

## Sonochemical technology for bioactive bone regeneration scaffold production

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Nanotechnology offers great opportunities for radical improvements in regenerative medicine. We present results of sonochemical methods for radical improvement of the scaffolds for bone regeneration.

According to “Sonosca” Project, two kinds of porous scaffolds  $\beta$ -TCP and PCL were elaborated as bone implants. In the framework of the project, unique coating method was developed and used to coat the surface of bone implants with GoHAP nanopowder [1]. Laboratory of Nanostructures have demonstrated that sonochemical coating method is effective in view of process rate, low temperature and use small amount of nanopowder. Sonochemical coating has been used according to P.412238 patent application.

In vitro test revealed that coated scaffolds with GoHAP nanopowder in comparison with non-coated implants increase cellular activity by 3x on implant surface. In vivo investigations of three month experiment, New Zealand rabbits revealed significant acceleration of bone regeneration for GoHAP coated scaffolds of  $\beta$ -TCP and PCL. In addition, coating of GoHAP nanopowder reduces the occurrence of inflammation around the implant in the area of implantation and induces substantial improvement in biocompatibility and bioactivity of polymer and ceramic implants.

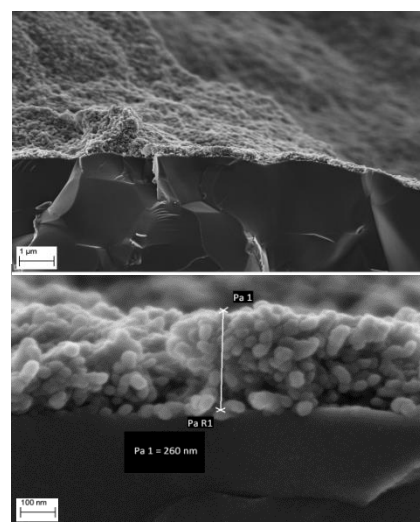


Fig 1. Coated surface of  $\beta$ -TCP scaffold with GoHAP nanopowder

### References

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