

CHARACTERIZATION OF MICELLES BY NMR SPECTROSCOPY

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ABSTRACT

The lecture will cover recent developments of polymer characterization by NMR spectroscopy. The main attention will be paid to the characterization of amphiphilic block copolymers. Different block copolymers based on 2-Polyoxazolines were synthesized in order to form different properties in solution.

In particular these amphiphilic diblock copolymers are forming micelles in water. ¹H NMR spectroscopy was used to describe the behavior of the micelles. Several NMR studies were performed to quantify the degree of aggregation, determining their dynamics as well as the diffusion behavior. Temperature dependent ¹H NMR measurements, T₁ and T₂ relaxation studies as well as DOSY measurements were carried out in order to provide quantitative data of the aggregation formation. Detailed information can be obtained for the individual monomer units and their specific molecular structural groups.