

# BIOMATERIALS WITH FUNCTIONAL GRADIENT USED FOR THE ENDOBONE PERSONALIZED IMPLANTS

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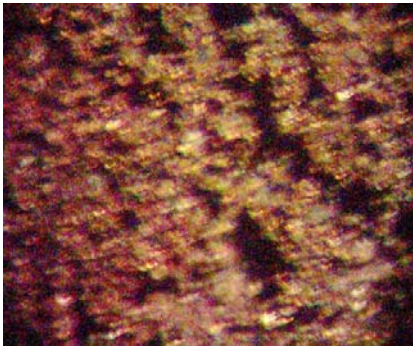
**Abstract:** The functionality of biomaterials must assure a good osteointegration of endobone implants used for the maxilo-facial implants.

Materials must present a gradient for porosity and one for composition (presents of a bioactive phase in titan matrix).

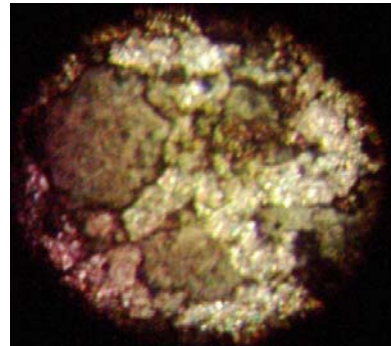
The exterior porosity, in the contact zones with the bone tissue, favors the incipient cellular processes (the adhesion and attachment of osteoblastes, proliferation and cellular differentiation and nucleation of mineral bone). The pores must be open and with a specific surface more great. It's preferred the exterior intercommunicating porosity.

## 1. Titan powders

The interior of implant what is not in contact with the tissues must have a sufficient mechanical resistance to assure the mechanical stability of implant in organism. On used titan powder for the probes. The optimal dimension is 150  $\mu\text{m}$ . In the case when the contact zone is viable, the cells extend the contact surface greating. (fig.1)



*Fig.1. Probe of titan sinterised, the powder granulation >100 $\mu\text{m}$ , frontal surface (x50)*



*Fig.2. Composite Ti – 5% HA, 400 MPa (x50)*

## 2. Composite Ti-hidroxyapatite

On use a material of implant with bioactive comporment in the bone tissue, having a matrix of titan and hidroxiapatite particles.

### Bibliography:

- 1) Berce P. si altii: -Fabricarea Rapidă a Prototipurilor- Editura Tehnică, București 2000;
- 2) Ratner Buddy D. si altii- Biomaterials Science – An introduction to materials in medicine –Academic Press, 1996;