polycaprolactone scaffolds by surface grafting of sulfonic and phosphonic groups and the effect of those groups on osteoblast-like cells behaviour on a preliminary base.

Scaffolds with porosity of about 68% were obtained from a blend of starch with polycaprolactone (30/70wt-%) by a fiber-bonding process. Oxygen plasma treatment was applied on the produced scaffolds in order to create highly reactive, free radicals on their surface. The pre-activated scaffolds were subsequently immersed in monomer (vinyl phosphonic acid (VPA) or vinyl sulfonic acid (VSA) solution. The successful grafting was confirmed by X-Ray Photoelectron Spectroscopy. Scanning Electron Microscopy was used to evaluate the possible effect of the plasma activation and grafting process on the surface morphology. It was demonstrated that none of the applied processes affect the scaffold/fiber texture.

Direct contact assays with osteoblastic cells (SaOs-2) were performed in order to evaluate the effect of the modification on their behavior. Cells were seeded onto the materials and incubated for 2 weeks. Cells viability, morphology and proliferation were also evaluated after different culture periods. The performed tests revealed that the presence of sulfonic and phosphonic groups increased significantly the proliferation and viability of SaOs-2 compared to untreated scaffolds. From both studied monomers, the scaffolds modified via VPA grafting performed better than the VSA grafted ones.

(P 354) Surface Functionalization of Starch/Polycaprolactone Fiber Meshes for Bone Guide Regeneration

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Surface design of biomedical devices is crucial for their acceptation or rejection by the body. One of the most versatile and effective tools to tailor surface chemistry and properties of solids is polymer grafting. This work describes the modification of starch/