

Synthesis and Characterization of Bone Replacement Materials by XRD, μ -CT and SEM

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Abstract

The development of bone replacement materials engineering includes numerous aspects: The synthesis and fabrication of appropriate scaffold materials, their analytical characterization, and guided osteogenesis using the sustained release of osteoinducing and/or osteoconducting drugs for mesenchymal stem cell differentiation, growth, and proliferation. Here, some aspects of the synthesis and fabrication of appropriate scaffold materials and their analytical characterization are presented. Recent developments and results in the manufacturing of Si-containing scaffolds are discussed. XRD was used to characterize the different crystalline and amorphous phases of Calcium phosphate. The measurement of the pore size distribution was done with μ -CT. The subsequent elemental distribution of the synthesized materials was measured by SEM with EDX.