

# **Neutron reflectometry for Langmuir monolayers of surface-active polymer nanoparticles**

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The structure tells a lot about the stability and mechanical behavior of monolayers made with various surfactants (e.g., lipids, polymers, and nanoparticles). X-ray and neutron can provide the in-situ lateral and vertical information of monolayers at liquid surfaces, both of which are essential to understanding the complete monolayer structure. This talk will illustrate the use of X-ray and neutron to resolve the structure of polymer-brushed nanoparticle (NP) monolayers in dynamic situations such as under varying surface pressure. The vertical profile of the NP monolayer at the air/water interface can be assessed using X-ray and neutron reflectometry while grazing-incidence scattering helps identify the lateral NP arrangement. The experimental setup and analysis procedure will be discussed for users in broader fields. The results revealed the floating height and deformation of the NP cores as well as the lateral close-packing of these strongly surface-active NP monolayers.