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On the dynamic business scenario, be functional, smart and interactive are the most valuable asset to become a reference in our markets. The global smart textile market promotes the implementation of nanotech and biocomposites projects in this field. Please note the market by moving beyond traditional path of what means value and fulfilling business future. We can identify the strategic alliance between textile industry and several markets such as polymer, cosmetic, health, architecture and fashion. For several years, while these "S-textile" program have been able to go beyond the original objectives and is seeking its way towards industrialization and mass production for enhancing the breakthrough of intelligence textile systems. Every innovative initiative are committed in improving the convergence between industries and the leading edge of the textile market; in this scenario, the priority is deep understanding of megatrends and new segments. We discuss about the most important trends that will define the architecture future of Smart Textile world.

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Metallic biomaterials and surface functionalization of Ti based alloys for medical applications

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Metallic biomaterials are widely used in the manufacturing of medical devices for hard tissue replacement such as pace maker cases and screws to assist patients when their body parts are damaged. The basic information of three main categories of metallic implant biomaterials, stainless steel, cobalt and titanium (Ti)-based alloys are introduced in this paper. In addition to mechanical performance, the other essential requirements that are needed to be posted by these metallic biomaterials are also explained. Various advantages of using these metallic biomaterials as an implant and their current applications also are reviewed. The main issue during implantation of a biomaterial (i.e., Ti implant) and its alloys is inflammatory of surrounding tissues and eventually it leads to implant failure even when the biomaterial has shown excellent properties. This review paper covered some of the recent notable surface functionalization techniques and the obtained results contributed to biomedical field to resolve the problems. It firstly explained that the biocompatible metal layer (tantalum) is deposited onto bare Ti and Ti substrate with the nanoporous Ta-incorporated surfaces using various methods of deposition to improve the performance in terms of corrosion resistance and biological performances. Attachment of hydroxyapatite (HA) onto Ti surface is one of the ways of getting rid of the negative effects of Ti. However, HA has poor mechanical properties and low bond strength with Ti. Thus, a composite coating that can improve the lack of HA properties was formed. Moreover, the last investigations related to incorporating antibacterial nanoparticles and drugs with Ti implants are presented, as well. The overall results indicated that the antibacterial performance of Ti implants improved with attachment of incorporating antibacterial agents onto it. Carbon nanotubes (CNTs) and biocompatible polymers are integrated onto Ti to improve the cells adhesion and growth as well as reducing the toxicity which will lead to the longevity of implants. The investigator studies are revealed that the different surface properties on Ti will affect the absorption of protein and increase of biocompatibility.

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