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Biotolerability of intracortical microelectrodes


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There are different ways to profitably apply smart, i.e. stimuli responsive, polymers to the field of biomaterials. Shape memory polymers (SMPs) have a high potential for applications in minimally invasive surgical procedures allowing the design of devices that can modify their macroscopic properties when receiving a stimulus by the human body. Shape Memory Polyurethanes (SMPU) were investigated as promising candidate materials for the repair of bone defects and cerebral aneurism occlusion. Porous SMPU structures were fabricated by foaming processes and their potential biomedical application was

evaluated. Thermo responsive polymers undergoing a “reverse” sol-gel transition can be used in Regenerative Medicine to develop smart cell culture surfaces from which to obtain intact cell sheets (Cell-Sheet Engineering, CSE). Recently, extrusion-based bioprinting of methylcellulose (MC)-based hydrogels was used to produce MC hydrogel rings onto which cells sheets were successfully obtained with murine embryonic fibroblasts and endothelial murine cells.

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