



## Preview

# Materials Engineering

Development of glass-based biomaterials

Design, development and characterisation of glass and composite bioactive coatings for arthroprosthesis.

Aim of this job is to design, develop and characterise a new family of novel silicate glass compositions for applications in the biomedical field.

Preparation of glasses used in different forms, e.g. as powder, solid component, coating or porous material in the application of interest particularly focused on

- Glass and bioactive composite coatings for orthopaedic implants and devices
- Bioactive glass based porous scaffolds for tissue engineering

An integrated approach to the application of bioactive glasses in the biomedical field, from materials development to in vitro tests, will be pursued, including also a comprehensive comparison with available biomaterials to highlight the advantages (and possible disadvantages) of bioactive glasses in the different selected applications

## Description

The project will develop new bioglass surfaces for dental implants. These surface will be functionalised with innovative nanostructures; two main different nanostructures will be investigated, the first TiO<sub>2</sub> (anatase) based and the second Hydroxyapatite based. Also combination or opportune doping of these could be in the research programme. New bioglass suitable for osteointegration will be studied and developed with different ranges of phosphates in silicate matrix. The structure of the research programme will be based on the follow steps:

- a) study of new bioglass
- b) new formulation of nanomaterial to functionalize bioglass
- c) caharacterization of a), b) and a)+b) in terms of XRD (hot chamber), SEM FEG, DLS, DSC-DGA contact angles, aging, mechanical resistance, metals releases,
- d) definition of protocols to apply on Ti, Al<sub>2</sub>O<sub>3</sub> and ZrO<sub>2</sub> surfaces for prosthesis
- e) caharacterization of d) in terms of XRD, SEM FEG, DLS, contact angles, aging, mechanical resistance, abrasion phenomena, metals releases
- f) collaboration with other partner inside the project to asses the antimicrobial behaviour and the imoroved osteointegration

## Research Fields

Chemistry - Inorganic chemistry

## Career Stage

Early stage researcher or 0-4 yrs (Post graduate)

Experienced researcher or 4-10 yrs (Post-Doc)

More Experienced researcher or >10 yrs (Senior)

## Benefits

works canteen, vacation days on the base of contract

## Comment/web site for additional job details

Early-stage researchers are those who are, at the time of selection by the host institution, in the first four years (full-time equivalent) of their research careers. This is measured from the date when they obtained the degree which formally entitles them to embark on a doctorate, either in

the country in which the degree was obtained or in the country in which the research training is provided, irrespective of whether or not a

doctorate was envisaged.

"HOW TO APPLY" procedures on

Project Website: <http://www.glacerco.eu/>

e-mail: [glacerco.itn@polito.it](mailto:glacerco.itn@polito.it)

## Requirements

### Required Education Level

<b>Degree</b>	Primary Degree or equivalent
<b>Degree Field</b>	Chemistry

### Required Research Experiences

<b>Main Research Field</b>	Chemistry
<b>Research Sub Field</b>	Biochemistry
<b>Years of Research Experience</b>	1

### Required Languages

<b>Language</b>	ENGLISH
<b>Language Level</b>	Good



### Other job details

#### Job ID

33672190

#### Type of Contract

Temporary

#### Status

Full-time

**Hours Per Week**

39

**Company/Institute**

COLOROBIA ITALIA S.p.A.

**Country**

ITALY

**State/Province**

FLORENCE

**City**

SOVIGLIANA VINCI

**FP7 / PEOPLE / MarieCurie Actions****Research Framework Programme/****Marie Curie Actions**

FP7/People - Marie Curie Actions

**SESAM Agreement Number**

264526

**Company/Institute****COLOROBIA ITALIA S.p.A.**

CERICOL (Advanced Research Laboratory)

Large Company

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16/05/2011

**Application Deadline**

09/05/2011

**How To Apply**

e-mail