Annual Conference on

Nanoscience, Nanotechnology & Advanced Materials

November 26-27, 2018 Bali, Indonesia

Functionalized SPIONs for enhancing MR imaging and exploring efficient techniques in drug delivery

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Untra small sized Super Paramagnetic Iron Oxide Nanoparticles (SPIONs) are being explored for their highly potential applications across multiple fields. They have received special attention in biomedical fields for showing some promising directions in new-age medicine. They have been accepted as good contrast agents for MRI and now are being explored for newer applications. Biocompatibility of certain drugs and personalization of medicine have been the two persistent challenges which medical science is still struggling with. Suitable coating of nanoparticles can allow better acceptance and internalization of drugs. Dendrimers are one of the much accepted polymers which are attributed with great biocompatibility. This, along with their hyper branched structure, allows one to explore scope for attaching drugs, antibodies or markers. (3-Aminopropyl) triethoxysilane APTES modified nanoparticles can be used as a core for such dendrimers of higher generations which possess potential as excellent bio-vehicles for drug delivery, localization and optimization. The work discussed in this poster mainly includes (APTES) modified Dendrimer Coated (DC) SPIONS. These DC SPIONS have been characterized for their chemical and physical properties using XRD, FITR, SEM, TGA etc. Mammalian cell line (Mouse fibroblasts) 3T3 was used to test the said particles for cytotoxicity using MTT assay. Cells were observed under phase contrast inverted microscope for morphological changes. The overall experimental results have indicated positivity towards the biological use of DC SPIONS synthesized in our laboratory. Upon optimization, the work will be carried forward to mice model studies where they shall be tested for their performance *in vivo* and for their comparative advantage over conventional methods of drug delivery.

Biography

Navjeet Kaur is pursuing her PhD from Ramnarain Ruia College, Mumbai in an interdisciplinary area of Nanoscience. She has three publications in peer reviewed journals arising from her previous project works. She is currently working on functionalization of magnetic nanoparticles and their use in biomedicine technology.

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