VUV ACTIVATION

New UV technology removes implant pellicles and regenerates hydrophilicity.



DIO IMPLANT

DID VOU KNOW?

STRAIGHT OUT-OF-THE-PACKAGE IMPLANTS ARE BIO-COMPROMISED.

Titanium implants undergo biological aging the minute they are manufactured.

Hydrocarbons grow on the surface over time, forming a carbon film called implant pellicle.

As a result, the titanium changes from hydrophilic to hydrophobic.

What are the consequences?







WHY COMPROMISE WHEN YOU CAN GET THE BEST?

UCLA conducted extensive research regarding the next-generation UV technology.

They exploited cutting-edge vacuum UV (VUV) light with a 172nm wavelength and an innovative synthetic quartz technology.

The result?

Implant surface hydrophilicity was regenerated in just one minute without the need for unpacking.

UCLA SCHOOL OF DENTISTRY RESEARCH



IMPLANT PELLICLE DEFINED

Implant surfaces are covered with a pellicle coating, just like teeth. Dr. Ogawa at the UCLA School of Dentistry did extensive research and defined this hydrocarbon build-up as implant pellicle.

Much like the dental pellicle impedes tooth re-mineralization and provides a foundation for oral bacterial biofilm, the implant pellicle significantly compromises osseointegration and increases the attraction of oral bacteria.

However, VUV effectively removes the implant pellicle, maximizing osseointegration and minimizing biofilm development.

IMPLANT PELLICLE GROWTH

How time-dependent carbon turns into implant pellicle on a titanium implant surface.



2 weeks

1 month

Unknown age

The implant pellicle is a film that forms on implant surfaces when the titanium binds to hydrocarbons in the atmosphere.

The hydrocarbons of the pellicle prevent bone deposition and, instead, attract bacteria and facilitate biofilm formation.

V UV Activate

UV-PERMEABLE Quartz Packaging

DIO's incredibly unique double-layer packaging allows UV irradiation to reach the implant surface without opening the vial. It maintains a sterile barrier, preventing contamination.



"The combination of VUV activation, while the implant is still in the quartz packaging, enables implant surface perfection."

Dr. Takahiro Ogawa Professor, UCLA School of Dentistry

THE DIFFERENCE IS PERFECTLY CLEAR.

Org

UVC

Ti-

Ti+

HUVC

Ti+

Ti-

PUV

Ti-

Ti+

VUV

Ti-

Ti+

To evaluate the efficacy of various UV sources that decarbonize and remove implant pellicles, methylene blue solution was tested on the implants.

With the VUV, the solution becomes perfectly clear after just one minute of exposure, eliminating all the carbon.

The competition doesn't even come close.



SIMPLE, NOVEL, PELLICLE-FREE IMPLANT

HIGHEST GROWTH RATE

VUV activation fully restores the hydrophilicity of compromised implants, making them more remarkable than the original. The research-proven effects of UV photofunctionalization in cell cultures and animal models are as follows:





"Pellicle-free implants. Finally! This changes everything. One-minute VUV treatment maximizes osteoblast attachment and function. VUV has solved all the technical challenges the original UV Activator had."

Dr. Takahiro Ogawa, UCLA School of Dentistry



HEALING RESULTS IN 4WEEKS



CONTROL IMPLANTS



VUV PHOTOFUNCTIONALIZED IMPLANTS



The effect of titanium ultraviolet functionalization on integration with bone.



PELLICLE-FREE IMPLANT SURFACES ARE A REAL GAME-CHANGER

The VUV Activation goes beyond removing implant pellicles, increasing osseointegration, and enhancing soft tissue seal. It also increases interfacial adhesion between materials. On top of that, crowns, bridges, and implant access holes become clean for bacteria-free delivery, making them bacteriophobic surfaces.

IRRESISTABLE ATTRACTION

VUV photofunctionalization removes implant pellicles by decarbonizing the titanium, restoring hydrophilicity.

This dramatically increases blood wettability, thereby improving the adhesion of proteins and osteoblasts enhancing osseointegration.



Before VUV Activation The blood forms drops, and fails to penetrate the threads



After VUV Activation The blood adheres to the entire implant surface

ENHANCES SOFT TISSUE SEAL



Control



An increased number of human fibroblasts attach and adhere to VUV-treated healing abutments, enabling better soft tissue healing and sealing.

VUV Treated (1 min)



THE DAWN OF A NEW NORM VUV Activation. The next-generation of UV technology.

Eliminate implant pellicle. One minute is all it takes. Get the VUV Activator from DIO and say goodbye to hydrocarbon forever.

LEARN MORE





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