

How much can synthetic oligomers alter the state of a lipid membrane ?

Methods, evidences and open questions.

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The sheer scale of plastic pollution has directed our eyes towards the visible, large-scale consequences of plastic debris for living organisms. It is possible however that a more potent threat to the life forms lies in the small molecules at the lower end of the degradation cascades of plastics. Small degradation products are hard to detect because they require sophisticated technology.

Lipid membranes are a likely place where nanometric sized hydrophobic particles might be found after being internalized by living organisms. At the Institut Charles Sadron, we are interested in investigating the possible alterations of the physicochemical properties of model lipid bilayers induced by the presence of polystyrene synthetic oligomers. In this presentation, we will discuss a number of effects that could be observed when inserting PS oligomers of *ca* 500 Da into pure DPPC and binary DOPC-DPPC mixtures [1].

[1] Morandi, M. I.; Kluzek, M.; Wolff, J.; Schroder, A.; Thalmann, F. & Marques, C. M., Accumulation of styrene oligomers alters lipid membrane phase order and miscibility, PNAS, 2021, 118, e2016037118

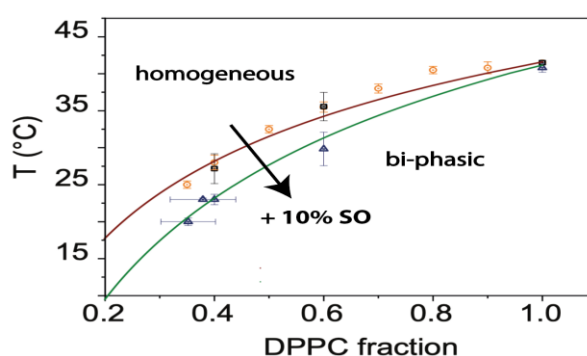


Figure 1 : Evolution of the binary coexistence line in DOPC-DPPC mixtures as the result of short PS oligomers insertion.