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**Coated calcium phosphate scaffolds for bone tissue engineering
produced by foam replica method**

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Tissue engineering (TE) is a growing field which provides helpful alternative strategies for conventional treatments in medicine. TE involves the smart combination of cells, biomolecules and engineered porous biomaterials in the form of 3D scaffolds. When it comes to bone regeneration the use of 3D scaffolds made of calcium phosphate is a well-known concept with a great potential. Here we present the foam replica method as a procedure suitable for producing highly porous scaffolds with the pore size in the range of 100-500 µm and the mean porosity of >90%. The obtained scaffolds were further coated with selenium nanoparticles (SeNp) and SeNp immobilized within poly(epsilon caprolactone) microspheres (PCL/Se). The purpose of such coating is based on the potential anticancer activity of SeNp as well as on their prolonged release from a biodegradable polymeric carrier. Scaffolds were characterized by X-ray diffraction, scanning electron microscopy, optical microscopy, thermogravimetric/differential thermal analysis (TGA-DTA) as well as Fourier transform infrared spectroscopy (FTIR). The cytotoxicity was determined employing 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide (MTT) assay and all the samples have shown good biocompatibility. Based on these preliminary results the obtained system can be considered as a candidate for the repair of bone lesions and damages.