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Functionalized Ormosil Scaffolds Processed by Direct Laser Polymerization for Application in Tissue Engineering

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Abstract

The N,N'-(methacryloyloxyethyl triethoxy silyl propyl carbamoyl-oxyhexyl)-urea hybrid methacrylate for applications in tissue engineering was synthesized and afterwards polymerized by direct laser polymerization using femtosecond laser pulses with the aim of using it for further applications in tissue engineering. The as-obtained scaffolds were modified either by low pressure argon plasma treatment or by using two different proteins (lysozyme, fibrinogen). For improved adhesion, the proteins were deposited by matrix assisted pulsed laser evaporation. The functionalized structures were tested in L929 mouse fibroblasts culture and the cells morphology, proliferation, and attachment were analyzed.