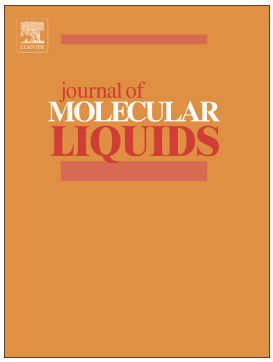

Star-like dextran-graft-pnipam copolymers. Effect of internal molecular structure on the phase transition

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STAR-LIKE DEXTRAN-GRAFT-PNIPAM COPOLYMERS. EFFECT OF INTERNAL MOLECULAR STRUCTURE ON THE PHASE TRANSITION

V. Chumachenko[1], N. Kutsevol[1], Yu. Harahuts[1], M. Rawiso[3], A. Marinin[4],
L. Bulavin[2]

[1]*Faculty of Chemistry,* [2]*Faculty of Physics, Taras Shevchenko National University of Kyiv*
60 Volodymyrs'ka str., 01601 Kyiv, Ukraine

[3]*Institut Charles Sadron (CNRS-UdS),23 Loess str., Strasbourg 67034, France*

[4]*Problem Research Laboratory, National University of Food Technology, Volodymyrska str. 68 , 01601 Kyiv, Ukraine*

kutsevol@ukr.net

Key words: branched polymer, poly-N-isopropylacrylamide, conformational transition.

Stimuli responsible polymers based on poly(N-isopropylacrylamide) having conformational transition in the range of physiological temperature is discussed last years as novel drug delivery nanosystems. Two star-like copolymers with dextran core and grafted poly(N-isopropylacrylamide) arms were synthesized and characterized by size exclusion chromatography equipped with light scattering, refractometry and viscometry detectors. The copolymers differed in the distance between grafts, that caused various conformation of poly(N-isopropylacrylamide in star-like macromolecule. The influence of the polymer internal structure on the conformational transition temperature range has been studied by Quasi Elastic Light Scattering. It was shown that the thermally induced collapse of end-grafted poly(N-isopropylacrylamide) chains above the Lower Critical Solution Temperature was depended on the grafting density.

1. Introduction

In recent years nanostructured materials have attracted the attention of researchers of various fields such as polymers, materials science, pharmacy, and drug delivery. The growing progress in nanotechnology and life sciences demonstrates an urgent need for novel intelligent biocompatible polymers. Thermally responsible polymers base on poly(N-isopropylacrylamide) (PNIPAM) with Lower Critical Solution Temperature (LCST) become a subject of study as a promising approach of