implaPrep Concept

Plasma activation of implants

The functionalization of dental implants serves to optimize the wetting behavior. Materials used in medical technology, such as titanium can be effectively optimized in their wetting behavior by plasma pre-treatment. This property is the basis for biocompatibility and acceptance by the surrounding living tissue. By increasing the surface energy the initial attachment of osteoblasts is improved, which subsequently leads to increased new bone formation after implantation. Thus, surface activation with plasma can improve bone regeneration, leading to increased and accelerated osseointegration. This is particularly important in complex cases, immediate loading, or compromised patients.

Activation of the implant surfaces with implaPrep is a supportive procedure that is used by an implant dentist, oral surgeon, or oral and maxillofacial surgeon prior to the insertion of the implants into the jawbone. The material and surface structure specified by the manufacturer is not changed by this process. Surface activation is achieved by an atmospheric dielectric barrier discharge on the implant, which removes microscopic carbon-based adsorbates from the surface, increasing surface energy and improving implant wettability. This enhances the interactions of proteins and cells with the implant surface at a molecular level.

Fields of application

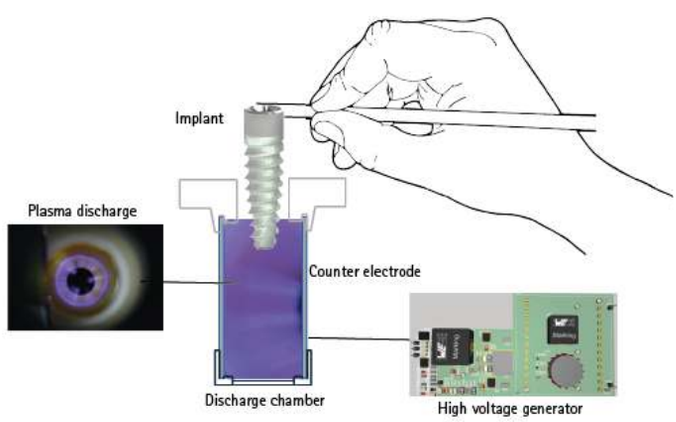
- Activation and functionalization of titanium implants
- Improvement of wettability

Possible applications

◇ Chairside during implantation as a stand-alone device
◇ Integration into existing devices

Technical data

Electrical power: 25 W
Electrical voltage: 10-30 V, 24V typ.
Typical process time (incl. cooling): 45 s
Typical implant end temperature: 38 °C
Maximum implant temperature: 60 °C



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Technology – Plasma components

Our plasma components for the activation of implants are developed according to ISO 13485. This enables easy and safe integration into a medical device or a stand-alone chairside device.

Plasma reactor

- DBD (dielectric barrier discharge) plasma generator with implant as counter electrode
- Sterile barrier to the implant
- Effective cooling of the implant during and after activation
- Contamination of the implant in the reactor is impossible
- Safe to use, sterilizable, biocompatible

Plasma driver

- Provides the required high voltage for plasma activation
- Easy control via analog on/off signal or supply voltage
- Plasma monitoring and provision of an analog process signal
- Robust and safe technology

What we offer

- Components (Driver & Reactor) developed according to ISO 13485
- Validated activation process
- System and integration know-how

Partners we search for

- System integration
- Device approval (possibly MP Class I)
- Worldwide distribution of the finalized device

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