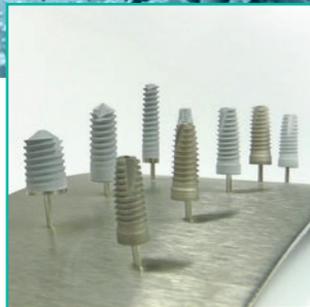
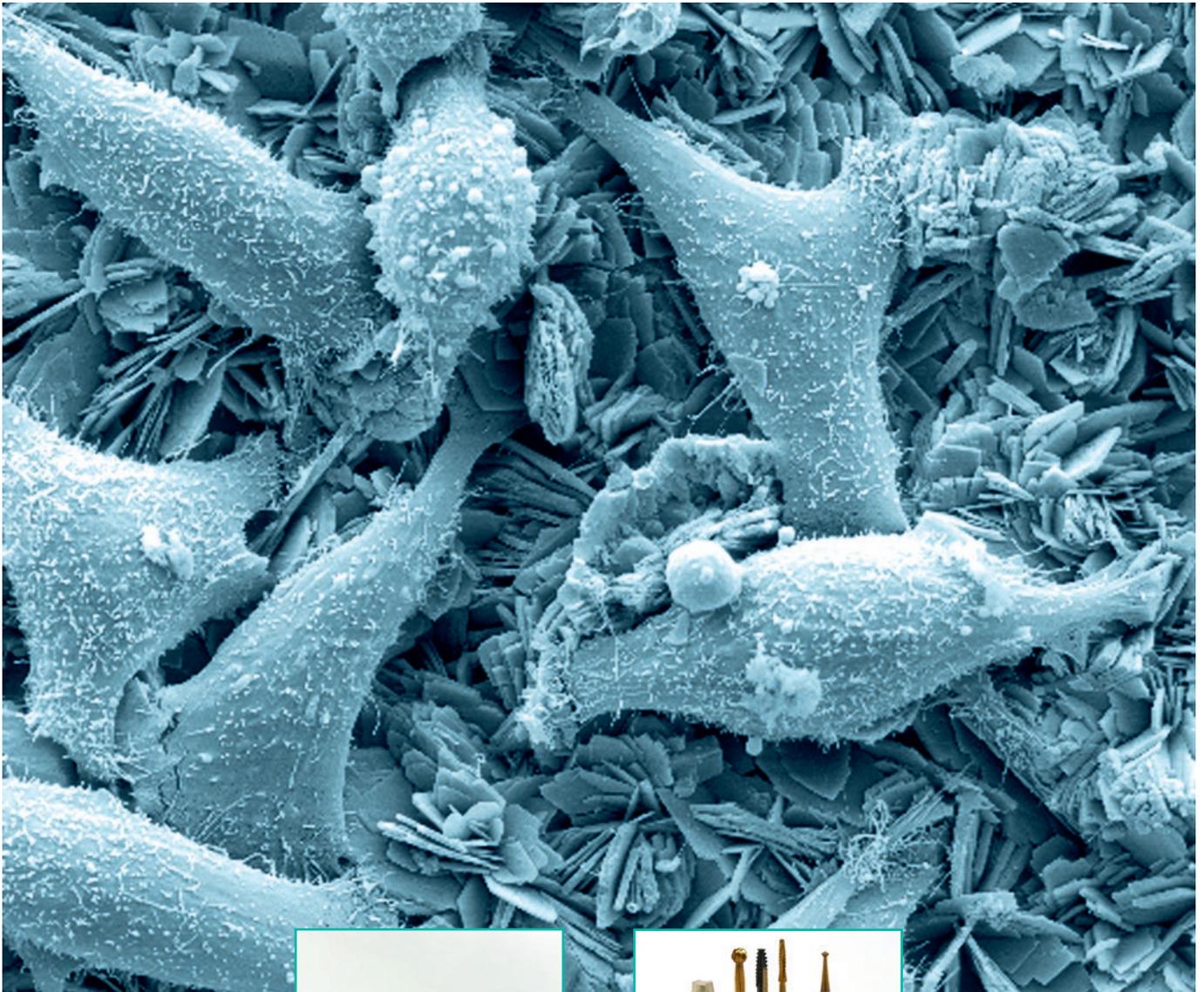
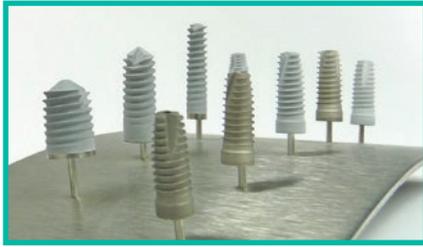


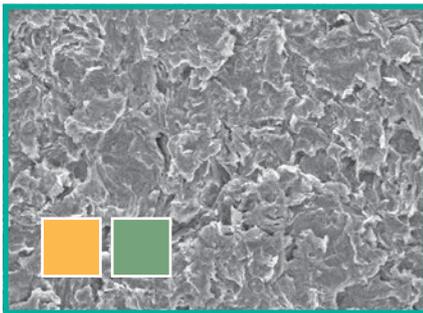
Innovative Surface Treatments for Dental Implants and Instruments



Surface Treatment Options



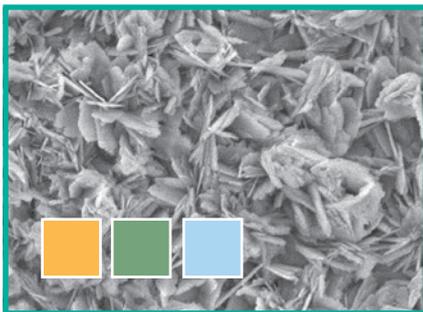
1	HA blasting	Double acid etching		DUOTex®
2	HA blasting	Double acid etching	BONIT® (CaP coating)	BONITex®
3	Corundum blasting	Acid etching		CELLTex®
4	Corundum blasting	Acid etching	BONIT® (CaP coating)	CELLBIOTex®



1 HA blasting/Double acid etching **DUOTex®**

DUOTex® is a subtractive surface that is created by using an HA blasting and a double acid etching process. As a result of its microstructured topography, the DUOTex® surface exhibits roughness values of approx. $R_a = 1.1 \pm 0.5 \mu\text{m}$. The

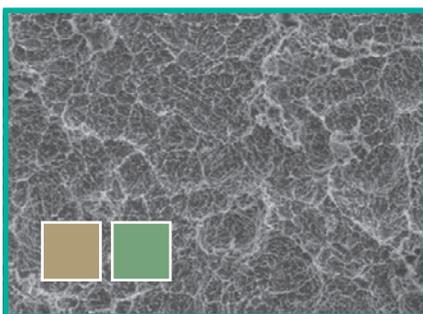
high capillarity of the DUOTex® surface also enhances wettability in body fluids significantly. The DUOTex® surface achieves good osteoconductivity and promotes osseointegration, which is essential for the success of dental implants.



2 HA blasting/Double acid etching/CaP coating **BONITex®**

The BONITex® coating process is comprised of HA blasting, double acid etching and applying an additive surface (BONIT®). The BONITex® surface is thus a combination of

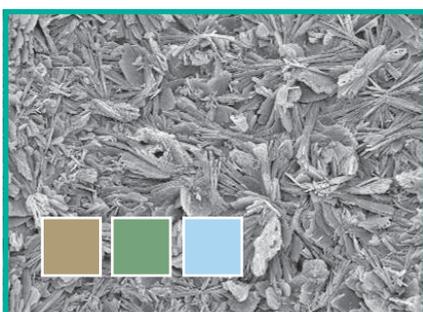
optimal roughness and surface topography with a very thin CaP-layer that comprises all features to enhance primary stability and rapid bone ongrowth.



3 Corundum blasting/Acid etching **CELLTex®**

The CELLTex® surface is a macro- and microstructured surface obtained by a corundum blasting and acid etching process. As a result of its topography, the surface has an osteoconductive effect and

therefore supports osseointegration of enossal dental implants. The roughness of the surface is $R_a = 3.0 \pm 1.5 \mu\text{m}$. CELLTex® is only offered for pure titanium implants.



4 Corundum blasting/Acid etching/CaP coating **CELLBIOTex®**

The CELLBIOTex® surface is created by corundum blasting, acid etching and applying a thin layer of CaP (BONIT®). The macro- and microstructured surface topography is produced by corundum blast-

ing and acid etching. The resorbable CaP coating (BONIT®) comprises all features for enhanced bone ongrowth and reduces healing time. CELLBIOTex® is only offered for pure titanium implants.

Surface Treatment Options



5	PVD coating (TiN, ZrN)
6	Type II Anodizing (DOTIZE®)
7	Type III Anodizing (Coloring)
8	DLC coating



5 PVD coating (TiN, ZrN)

PVD (Physical Vapor Deposition) coatings, such as Titanium Nitride or Zirconium Nitride are applied onto dental implant collars and abutments for cosmetic reasons. They are also being increasingly used to develop rotary dental instruments for purposes of

wear protection. TiN ceramic hard coatings with a thickness of $\sim 2 \mu\text{m}$ enhance the product life span of instruments and can prevent contamination as a result of their proven biocompatibility.



6 Type II Anodizing **DOTIZE®**

Type II anodized surfaces with a thickness of $1-2 \mu\text{m}$ are produced by using an electro-chemical process on prosthetic screws with the objective of reducing cold

welding and ensuring easy screw removal, if necessary. The DOTIZE® procedure conforms to the AMS 2488 standard.



7 Type III Anodizing **Coloring**

Type III anodizing is used to process dental implant abutments or temporary implant components, such as cover screws for color-coding purposes. The codes optimize

the process of part identification during surgical procedures. The layer thickness is $20-200 \text{ nm}$ depending on the selected color. DOT offers a broad variety of colors.



8 DLC coating

DLC coatings are metal-containing, amorphous carbon coatings consisting of the elements chromium and carbon. Both elements are converted into the requested DLC hard layer in a PVD process. The coating thickness of the DLC layer is $0.5-2.5 \mu\text{m}$.

DLC coatings exhibit a very high degree of adhesive strength combined with high micro hardness. As a result of a very low friction coefficient, DLC coatings are known to reduce wear and therefore extend the lifetime of tools and instruments.

One Source – Multiple Solutions

Principles

The long-term success of a dental implant is largely dependent on rapid healing with safe integration into the jaw bone. This can be achieved by adequate surface functionalization with different and complementary surface treatment processes. As a general rule, the surface is roughened by using different blasting media in a first process step. If required, the surface is further structured by using an acid etching process and then coated with a bioactive calciumphosphate coating. These micro- and nanostructured surfaces exhibit a high degree of biocompatibility and promote the ongrowth of bone.

DOT offers state-of-the-art surface treatment solutions for dental implants in first grade quality. Our surface enhancements can be applied onto all dental implant systems, irrespective of their individual geometry.

Dental implants with functional DOT surface treatments have been applied onto more than 1 million dental implants over the past years.

Apart from functional surface treatments for dental implants, DOT specializes in solutions for anodizing implant components and implant related instruments.

We also offer you PVD coatings for your cosmetic applications and rotating dental instruments to enhance wear resistance. Combined surface treatments have become a key success factor for dental implant systems. A supplier who offers the whole range of surface treatments can provide substantial benefits to an OEM.

As the "one" source with multiple options for surface enhancement, we help you to reduce production lead time and time spent placing a product on the market.

DOT specializes in the following combined or single surface treatments for dental implant systems and instruments:

Surface Treatment Options			
	HA blasting		BONIT® (CaP coating)
	Corundum blasting		BONIT® (CaP coating)
1	HA blasting	Double acid etching	DUOTex®
2	HA blasting	Double acid etching	BONIT® (CaP coating) BONITex®
3	Corundum blasting	Acid etching	CELLTex®
4	Corundum blasting	Acid etching	BONIT® (CaP coating) CELLBIOTex®
5	PVD coating (TiN, ZrN)		
6	Type II Anodizing DOTIZE®		
7	Type III Anodizing (Coloring)		
8	DLC coating		

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DOT – coating specialist for orthopedic and dental implants

DOT is one of Europe's leading providers of medical coating solutions for orthopedic and dental implants and instruments and also their cleanroom packaging.

Our comprehensive supply chain concept makes us an ideal medical technology partner. Our activities help restore the health of patients worldwide and thus make a major contribution to the improvement of their quality of life.