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NANO-ENGINERED TITANIUM SURFACES FOR BIOMEDICAL APPLICATIONS

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Medical implants have to satisfy functionality demands defined by the working environment-human body. Nowadays implants are produced mainly of pure titanium and titanium alloys. The main problem of dental implants is their biocompatibility and osteoblast integration. The application of nanotechnology to implants allows the structure or surface of a biomaterial to be precisely defined thus improving biocompatibilty. Three are the main aspects in application of nanotechnology for implant development.

- To produce bulk nanostructured materials with higher strength, fatigue strength and corrosion resistance -usually titanium, its alloys and stainless steels.
- Surface nanostructuring which can improve cellular attachment and direct the cells to grow into defined structures.
- Nanocoatings for biocompatibility enhancement, decreasing the toxicity, increasing the corrosion resistance and ensuring better interaction with the surrounding cells and tissues.

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