

Apatite formation and stability of simulated body fluids Project work (3 months)

Wettability of dental implants is a key surface property heavily influencing osseointegration, i.e. the integration of implants into the surrounding bone tissue. Typically, implants comprising hydrophilic surfaces show faster osseointegration as compared to their hydrophobic counterparts. Therefore, Straumann SLActive® implants are stored in saline solution in order to maintain a clean (in terms of carbon contamination layer) and thus hydrophilic implant surface and consequently SLActive® implants are known to osseointegrate fast and stable.

This project work aims to further investigate salt-based solutions for implant storage and their impact on apatite formation on the implant surface. The goal is to determine the influence of various factors on the stability of the salt solutions and the precipitation properties on the implant surface.

The ideal candidate has a BSc degree in Nanosciences or equivalent and is currently pursuing a MSc degree where she or he is looking for a 3 month project work within the subjects of physics, biology or chemistry.

The candidate will be responsible for:

- Characterization of the apatite formation on Titanium-Zirconium surfaces using microscopy techniques (optical, confocal (roughness) and SEM/EDX) and contact angle measurements (hydrophilicity).
- Determination of the influence of various factors including pH, temperature etc. on apatite formation ability of different salt-based liquids, e.g. solutions similar to simulated body fluids (SBF).
- Setting up semi-quantitative or quantitative methods to compare the degree of apatite formation.
- Planning and preparing a preclinical study for implants immersed in different SBF-like solutions.

Start date of the project: February 2018 (or as early as possible).

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