New nanocoating for dental implants reduces infection risk

It is estimated that the American and European market for dental implants alone, will rise to over £3 billion by 2022. They are a very successful form of treatment.

Yet, it is thought that five to ten per cent of all dental implants fail and require removing. There are several reasons for failure, from mechanical problems to poor connection to the bones or simply infection or rejection.

The major reason for dental implant failure is peri-implantitis. This is a destructive inflammatory process, which affects the soft and hard tissues surrounding dental implants. This occurs when pathogenic microbes in the mouth and oral cavity develop into biofilms, which protects them and encourages growth. Peri-implantitis is caused when the biofilms develop on dental implants.

Now a cross-faculty study by a UK university research team has created and tested the effectiveness of a new nanocoating, which will reduce the risk of peri-implantitis from dental implants.

Scientists from the School of Engineering at the University of Plymouth and the School of Biological and Marine Sciences, Peninsula Schools of Medicine and Dentistry, devised a new approach using a combination of silver, titanium oxide and hydroxyapatite nanocoatings.

By applying the correct combination to the surface of titanium alloy implants, bacterial growth was successfully inhibited. The formation of bacterial biofilm on the surface of the implants was reduced by 97.5 percent. As well as resulting in the effective eradication of infection, a surface was created with anti-biofilm properties, which supported the implants successful integration into surrounding bone with faster healing.