

## **COMPATIBILIZATION OF POLYAMIDE 6 AND POLYLACTIC ACID BASED RESIN FOR MEDICAL APPLICATIONS BY POLYALKENYL-POLY-MALEIC-ANHYDRIDE BASED DERIVATES**

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Thermoplastic blending of different polymers have been studied widely for many years because this process allows obtaining a new material with specific properties, which are, in some cases, even better than those of the individual homopolymers. It is a consequence of increasing material quality and functionality, which can be observed especially in the area of medical devices production. From this point of view polyamide 6 (PA6) and polylactic acid (PLA) represent a perspective group of materials applicable in medicine. PA6 has been used in various medical applications such as sutures, plastic items. Polyamide has good hardness, impact strength and abrasion resistance. Neither PA6 nor PLA do not carry the combination of excellent mechanical properties and desired bioactivity. The combination of PA6 and PLA could bring the blend with good mechanical properties and improved bioactivity with regards to biomedical application. The problem is that phase separation effect and the loss of material properties can be arisen in PA6/PLA mixtures due to differences in physical form and in chemical composition of them. Therefore compatibilizing agents have been used. The aim of this work is to study and describe in detail the compatibilization effect of newly developed polyalkenyl-poly-maleic-anhydride coupling agents on resulting material properties (mechanical, structural, rheological) of the polymer blends based on PA and PLA co-polyester (Bioflex®). The main attention was paid to achievement of better chemical and physical interaction between the polymers. The results reveal the significant role of the compatibilisers in the PA6/Bioflex systems, which was confirmed by scanning electron microscopy (homogeneity improvement) as well as mechanical properties testing (e.g. 21 % increase in Charpy impact strength). The considerable effect of compatibilizer structure as well as its content in the blends will be presented with this conference contribution.