Detergent Mimetics by Scattering Techniques for Membrane Protein Crystallization*, in *Membrane Protein Structure and Function Characterization*, J.J. Lacapère, Editor. 2017, Springer Nature. p. 169-193.
- Polidori, A., et al., *Sparingly fluorinated maltoside-based surfactants for membrane-protein stabilization*. *New J Chem*, 2016. **40**: p. 5364-5378.
- Dahani, M., et al., *Use of dynamic light scattering and small angle X-ray scattering to characterize new surfactants in solution conditions for membrane protein crystallization*. *Acta Cryst*, 2015. **F71**: p. 838-846.
- Barret, L.-A., et al., *A new high-performance thin layer chromatography-based assay of detergents and surfactants commonly used in membrane protein studies*. *Journal of Chromatography A*, 2013. **1281**(0): p. 135-141.
- Barret, L.-A., et al., *Influence of Hydrophobic Micelle Structure on Crystallization of the Photosynthetic RC-LHI-PufX Complex from *Rhodobacter blasticus**. *Journal of Physical Chemistry B*, 2013. **117**(29): p. 8770-8781

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Invitée par Bruno Miroux

