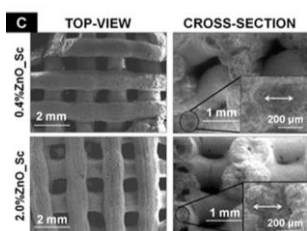
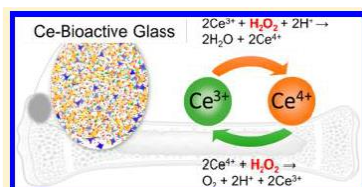
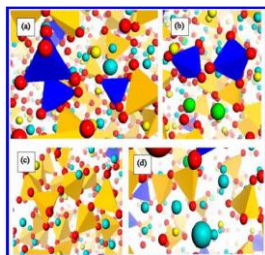


Smart Biomaterials

Erika Ferrari, Gigliola Lusvardi, Gianluca Malavasi, M. Cristina Menziani, Alfonso Pedone, Alfonso Zambon



CONTACTS

Prof. Gigliola Lusvardi
gigliola.lusvardi@unimore.it

Tel. +39 059 205 8549

Prof. Gianluca Malavasi

gianluca.malavasi@unimore.it

Tel. +39 059 205 8552

Our research focus is on the synthesis and study of biomaterials such as:

- bioactive glasses doped with essential elements;
- metal nanoparticles embedded into ceramic bioactive matrix;
- mesoporous scaffolds;
- bioactive glasses functionalized by organic molecules;
- drug delivery systems (DDS).

The activities of the group members entice:

- synthesis of biomaterials with tailored properties through traditional (melting) and innovative (sol-gel, EISA, thermal reduction and impregnation) methods;
- *in vitro* bioactivity tests in simulated body fluids: leaching tests and evaluation of element concentrations (ICP-EOS, ICP-MS);
- evaluation of functionalization (ICP-EOS, ICP-MS, FT-IR);
- characterization of biomaterials by qualitative and quantitative (Rietveld) X-Ray diffraction, thermal analysis (TG/DTA and DSC in different atmospheres), FTIR and UV-Vis-NIR spectroscopy, electron (SEM and TEM) and atomic (AFM) microscopy, elemental (CNHS) analysis, chemisorption/physorption;
- computational characterization of structural, dynamical and spectroscopic properties by using classical and quantum mechanical based methods.

COLLABORATIONS

The group members are involved in several projects and collaborate with well known national and international groups:

- Dr. A. Anesi (University of Modena and Reggio Emilia): *in vivo* tests on bioactive glasses
- Prof. Delia Brauer (University of Jena, Germany): synthesis and characterization of bioactive glasses
- Dr. T. Charpentier (Commissariat à l'Energie Atomique, IRAMIS): structural characterization by means of solid state NMR spectroscopy
- Prof. A. N. Cormack (Alfred University, NY, USA) modelling of mechanical properties
- Dr. C. Imbriano (University of Modena and Reggio Emilia): cytotoxicity tests toward tumor cells on bioactive glasses loaded with drugs (DDS)
- Prof. G. Martra (University of Turin): spectroscopic characterization of biomaterials
- Prof. P. C. Mustarelli (University of Pavia): NMR characterization
- Prof. A.J. Salinas and Prof. M. Vallet-Regi: preparation and characterization of bioactive mesoporous gel glasses and scaffold for regenerative bone tissue
- Dr. A. Tilocca (University College of London, UK): CPMD simulations
- Prof. P. Ugliengo (University of Turin): Modelling of Bioglass surfaces