

뼈 재생을 위한 폴리카프로락톤 필름에 대한 마이크로 캐스팅 및 플라즈마 에칭  
Effect of Micro Casting and Plasma-etching on Polycaprolactone Film for Bone

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**초 록:** One of the challenges in tissue engineering is the design of optimal biomedical scaffolds, which can be governed by topographical surface characteristics, such as size, shape, and direction. Of these properties, we focus on the effects of nano - to micro - sized hierarchical surface. To fabricate the hierarchical surface structure on poly( $\epsilon$ -caprolactone) (PCL) film, we employed a nano/micro-casting technique (NCT) and modified plasma process. The micro size topography of PCL film was controlled by sizes of the micro structures on lotus leaf. Also, the nano-size topography and hydrophilicity of PCL film were controlled by modified plasma process. After the plasma treatment, the hydrophobic property of the PCL film was significantly changed into hydrophilic property, and the nano-sized structure was well developed, as increasing the plasma exposure time and applied power. The surface properties of the modified PCL film were investigated in terms of initial cell morphology, attachment, and proliferation using osteoblast-like-cells (MG63). In particular, initial cell attachment, proliferation and osteogenic differentiation in the hierarchical structure were enhanced dramatically compared to those of the smooth surface.