

## THE DEVELOPMENT OF BONE ENGINEERING MATERIALS BASED ON CALCIUM PHOSPHATES

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### **Abstract**

Bone engineering materials are considered a priority in medicine and dentistry. The world market for muscular-skeletal products has been increasing due to the increase in the life expectancy of the population and associated trauma. New alloys for orthopedic prosthesis, nanostructured surface treatments, synthetic or hybrid composites for grafting and tissue engineering are some areas which bring together the fields of materials science, nanotechnology and biotechnology. In our group synthetic grafts based on calcium phosphates, containing substitutions such as magnesium, silicon or strontium are being developed. These materials are in either the granular or tablet form and are physico-chemically characterized, tested “in vitro” (degradation tests and tests with cells) and “in vivo”. Composite scaffolds comprised of hydroxyapatite (HA) or tri-calcium phosphate (TCP) mineral phase and containing bovine collagen, fibroin or chitosan are being developed and characterized. Recently, a bi-layered HA-Chitosan scaffold was proposed for the regeneration of osteochondral defects.

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