

PC 44

PREPARATION AND LOADING OF POLYETHER NANOPARTICLES WITH COVALENTLY CROSSLINKED CORE

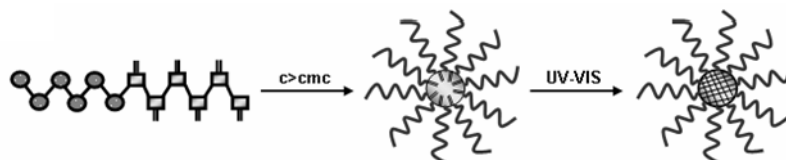
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Double hydrophilic block copolymers poly(ethylene oxide)-b-polyglycidol were synthesized using living anionic polymerization. The polyglycidol blocks were made hydrophobic by the esterification of a part of hydroxyl groups with cinnamic acid. The copolymers were found to form core-shell structures in water solution, where the corona of the micelles was formed of EO units and the cores consisted of hydrophobic glycidyl cinnamate units. The process of self-association of obtained copolymer in water was followed by fluorescence spectroscopy and light scattering to determine critical micelle concentration.

Thus, well defined, nanosized particles of covalently stabilized core were obtained in an aqueous system without use of low molar mass additives (photosensitizers, stabilizers or photoinitiators). This make its application for the selective transport and release of species in biological systems possible. Schematic illustration of crosslinking process is shown in figure 1.

Fig. 1. Schematic illustration of the crosslinking process



The kinetics of the crosslinking process was followed by gel chromatography. The nanoparticle sizes and shapes were checked by LS and AFM.

Obtained nanogels were charged with pyrene particles. Investigation of loaded nanoparticles solutions were performed using reversed phase SPE (solid phase extraction) columns. Its capacity were measured using GC chromatograph, fluorescence and UV-VIS spectroscopy.