

Structural and elastic characterization of biopolymers hydrolysis by acoustic microscopy

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Abstract.

In this work the high-frequency acoustic microscopy was applied for imaging of internal microstructure and measurement of elastic characteristics of the biodegradable polymers based on *D,L*-lactide, *L*-lactide, ϵ -caprolactone and their copolymers. Acoustic microscopy results (images of internal microstructure and values of bulk sound speed) have been supplemented by data on gel permeation chromatography, differential scanning calorimetry and mechanical tensile test obtained on the polymers under the hydrolysis range from initial state to 6 month. The features of ultrasound visualization and elastic characterization of each the polymer type have been discussed. The changes of the ultrasound characteristics have been detected in the high-rate degradation polymers. This work is supported by the Russian Science Foundation under grant № 19-72-00133