

MOLECULAR LEVEL STRUCTURE STUDIES TOWARDS FORENSIC ENGINEERING OF ADVANCED POLYMERIC MATERIALS

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Forensic engineering of advanced polymeric materials (FEAPM) deals with the evaluation and understanding of the relationships between their structure, properties and behavior before, during and after practical applications. FEAPM provides a central driving force for the otherwise disconnected works and should help to design novel biodegradable polymeric materials and to avoid potential failures of the commercial products manufactured from them [1,2]. Biodegradable polymer uses require case specific characterization and optimization of the material properties, its preparation, processing and recycling.

Contemporary reports on the molecular level characterization of natural polyhydroxyalkanoates (PHA) and their synthetic analogues, formed through anionic ring-opening polymerization (ROP) of β -substituted β -lactones, will be presented. The results of the multistage mass spectrometry studies will be discussed [3]. The undertaken approaches enable design of novel biodegradable and bioactive polymeric materials for diverse applications in medicine, cosmetic industry and agrichemistry.

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[2] W. Sikorska, G. Adamus, P. Dobrzynski, M. Libera, P. Rychter, I. Krucinska, A. Komisarczyk, M. Cristea, M. Kowalczyk, *Polymer Deg. Stab.*, 2014, 110, 518.

[3] M. Kowalczyk, G. Adamus, *Mass Spectrometry Reviews*, 2016, 35, 188.