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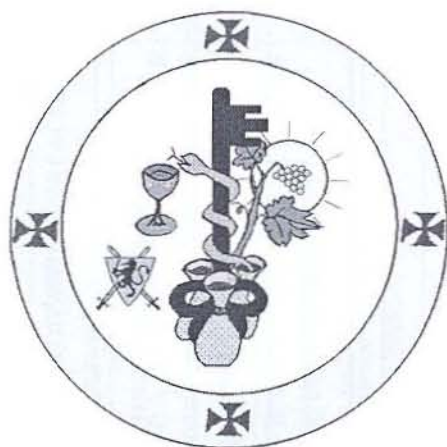


Agenzia Polo Ceramico

# CERAMICS, CELLS AND TISSUES 12<sup>th</sup> Annual Seminar & Meeting

## ABSTRACTS

*Z. J. Cecconi*



Topic of this year:

# *SURFACE-REACTIVE BIOMATERIALS AS SCAFFOLDS AND COATINGS: INTERACTIONS WITH CELLS AND TISSUES*

Congress Hall of BANCA DI ROMAGNA

Via P. Costa, 3 – Faenza - Italy

May 19-22, 2009



Fondazione  
BANCA DEL MONTE  
E CASSA DI RISPARMIO  
FAENZA



International Biomedical Systems

IBS



EXPOSANITA'  
Senaf-Bologna

## **Tailored preparation of nano and micro composites as new controlled bone drug delivery systems**

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Method of homogenous sono-chemical precipitation for obtaining controlled forms of micro/nano particles of desired shapes, size and distribution, and solvent/non-solvent method for obtaining spherical particles of polymer or polymer/ceramics composites with the encapsulated pharmacologically active agent for the treatment of bone tissue pathology, are methods developed in our laboratory for the production of nano and micro ceramic/polymer or polymer composite systems which can be potentially used as controlled bone drug delivery system.

Method of homogenous sono-chemical precipitation, by designing synthesis parameters like temperature, frequency, energy and ultrasonic field regime, and by applying appropriate solvents, enables producing desired forms and particle structures. Through this method calcium phosphate systems can be obtained, but also systems where calcium phosphate particles are coated with bioresorbable polymer with immobilized antibiotic.

Physicochemical synthesis procedure in solvent/non-solvent method consists of initial dissolve of desired bioresorbable polymers and its homogenization, followed by encapsulation of the desired agents. Already produced pharmaceutically active compounds (ascorbic, folic acid, peroxidase, antibiotics, autologous plasma, etc.) can be encapsulated or different calcium phosphates used as fillers for the defected bone tissue.

Micro, submicro and nano sized particles in deagglomeration form, optimal for the advanced application in bone engineering, are obtained through these preparation methods.