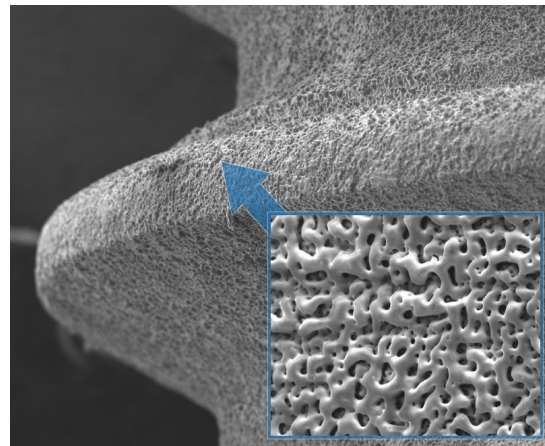


## NANO ACTIVE SURFACE<sup>®</sup> Implant surface topography & osseointegration

The surface undergoes an electrochemical process of Anodic Oxidation increasing the thickness of the implant's natural layer of titanium oxide. This generates a new biomaterial Nova Active Surface<sup>®</sup>, providing an especially porotic surface and several features: it is gray, with a titanium oxide layer that has a high level of crystallinity and phosphorus content.

Its microscopic topography does not display sharp features, but rather open pores, consistently distributed.

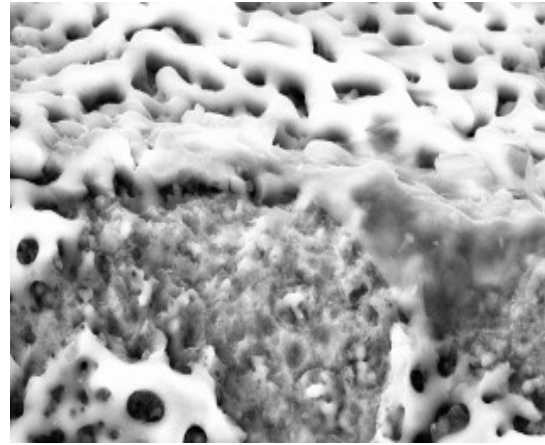
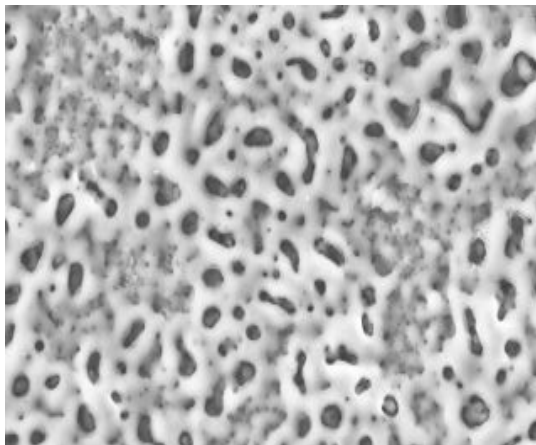
Pore dimensions 1-10 $\mu$ m



### Biological Reaction

Osteogenesis is based on the osteogenetic cells that proliferate on the Nova Active Surface<sup>®</sup> and develop into osteoblasts that secrete a non-calcified bone matrix. Following an apposition process, it calcifies and settles directly on the Nova Active Surface<sup>®</sup>.

The osteoblast is a polarized cell, thus creating a collagen bone matrix perpendicular to the Nova Active Surface<sup>®</sup>, penetrating all of the pores and providing a strong bone anchoring to the surface (high BIC).



## **NANO ACTIVE SURFACE<sup>®</sup>**

### **Advantages**

#### **Rapid osseointegration**

The implant's initial stability is generated by the mechanical locking of the screws themselves regardless of surface features. Surface qualities are very important for maintaining mechanical stability, mainly for the soft bone and for immediate loading. The biological factors determine and retain implant stability, so that the implant surface supports the bone's biological healing process.

Nova Active Surface<sup>®</sup> induces osseogenesis on the surface, thus accelerating and strengthening osseointegration, as compared to a machined surface.

#### **Osseointegration**

The Nova Active Surface<sup>®</sup> layer enables bone growth directly on the surface, whereas the bone in the machined option only undergoes apposition from the osteotomic region.

Histological tests showed that the bone responds faster to Nova Active Surface<sup>®</sup> where osseogenesis follows the screw outline in the initial healing stages => higher BIC, earlier.

#### **Maintaining the implant's mechanical stability**

During Week 1 of post implantation healing, the mechanical relaxation of the bone and the remodeling around the implant might impair implant stability and risk its success, mainly in areas of soft bone under heavy occlusal loading. The quick and strong osseointegration achieved with Nova Active Surface<sup>®</sup> maintains mechanical stability during healing.



**NOVA** IMPLANTS

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