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Hemocompatible Thin-Film Materials Recreating the Structure of the Cell Niches with High Potential for Endothelialization

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Abstract : The future and the development of science is therefore seen in interdisciplinary areas such as bio medical engineering. Self-assembled structures, similar to stem cell niches would inhibit fast division process and subsequently capture the stem cells from the blood flow. By means of surface topography and the stiffness as well as micro structure progenitor cells should be differentiated towards the formation of endothelial cells monolayer which effectively will inhibit activation of the coagulation cascade. The idea of the material surface development met the interest of the clinical institutions, which support the development of science in this area and are waiting for scientific solutions that could contribute to the development of heart assist systems. This would improve the efficiency of the treatment of patients with myocardial failure, supported with artificial heart assist systems. Innovative materials would enable the redesign, in the post project activity, construction of ventricular heart assist.

Keywords : bio-inspired materials, electron microscopy, haemocompatibility, niche-like structures, thin coatings
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