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Surface modification processes of modern bioresorbable polymers towards to the desired surface properties applying in the tissue engineering

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This year, for the first time, we will introduced in this conference our topic and highlights from our research developing the present biomedical area focusing on the modification of bioresorbable polymers. At present, there exists a plenty of scientific groups researching the improvement of essential characteristics of biomaterials applying in tissue engineering. Modern trends are requesting the universality of implanted materials implanting in the body environment in different conditions of the tissues. Therefore, our research is focusing to the tuning the surface parameters of current polymer biomaterials in desired properties, primary forming the surface wettability to mediate appropriate degradation rate. Within the surface modification of bioresorbable polymer is the main question to forming the hydrophobic/hydrophilic surfaces (repellent and adhesive surface properties, as well as nanomechanical and biodegradation characteristics). Modification processes were included two independent approaches - firstly, activation of the polymer surface by only plasma treatment, following by the chemical activation by grafting with diazonium salts. Moreover, it was demonstrated that the described technique can be used for the spatially selective modification of biopolymer, i.e. achieving of quite different properties on the two opposite sides of polymer films. The technique allows one to vary of the polymer surface properties in the wide range. So that it would be important for biopolymer use in medical applications where spatial tuning of surface properties such as biorepellent or bioadhesive ones, polymer degradation rate or mechanical characteristic are highly required.

Biography

Kristina Bastekova has been a postgradual student in the UTC, department of material engineering since 2015 focusing to the biomedical section to prepare the surface polymer scaffolds integrated in biomedical devices focusing to the medical section of the tissue engineering. At the present she is preparing papers for publishing in journals.

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