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GENERAL PRESENTATION

- **Complete denomination**: Riga Technical University, Institute of General Chemical Engeneering, Rudolfs Cimdins Riga Biomaterials Innovations and Development Centre
- **Location (city, country)**: Riga, Latvia
- **Director**: Dr. Dagnija Loca
- **Contact person in NEWGEN**: Dr. Janis Locs – janis.locs@rtu.lv
- **Working Group involvment**: WG1 (K.Salma-Ancane), WG2 (J.Locs), WG3 (D.Loca)
- **Staff**: 20, including 6 PhD students.
- **Research topics**: Synthesis of CaP materials, preparation of porous and dense ceramics, drug delivery systems, synthesis and characterization of CaP cements, CaP/biodegradable polymer composites.
- **Researchers expertises**: chemical engeneering – synthesis and upscaling of CaP materials, drug delivery systems…

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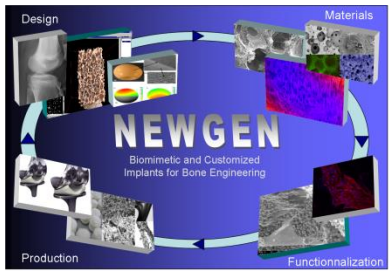
Riga Technical University
Pulka street 3/3
LV-1007, Riga - LATVIA



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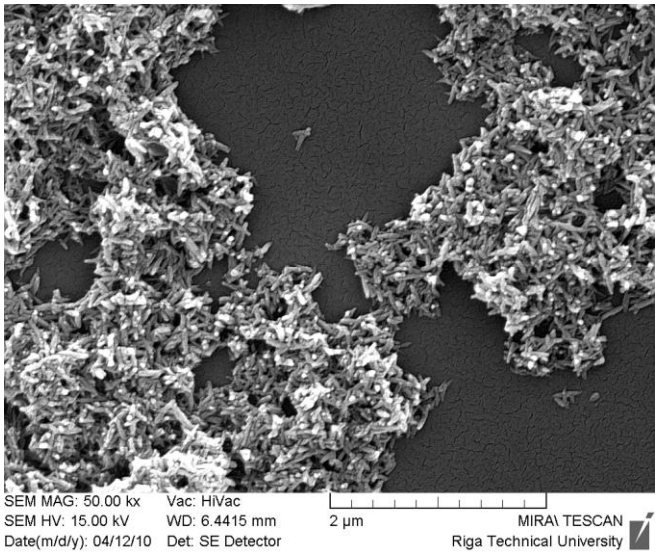
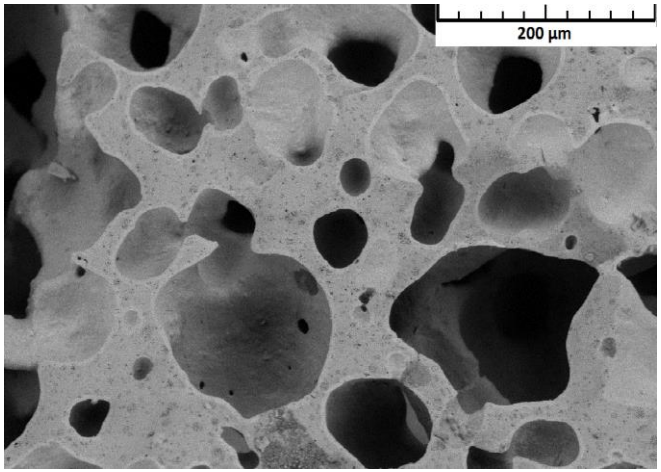
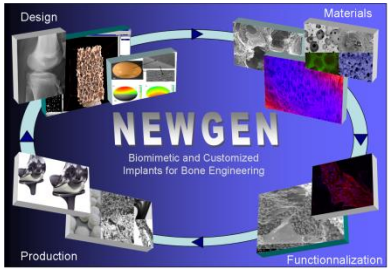
Synthesis of Raw Materials and Ceramics



- CaP particles in size from 10 to 20 nm with variable Ca/P ratio from 1,50 to 1,67.
- Obtaining of pure or biphasic TCP/HAp ceramics after calcination.
- Bach size 1 kg.
- Synthesis of α-TCP for manufacturing of CaP cements.

- Synthesis of substituted CaP.
- Preparation of drug delivery systems based on porous CaP ceramics.
- Synthesis of biocompatible Nb containing glass ceramics.





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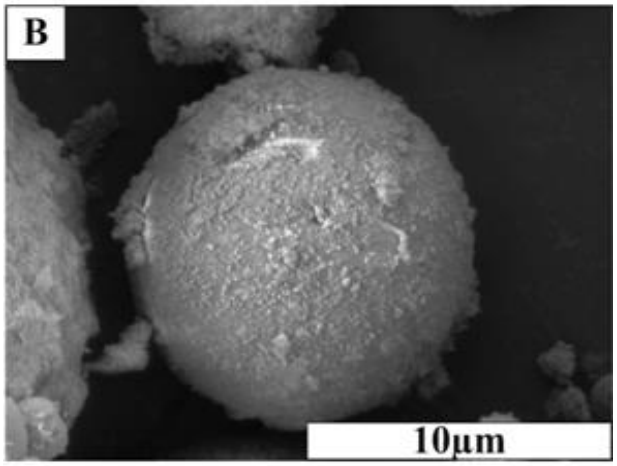
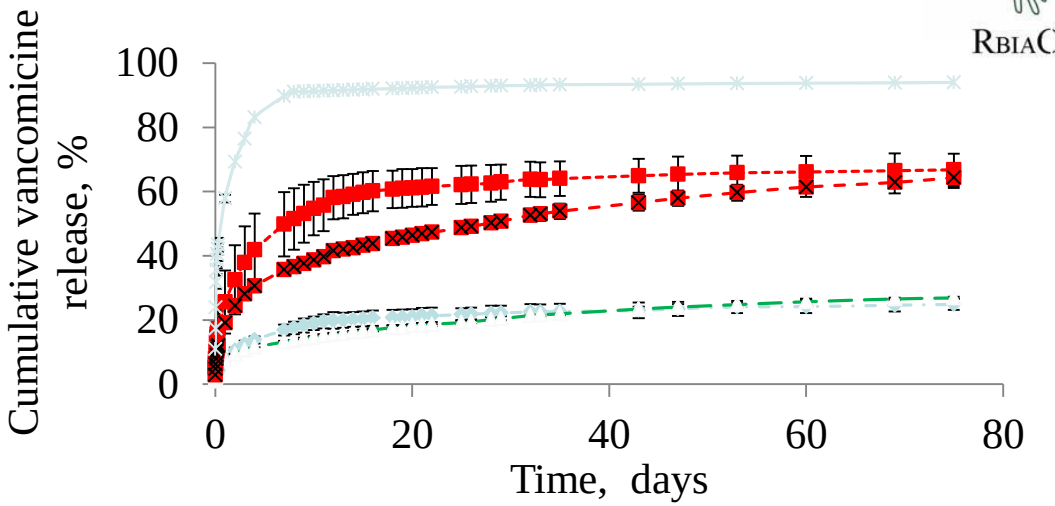
Drug delivery systems

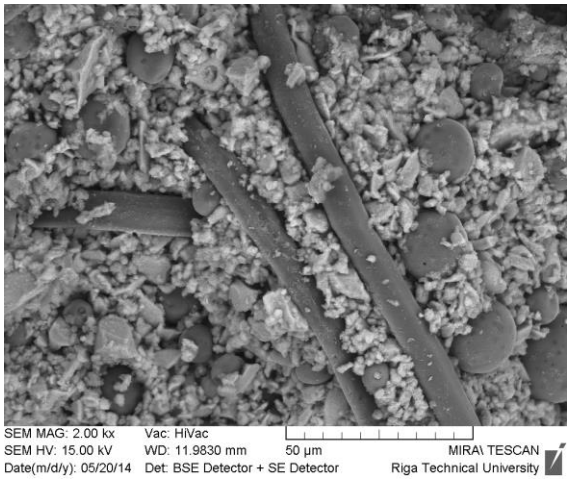
RBIAC

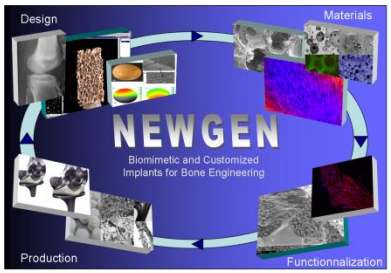


CaP nanoparticle coated and drug loaded biodegradable polymer microcapsules



CaP cement, reinforced with biodegradable fibers and loaded with drug elutingmicrocapsules





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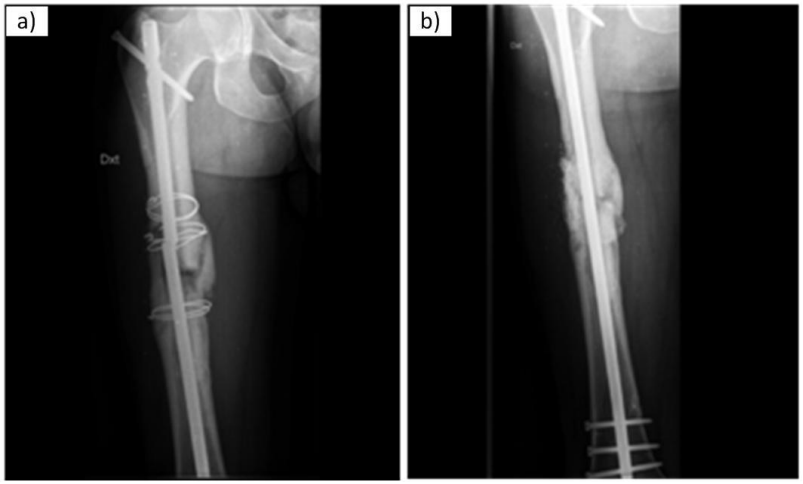
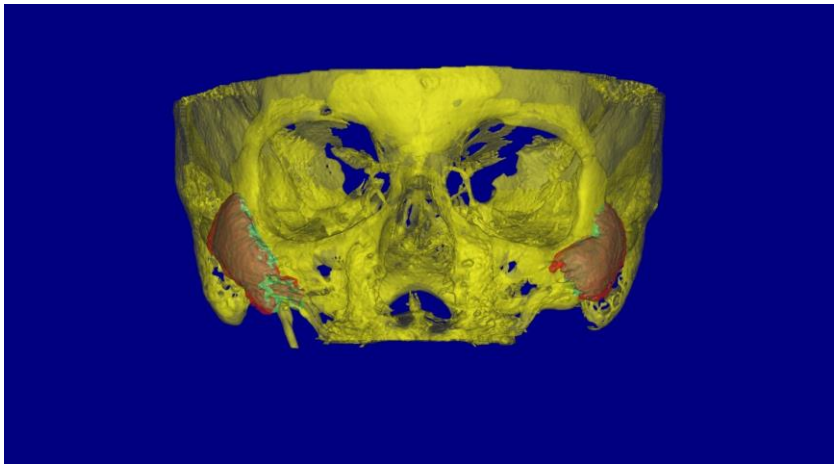
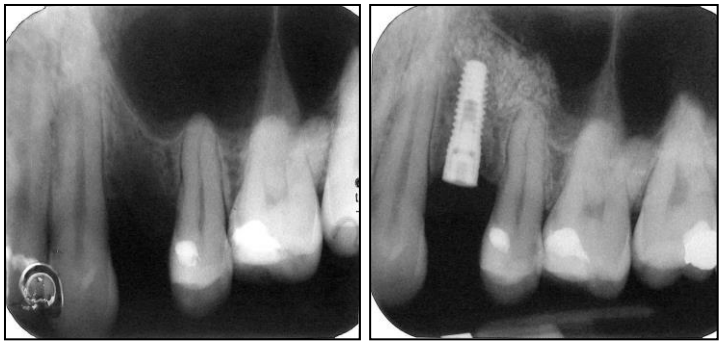
Applications of biomaterials



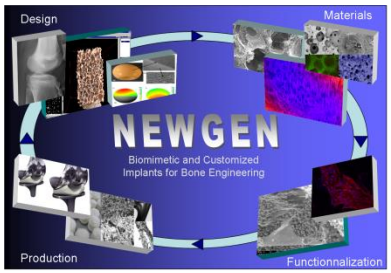
Orthopedic surgery



Cosmetic/maxillofacial surgery



Maxillofacial surgery



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FACILITIES

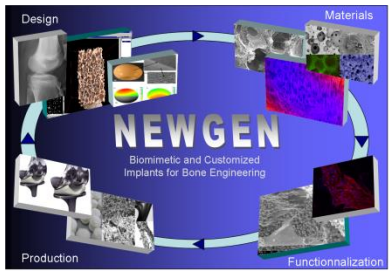
Synthesis (powders): multiple scale reactors, parallel titration systems, glass synthesis furnace.

Shaping methods:

- Uniaxial pressing, izostatic pressing up to 0,5 GPa, foaming, spry drying, freeze drying of water and organic solvents.
- Densification: sintering under controlled atmosphere and vacuum.

Characterisation:

- **Physical and mechanical:** Sintering kinetics (high temperature microscope), specific surface area (BET method), laser granulometry, viscosimetry…
- **Chemical and structural:** XRD, FTIR , UV-visible spectrometer, FE-SEM, TDA, UPLC chromatography…



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