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Application of Special Nanomaterials in Medicine

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Extended Abstract

Abstract

Extensive analysis of biomaterials at nanoscale has junction rectifier to development of novel medical technologies together with prosthetic devices and new surgical material and ways. In several cases, however, biomechanical properties and health impacts of nanomaterials area unit poorly understood. The FDA (U.S. Food and Drug Administration) has even established a separate cluster among the Agency to develop higher data of interactions of nanomaterials with biological systems, and to assess the adequacy of testing approaches for evaluating safety, effectiveness, and quality of merchandise containing nanomaterials.

We have a tendency to gift three key innovations employed in treatment of severe bone injuries among veterans and athletes: (i) academician. Ilizarov's equipment, (ii) 'Perftorun', called 'blue blood' medical care discovered by academician. Beloyartsev in Russia, (iii) 'Litar', a synthetic bone technology made-up by academician. Krasnov that's want to replace bones defects. Prof. Petrov, a author of this paper, has in depth expertise in implementation of novel technologies for health protection and safety together with the utilization of the higher than mentioned technologies.

We gift our analysis of key challenges that hinder exploitation of recent medical specialty technologies and limit the utilization of such technologies in human patients and {can} illustrate however suboptimal restrictive approval method for brand new medical specialty devices can well increase the time and price of technology translation from bench to side and can discuss the importance of technology's patent protection in attracting personal investment needed for exploitation. Exploitation three preceding innovations, we are going to recommend approaches for up the outcomes of medical specialty technology translation.

Nanoworld could be a terribly superb creation. It's not a straightforward vital reduction within the encompassing objects, however lives and functions in step with its own laws, in step with that our civilization was formed by the planet Creator. we have a tendency to additionally to gift some our new achievements, connected with advanced materials, like bio and medical ceramics, that nowadays employed in implant medical specialty in Russia.

The risk analysis of various nanoparticles is presently of interest worldwide. Silver and magnetic iron-ore nanoparticles also are studied during this special issue highlight the advances from the purpose of read of application and toxicity. Silver, for example, was studied from the purpose of read of risk analysis of silver nanoparticles exposure from sprays and it absolutely was found that, counting on exposure kind, the limit of exposure ranges between fifty nine and 146 for inhalation, a lot of under a thousand which suggests the no-risk level whereas the dermal exposure risk was between 20 000 and 500 000 (~2–50 μg/kg/day). So, the exposure of individuals to silver containing aerosols is risky. Silver and magnetic iron-ore nanoparticles were conjointly studied from the purpose of read of the impact of exposure of those nanoparticles to steroid alcohol uptake by macrophages. This paper clearly indicates that long impact of nanoparticles on cellular perform should be taken into consideration before victimisation nanoparticles for medicine applications. lipotropic Bi dimercaptopropanol nanoparticles have a awfully necessary antimicrobial activity, however at this moment there are not any sufficient information. Supported these results, these nanoparticles at grade of up to 100 μM don't cause harm to blood cells. CdTe quantum dots area unit smart candidates for bioimaging however the analysis of the toxicity should be tired order to avoid any risks. supported a new developed analysis protocol supported supermolecule expression, it absolutely was found that the quantum dot shell plays a crucial role thanks to initial direct contact with cells. The CdSeS nanostructures were analyzed from the purpose of read of the correlation between synthesis route and applications, particularly supported the toxicity of those nanoparticles counting on the synthesis route and used precursors and solvents. supported this study, such safe, economic, setting friendly, and appropriate for large-scale production of alloyed CdSeS nanostructures with high photoluminescence, high stability, and low/no toxicity area unit still a lot of desired.

The role of nanocomposites for medicine applications is additionally mentioned during this special issue. The safe use of nanocomposite bone material was examined during a study of a thirty-one-patient run. The nanocomposite bone material was ultimately found to be helpful within the field of orthopaedics. Designed materials is conjointly improved by adding helpful parts and consequently new functionalities. During this special issue, novel antibacterial drug loaded collagen/hydroxyapatite composite materials area unit bestowed to be used in nanomedicine.

Biography

Alexander V. graduated from Tomsk Polytecnical University in 1972 in Tomsk city, Russia. He had his PhD at the age of 28 years in Polytechnic University in Ekaterinburg city, Russia. And he had doctor of Russian degree of physic and mathematic sciences in 1998 in Nuclear Physic Institute in Almata city of Kazakhstan Republic. Today he is Leading Researcher, Professor, Doctor of Sciences, Division of Ecological Safety and Radiation Risk, Nuclear Safety Institute of Russian Academy of Sciences, Moscow, Russia.