Abstract

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INVESTIGATIONS ON THE AGGREGATION OF MESOSCOPIC SYSTEMS BY MEANS OF TIME RESOLVED STATIC LIGHT SCATTERING

In the case of the present work two different systems in the field of soft matter has be studied by means of time resolved static light scattering. The necessary equipment in form of hardware and software is homebuild. For the interpretation of the scattering curves the effect of the monomer content on the logarithmic plot of the radius of gyration versus the molecular weight requires particular attention.This circumstance was elaborated and considered for the interpretation of the experimental data.

calix[4]aren-naphthyridin-aggregation:
For the two component system calix[4]aren-naphthyridin the clarification of the structure of the aggregates was of special interest. By means of a modified model of trifunctional polycondensates from macromolecular chemistry, a consistent interpretation of the scattering curves could be reached. Based on this model, a possible aggregation mechanism could be proposed. The structure model was supported by electron microscopy measurements.

β-amyloid-aggregation:
In the case of the one component system β-amyloid the establishment of reproducible data and the clarification of the structure and kinetics of the aggregation was the aim of this investigation. The shape of the aggregating particles could be described by means of the so called wormlike-chain or KRATKY-POROD-chain. Here, the resulting parameters persistence length and linear mass density provide an insight into the structure of the growing particles. The influence of the β-amyloid concentration and the salt content of the solvent on the aggregation process could be determined. Finally, a simulation of the β-amyloid aggregation allows the development of a kinetic model which reveals a qualitative interpretation of the experimental trends in persistence length and linear mass density in function of the extent of the growing particles.