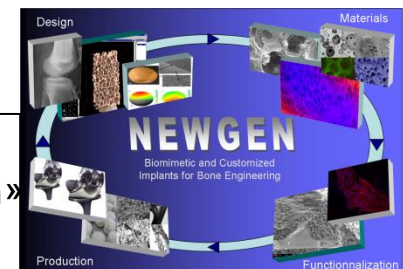




- **Complete denomination:** Biomimetic and Materials Chemistry Group
- **Location (city, country):** Department of Chemistry « G. Ciamician »
University of Bologna – ITALY – <http://www.ciam.unibo.it/biomimetic>
- **Director:** Prof. Adriana Bigi
- **Contact person in NEWGEN:** Dr. Elisa Boanini
- **Working Group involvment:** WG1
- **Staff:** 4 research staff, 3 under-contract, 1 PhD student.
- **Research topics:** Calcium Phosphates Bioceramics and Composites
- **Researchers expertises:** Biomimetic crystallization and structural analysis; crystallographic approach to the development of biofunctionalized nanocrystals, calcium phosphates-based coatings and bone cements.

BiomMatChem

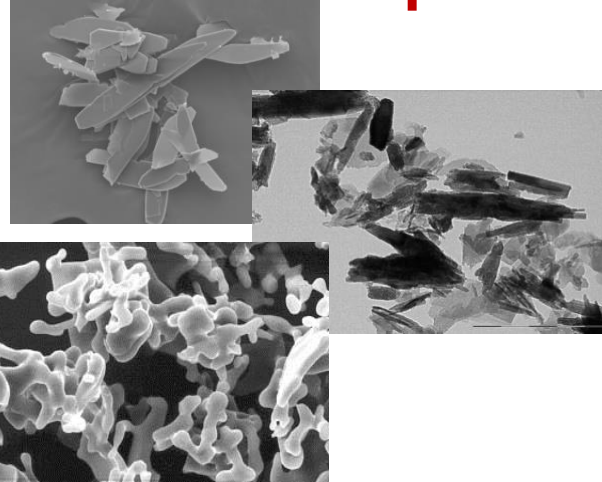
Department of Chemistry «G. Ciamician»
Via Selmi, 2
40126, Bologna- ITALY



COST Action MP1301

Functionalization of calcium phosphates crystals

- Octacalcium phosphate -OCP
- Hydroxyapatite -HA
- Alpha and Beta Tricalcium phosphates - α - and β -TCP



Close control of
stoichiometry and
purity.

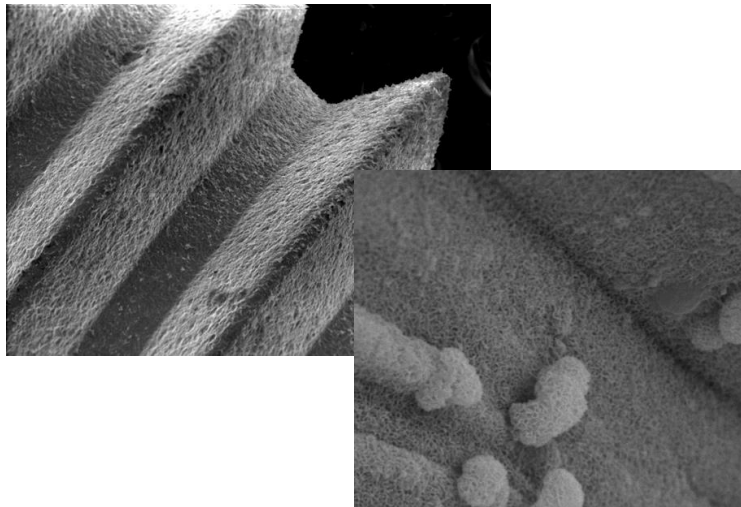
Expertise in the preparation and functionalization with ions, molecules and macromolecules of biological interest:

- Strontium, Magnesium, Manganese...
- Aminoacids and poly-Aminoacids (aspartic/glutamic acid)
- Bisphosphonates (alendronate, zoledronate...)

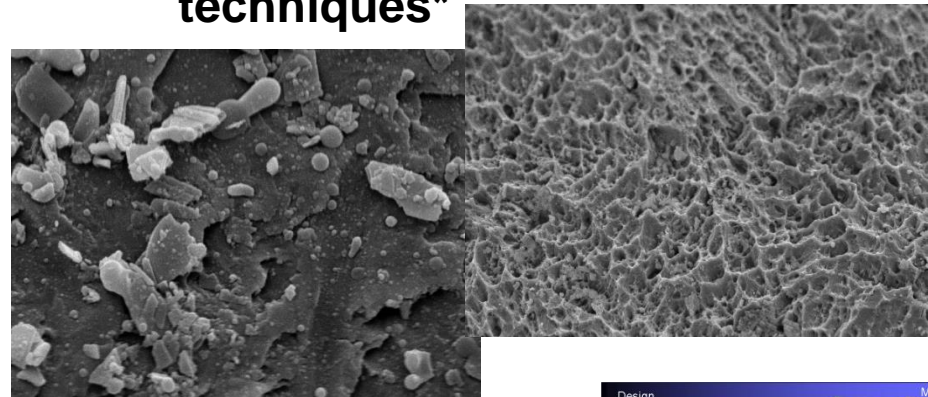
Calcium phosphate coatings

Functionalization with **ions, molecules** and **macromolecules** of **biological interest** of

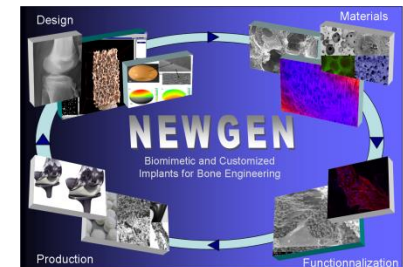
➤ **Biomimetic coatings**



➤ **Coatings of modified hydroxyapatite or octacalcium phosphate deposited with physical techniques***



*in collaboration with
INFLPR - Romania

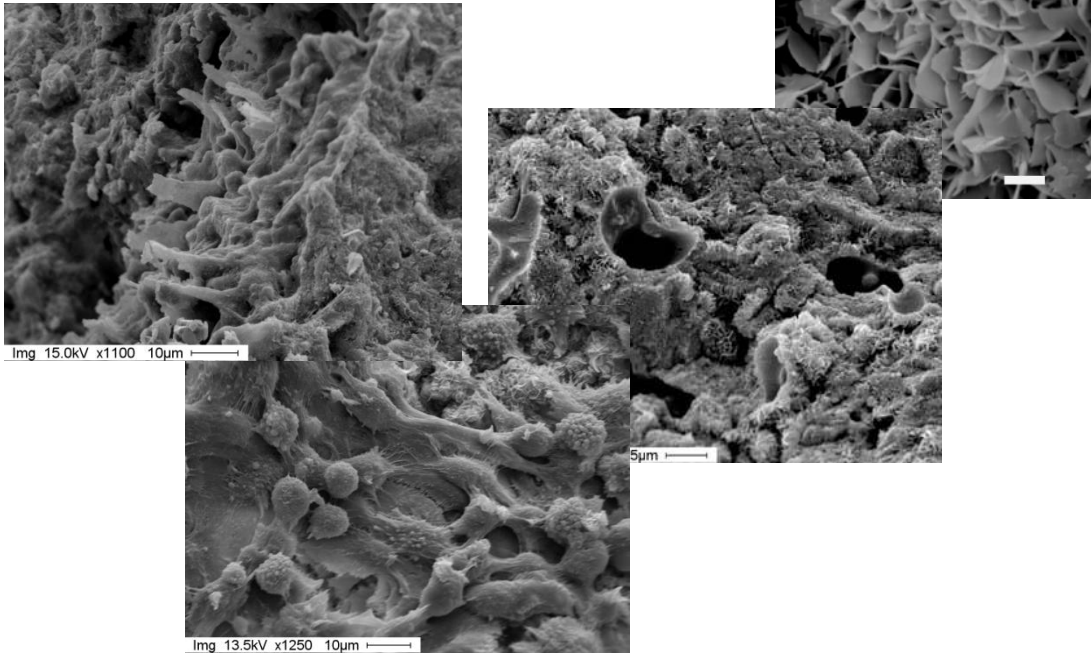


COST Action MP1301

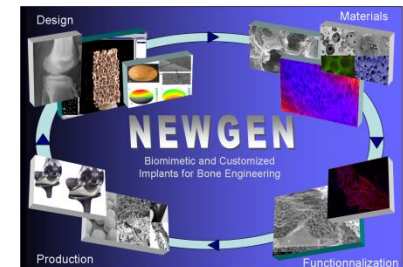
Calcium Phosphates Bone Cements

Synthesis of Bone Cements enriched with:

- **Fibers and Nanofibers, Biologically Active Molecules, Substituted Hydroxyapatite**



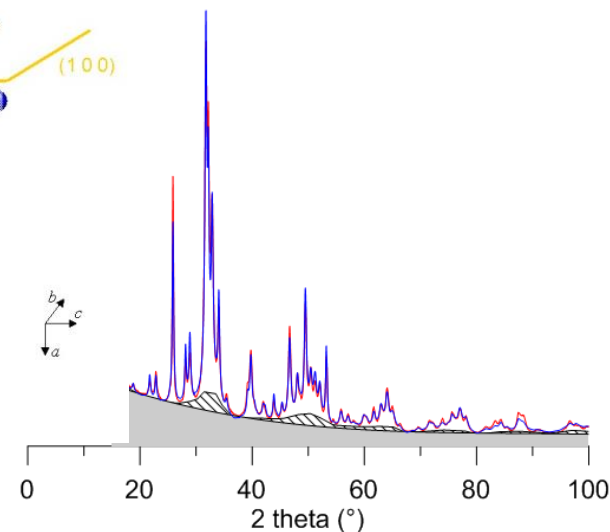
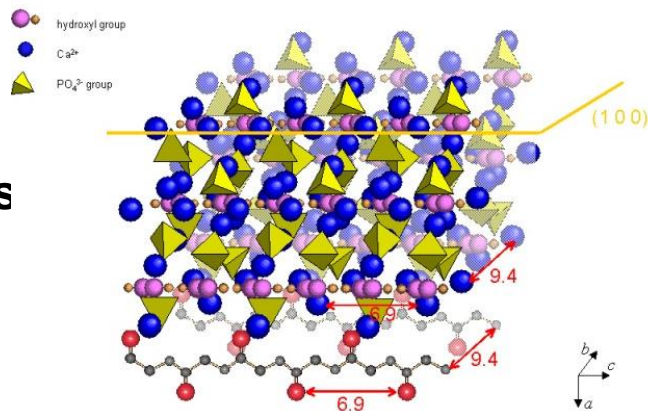
- Synthesis and characterization of **Injectable Bone Cements**



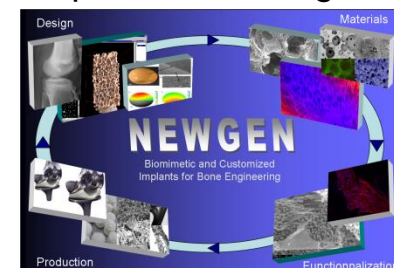


Structural analysis of crystalline powders and coatings

Crystallographic studies of modified calcium phosphates using X-Rays diffraction methods.



Effect of polyelectrolytes, polymers, drugs and isomorphous substitutions on the structure and relative stability of calcium phosphates of biological interest.



Other Characterisation Techniques for powders and coatings

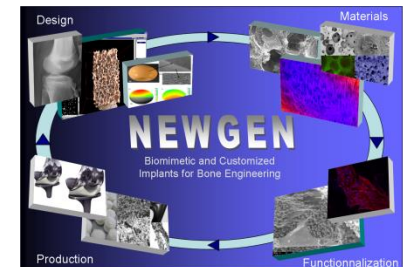
➤ Morphology (SEM-EDAX, TEM-ED, AFM)

- FT-IR/ATR, UV-vis spectrophotometry
- Specific surface area (BET)

➤ Chemical analysis



➤ Thermal analyses
(TGA, DSC)



Characterisation of scaffolds and cements

Physical: porosity, contact angle, morphology

Chemical and structural: SEM, TEM, X-Rays Diffraction, Atomic Force Microscopy.

Mechanical : tensile test, compression test.

