UNIVERSITY OF GENOA
DEPARTMENT OF INFORMATICS, BIOENGINEERING, ROBOTICS AND SYSTEMS ENGINEERING
MASTER'S PROGRAM IN BIOENGINEERING

Thesis Project Form

Title (tentative): Design and characterization of hydroxyapatite particles to optimize their performances in term of bone cement

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Description

Motivation and application domain

Calcium phosphates are salts that make up the mineral part of bone. They can also be used as bone cements thanks to their osteoconductive and osteointegration properties. The microstructure plays a fundamental role in improving the properties of cement. For this reason the study and the design of an appropriate microstructure become fundamental in order to improve the osteoconductive performance of the cement.

General objectives and main activities

Onboarding training according to CAM quality management system procedures
Quality control training on XRD, FTIR, laser diffraction, SEM and densitometry
Literature review on calcium phosphate materials for medical applications
Chemical synthesis of calcium phosphates powders
Chemical and physical characterization of the synthesised powders via XRD, FTIR, laser diffraction, SEM and densitometry
Research outcomes reporting and presentation

Training Objectives (technical/analytical tools, experimental methodologies)

Design and develop raw materials for medical devices according to ISO 13485-2016 requirements.
Quality control testing according to relevant ISO and ASTM standards

Place(s) where the thesis work will be carried out: Lab of Materials Engineering (DICCA), Lab R&D of foreign company (Nedherlands)

Additional information

Pre-requisite abilities/skills: Inorganic chemistry, Materials Science

Maximum number of students: 1