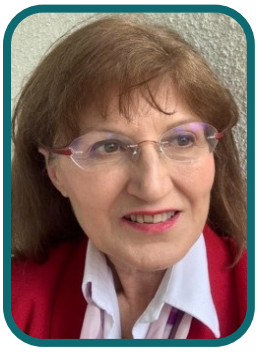

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Medical Devices Having Nano System

Abstract:

There are various materials used for the treatment of the damaged or malfunctioning tissues and organs. Generally, these materials are manufactured in macro size. On the other hand, in many cases, there is a need for micro or nano modifications for these medical devices. The most important application is related to the surface since the surface of an implant is the first part come in contact with tissue. Surface should have high biocompatibility and/or bioactivity. A nano level coating of a vascular graph with an antithrombogenic material prevent blood coagulation; or adding nano size hydroxyapatite crystals in a bone filler enhance its bioactivity and attachment of bone cells on the implant leading fast formation of natural bone. Meantime, there are nano particles, capsules or spheres used for targeting drugs to the desired area (mostly to the cancer tumor tissue) and release the active agent over there at effective dose in a sustained way. In tissue engineering applications, generally polymeric materials are used for the preparation of scaffolds. In general, these scaffolds have micron size pores and nano size fibers or membranes. One important point is the adhesion of cells on the scaffold, and then migrate and proliferate to form a new tissue over there. Nano designs on the implant surfaces can also maintain proliferation of cells in a certain direction.

Biography

Nesrin Hasirci is a member of Middle East Technical University BIOMATEN-Center of Excellence in Biomaterials and Tissue Engineering (Turkiye), and Near East University (TRNC). Her research covers: micro and nano modifications of polymers and composites used in medicine. She has more than 250 scientific publications, 7 patents (4 pending), 21 chapters, 2 books (as one of the two authors of the 'Fundamentals of Biomaterials' and one Turkish lecture book). She received 'Science Award' given by M.Parlar Foundation and 'Technology Award' given by Elginkan Foundation. Her h-index is 53 (Google Scholar). She is Honorary Member of 'European Society of Biomaterials'; and Fellow of the Science Academy' (Turkiye).