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Polyacrylic Acid Modifies Local and Lateral Mobilities in Lipid Membranes

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Abstract

Polyacrylic acid (PAA) is a promising polymer for engineering lipid-based drug-delivery vesicles. Its unique properties allow lowering drug dose and delivery the drug close to the site of its release. To design a successful delivery scheme, however, it is important to understand on the molecular scale how the polymer interacts with lipids under various conditions in the human body. Some aspects of the PAA-lipid interaction can be revealed using physical methods, such as differential scanning microscopy, nuclear magnetic resonance spectroscopy, NMR-diffusometry, and infrared spectroscopy. This work discusses the use of these techniques as well as the peculiarities of preparing vesicular and microscopically aligned PAA-lipid systems. © 2014 Copyright Taylor & Francis Group, LLC.

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Keywords

FTIR, lateral diffusion, lipid bilayers, NMR diffusometry, NMR spectroscopy, polymer-membrane interaction