

NANOSTRUCTURED MULTILAYERS IN THE PRODUCTION OF NEW DEVICES FOR BIOMEDICAL APPLICATIONS

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Surface engineering is of the utmost significance in the conception of devices with an improved biological performance. By addressing physical and chemical features of interfaces, it has been possible to develop patterned and stimuli-responsive devices with tunable wettability and protein/cell adhesion properties with application in biomedicine and tissue engineering.

While several surface engineering approaches exist, there is an increasing emphasis to non-harmful and versatile techniques to modify polymeric substrates: the sequential adsorption of proteins and polysaccharides, known as layer-by-layer (LbL) adsorption, is one of the most promising today. It is a simple and versatile technique where the cooperative effects of multipoint attractions allowing to produce robust coatings, even in substrates with complex geometries. Because it discards the need of organic and harmful solvents, it is an attractive technique for tissue engineering applications [1-3]. Multilayer systems have already been proposed for different biomedical applications, including for biomimetic composite-like coatings, surfaces with smart properties, and to manipulate the adhesion and proliferation of cells.

References:

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