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ABSTRACT

STUDY OF POLYESTER DRUG CARRIERS DEGRADATION USING THE DSC METHOD

The aim of this work was focused on the study of relations among various parameters of degradation process, such as time-dependent range of glass transition temperature, swelling, erosion, and molar weight decrease. Two model polyesters of two type architectures of polyester molecules were used and monitored during two-week period. In the theoretical part of this diploma thesis are in details described biopolymers with stimulus responsive activity and exploitation of these materials in various biomedical applications in the topic of tissue engineering. The experimental part of this work is directed into the study of molecule degradation parameters, eventually into simulated biodegradation in the in vitro conditions of two different in the type polyesters with the contrast polyester molecule constitution. It was demonstrated that parameter M_n decreases towards the limit values. Between the values of molar weight and glass transition temperature is not Flory-Fox relation in the advanced phase of degradation process. The erosion of the material begins after the lag-time in the dependency on the initial molar weight of polyester. The swelling proceeds in the nonequilibrium state, in the initial phase narrowly correlate with the corresponding values of glass transition temperature, in the next phase the process run differs.