

MIXED MONOLAYERS OF EICOSYLAMINE AND A BACTERIAL-FERRITIN PREPARED BY ADSORPTION TECHNIQUE AT THE AIR-WATER INTERFACE

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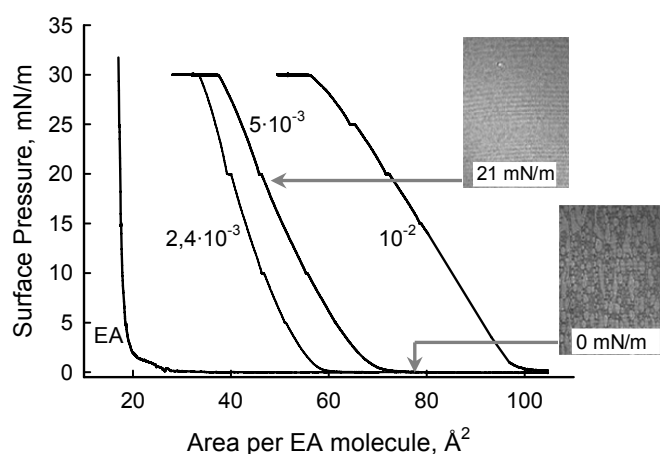
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Natural ferritin is the iron storage protein of animals, plants and bacteria. This globular protein, with a diameter of ca. 12 nm, may hold approximately 5000 iron atoms. Because of its excellent magnetic properties, it is interesting as a potential component on nanotechnological devices. Several studies have been performed to obtain thin organized films containing ferritin molecules. Langmuir and Langmuir-Blodgett techniques have been revealed as very useful strategies to prepare such thin films. In previous works, mixed monolayers of ferritin attached to a mixed lipid matrix of eicosylamine (EA) and methyl stearate (SME) have been built by adsorption method [1,2].

In this work we have investigated a new type of ferritin, a bacterial-ferritin that contains porphyrinic groups covalently linked to its core, which properties are not only interesting for the magnetic but also the spectroscopic features. The adsorption properties of the bacterial-ferritin to a Langmuir monolayer of EA have been studied. The EA monolayer was spread on a different ferritin solutions as an aqueous subphase. The adsorption of the bacterial-ferritin at the air-water interface has been probed through a noticeable expansion on the surface pressure (π) – molecular area isotherms with respect to the EA monolayer on pure water, also Brewster angle microscopy (BAM), UV-vis reflection spectroscopy (ΔR) at the air water interface, as well as surface potential (ΔV) – molecular area measurements have been used for its characterization. The results show not only the retention of the bacterial-ferritin to the lipid matrix but also a more homogeneous and reproducible mixed film in comparison with similar systems [2].

Figura 1. π - A isotherms of EA monolayers formed on aqueous subphases containing different concentrations of bacterial-ferritin (in mg/mL). As an example, BAM images of a mixed film



are shown.

References

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