

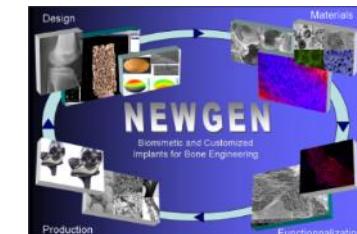
GENERAL PRESENTATION

- **Complete denomination:** Physical Metallurgy Laboratory, Dept. of Mechanical Engineering, Aristotle University of Thessaloniki
- **Location (city, country):** Thessaloniki, Greece
- **Contact person in NEWGEN:** Prof. Nikolaos MICHAILIDIS
nmichail@eng.auth.gr
- **Working Group involvement:** 1, 2, 3
- **Staff:** 3 Academic Personnel, 3 assistants, 4 Post Doc researchers, 12 PhD Students, 10 Students working on diploma thesis
- **Research topics:** Production and characterization of porous materials and scaffolds (metallic, ceramic, polymeric and composites) • Biosynthesis of noble metals Nanoparticles • Rapid prototyping of metallic-ceramic-polymeric-composite materials • Surface Engineering and Coatings • Corrosion and Protection of Materials • Materials' mechanical properties characterization and modelling • Bio-engineering (testing and modelling)
- **Researchers expertises:**
Corresponding to research topics.



Name/Acronym

Aristotle University of Thessaloniki
University Campus
54124, Thessaloniki-GREECE



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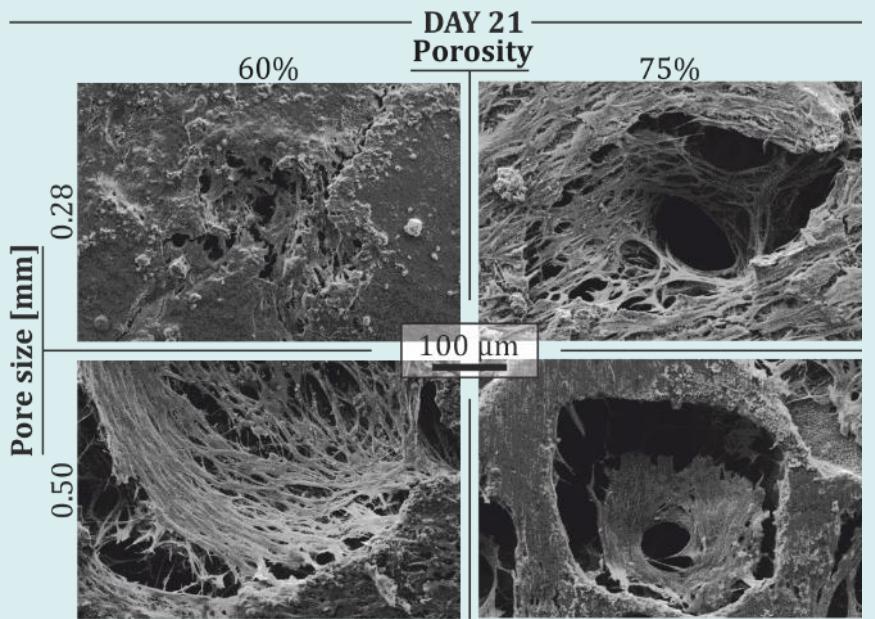
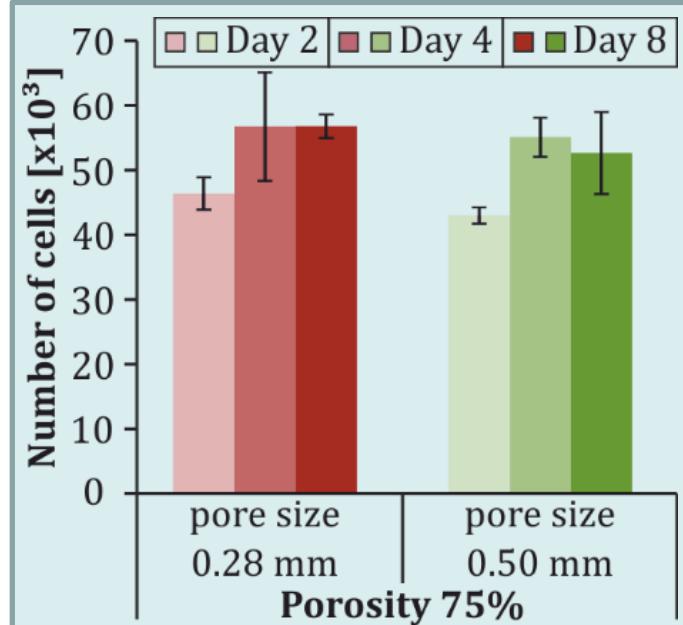
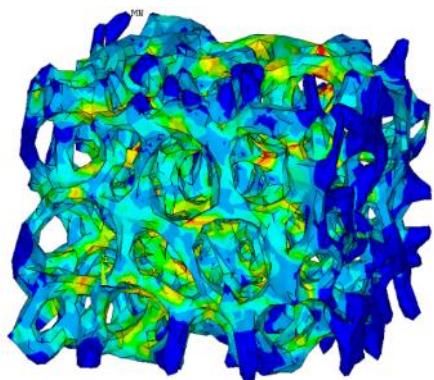
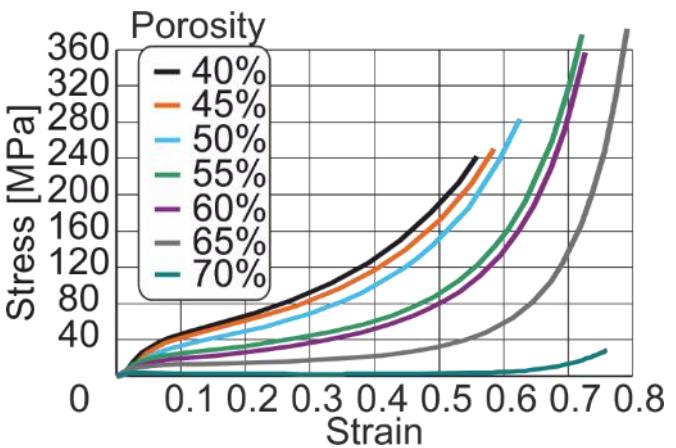
PML – Porous materials



Metal foam



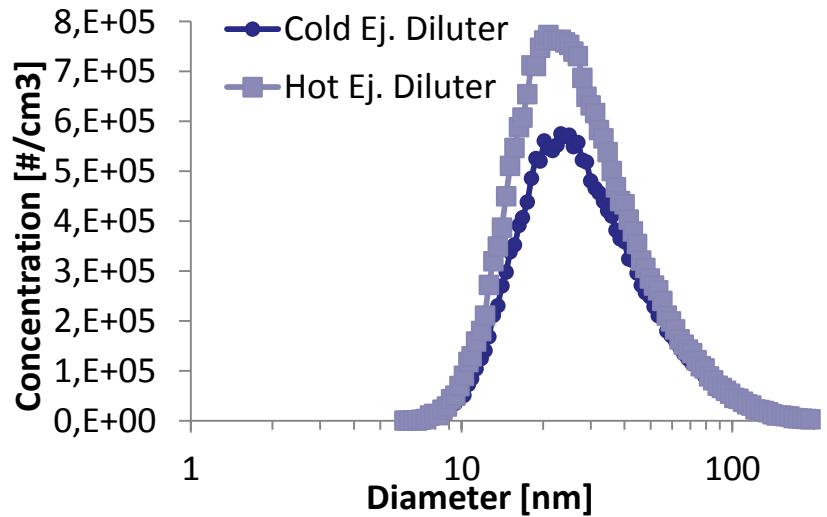
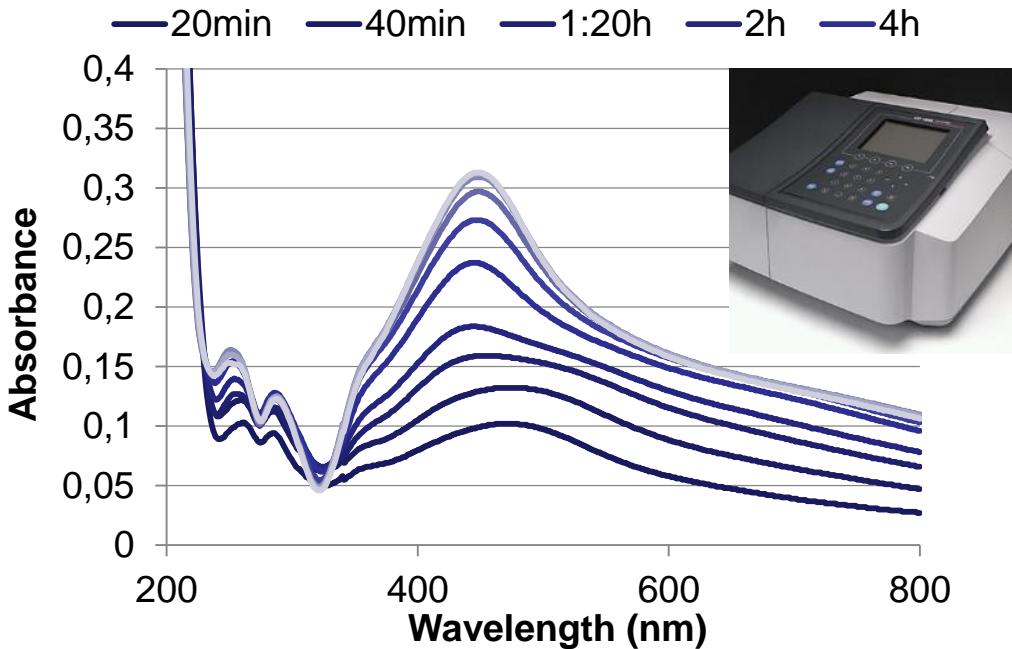
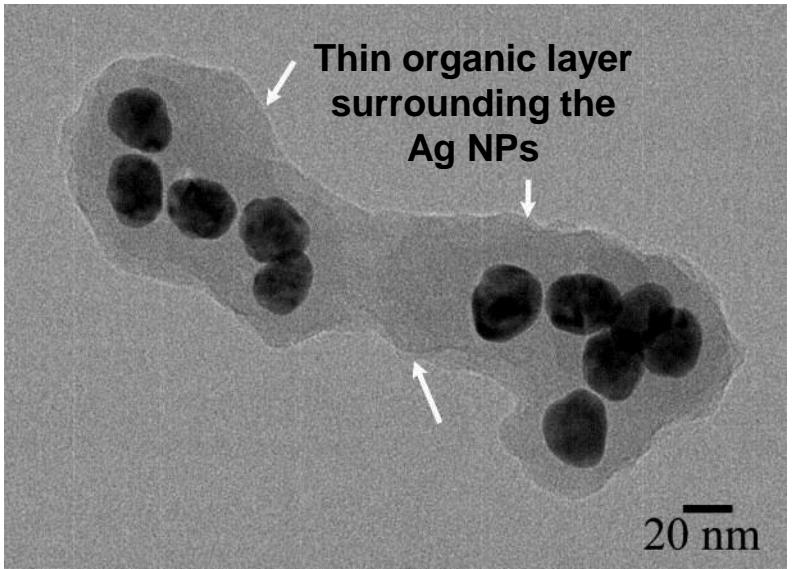
HAp foam



Cell growth investigations

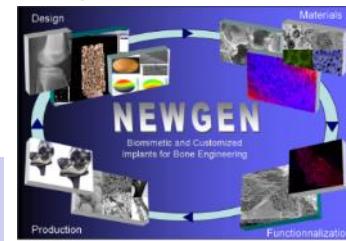


PML – Nanoparticles processing



Advantages:

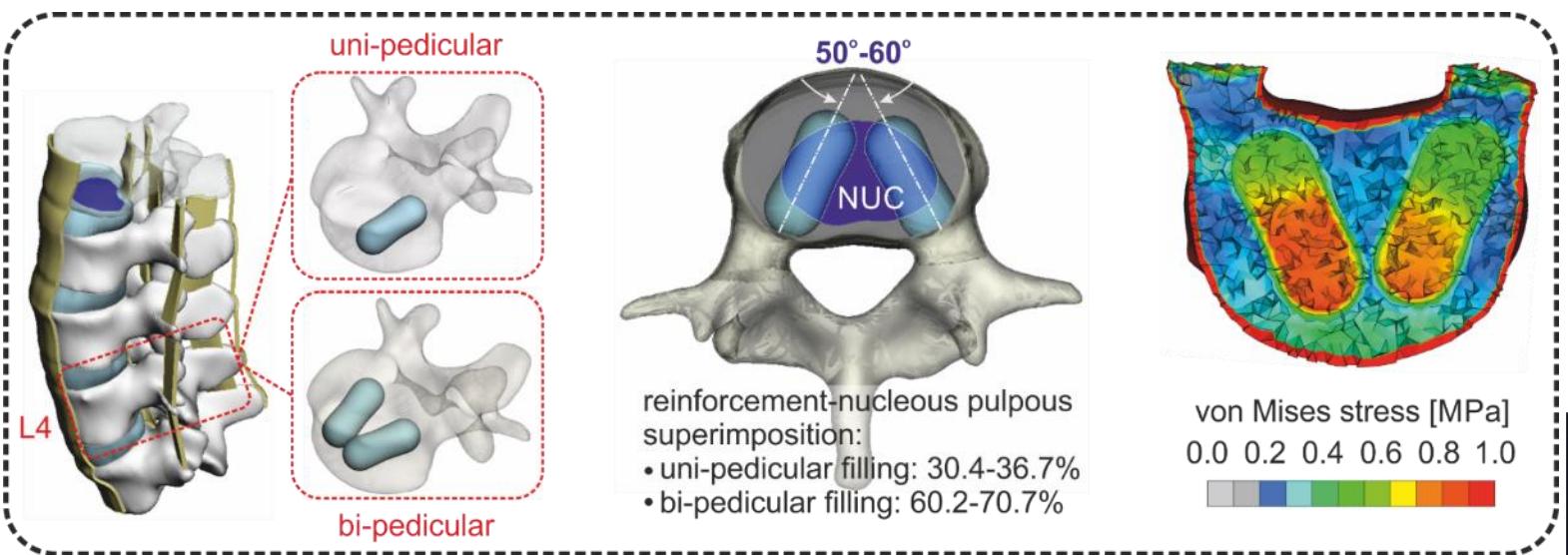
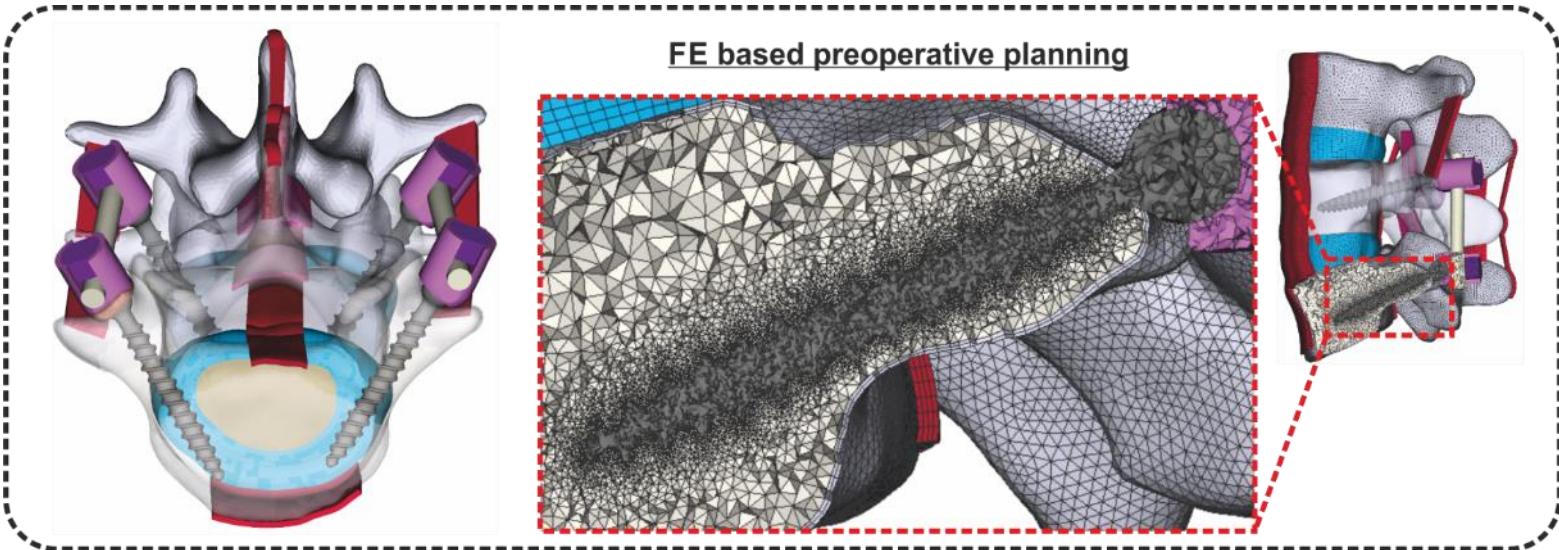
- Long-term stability
- Low toxicity
- Controllable size and shape
- High Repeatability-Reproducibility
- Cost-effective



Biosynthesis of noble metal nanoparticles

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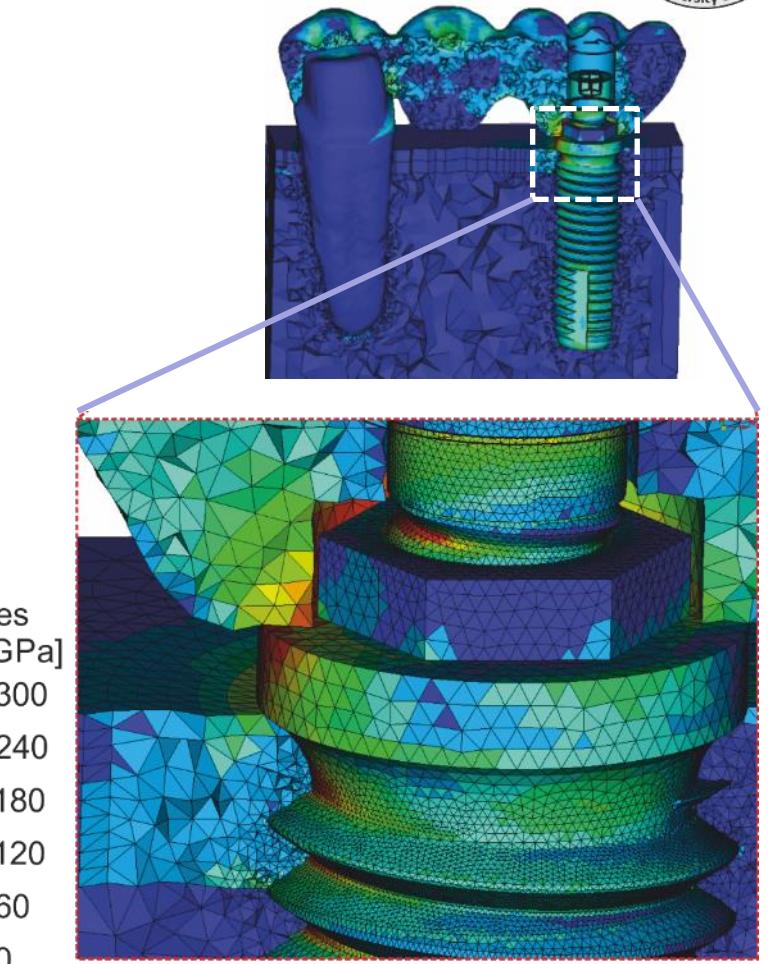
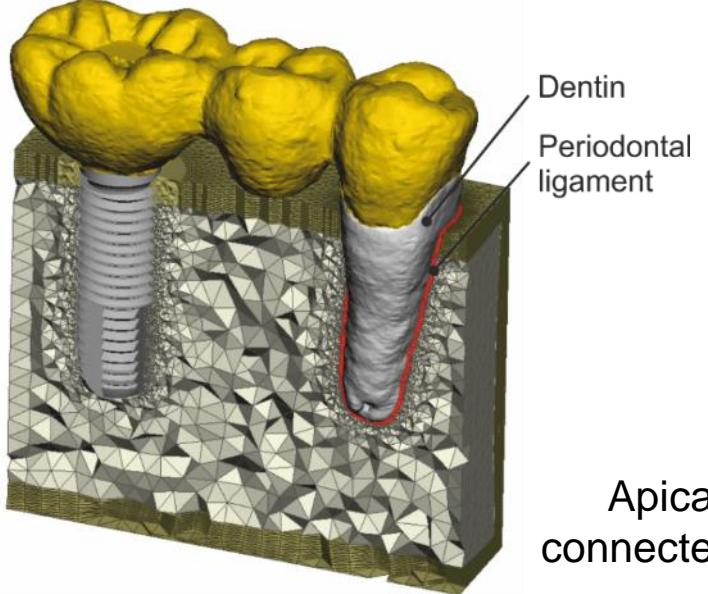
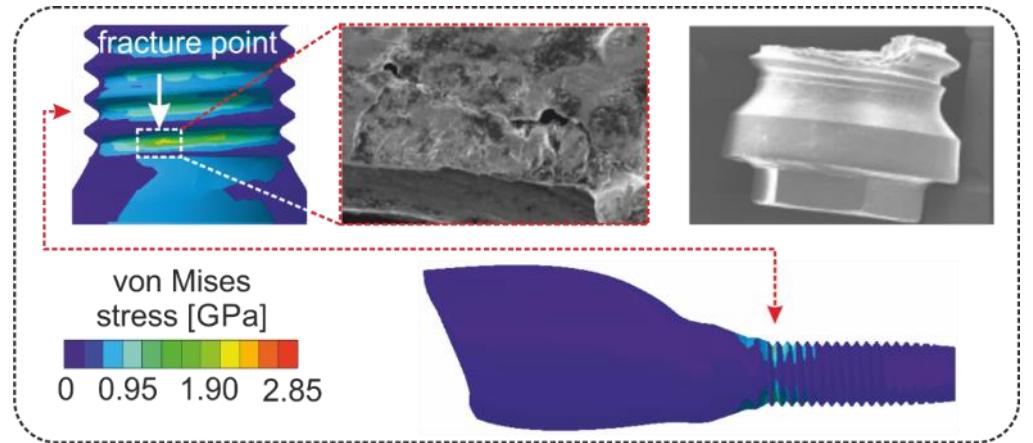
PML – Bioengineering



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PML – Bioengineering

Failure induced by peri-implant bone resorption



Apical migration of a natural tooth connected to an osseointegrated implant

PML – Rapid prototyping



EOS FORMIGA P 110



EOSINT M 280



Building volume: 200 mm x 250 mm x 330 mm

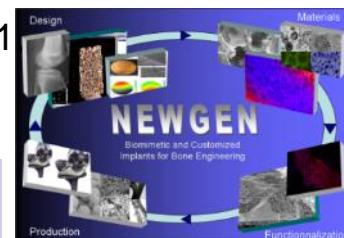
Materials: PA 2200, PA 3200 GF, PrimeCast 101, PrimePart DCTM (Ductile material)

250 mm x 250 mm x 325 mm

Titanium Ti64, NickelAlloy IN718, Aluminium AlSi10Mg, MaragingSteel MS1, StainlessSteel GP1, StainlessSteel PH1, CobaltChrome MP1

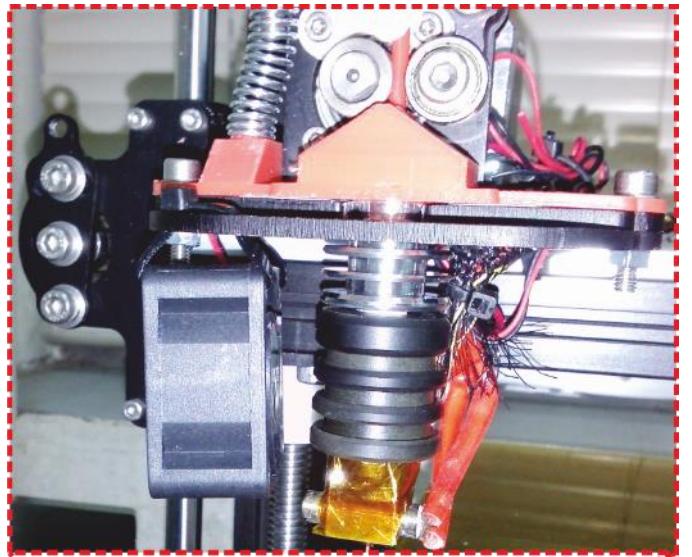


Rapid prototyping: laser sintering of metallic and plastic parts

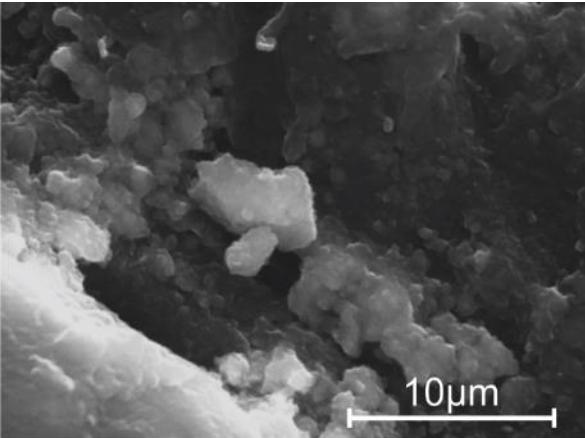


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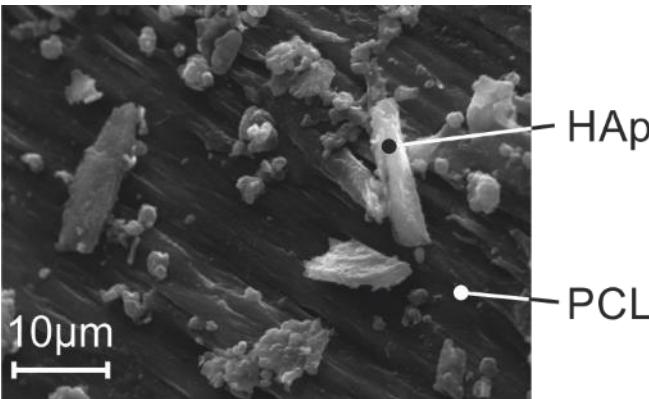
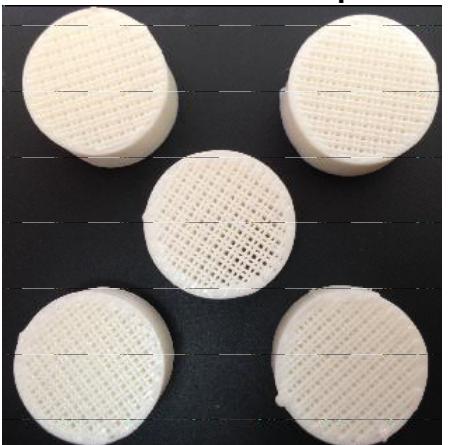
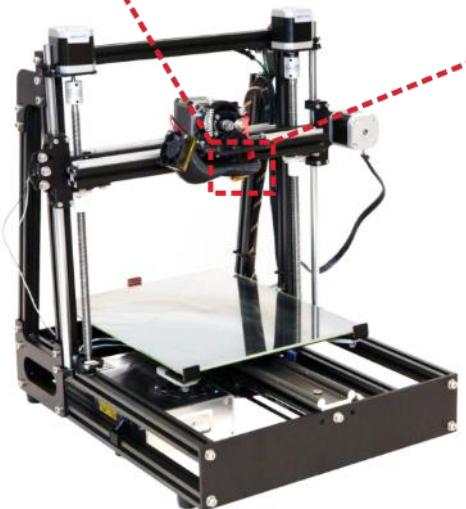
PML – Rapid prototyping



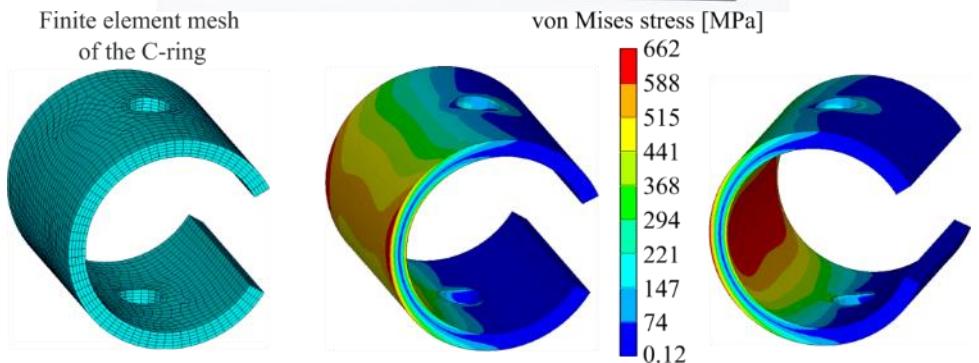
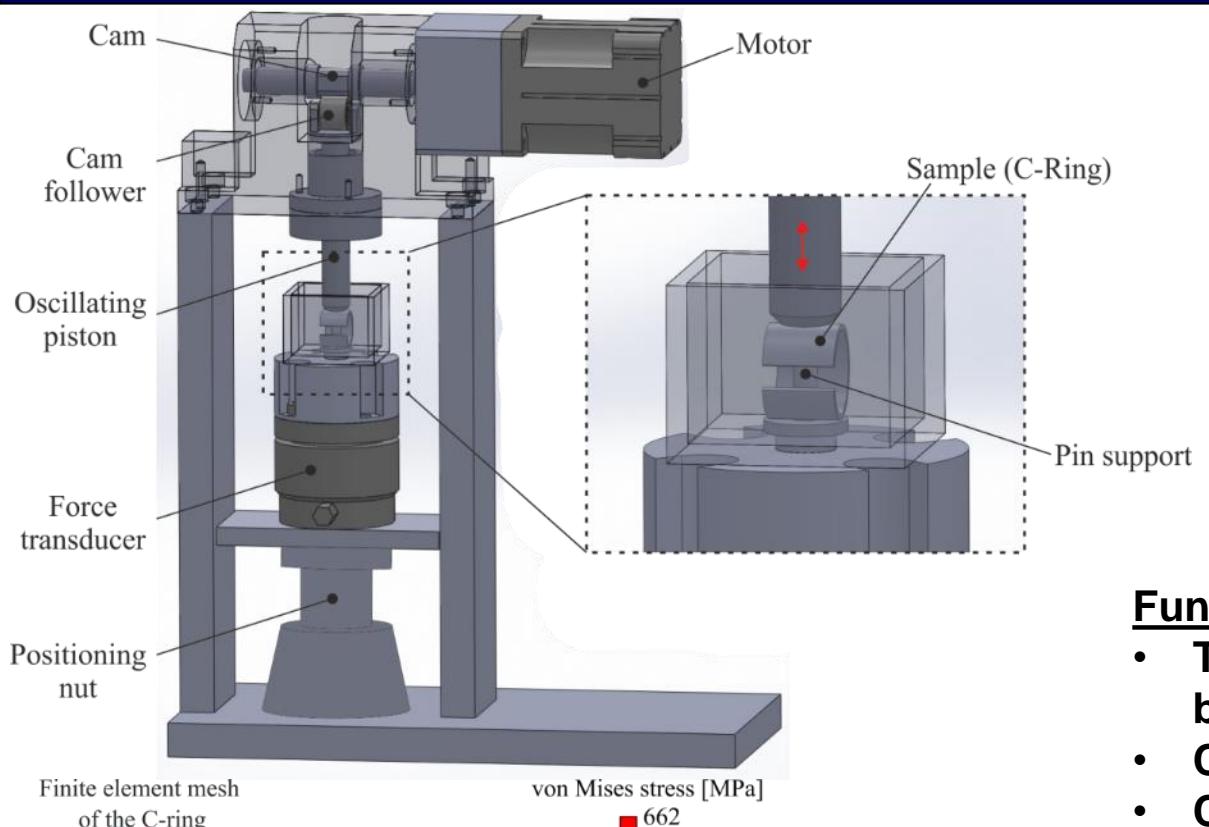
Customized
extruders



RP-fabricated composites



PML – Corrosion fatigue



Functions:

- **Testing of implants in simulated body fluids**
- **Corrosion in any etching solution**
- **Cyclic immersion**
- **Adjustable force signal**
- **Adjustable frequency**
- **Thermal cycling**

