

Nanotechnology for drug delivery applications

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Controlled and targeted drug delivery represents one of the frontier areas of science. Drugs can be encapsulated in a variety of carriers. The carrier can be a carbon nanotube, a nanotube made of something other than carbon, a structure like a silicon wafer with antibodies or some other molecule that will bind to the drug. Nanoparticles can enter damaged cells and release enzymes that initiate the cells auto destruct sequence, known as "apoptosis". Alternatively they can release enzymes to try to repair the cell and return it to normal functioning. Drugs in nanocrystalline form can be administered in smaller doses because they can be delivered directly to the tissue and in controlled doses related to the patient's requirements. Reduction of particle size and increased surface area, enhancing solubility, increasing oral bioavailability, targeting of tissues, cells are some of the special properties when using nanoparticles. An overview of the role of nanotechnology for drug delivery applications is presented here.

Biography

Nirmala Grace A received her M.Sc. degree in chemistry from the University of Madras, Tamil Nadu, India. She got her Ph.D. degree from the University of Madras in the area of Nanomaterials for electrocatalysis and drug analysis. She is currently working as an Associate Professor in the Centre for Nanotechnology Research, VIT University, Vellore, India. Her current research group is working on different applications of nanomaterials like photocatalysis, drug delivery, electrochemical biosensors, nanocomposites for energy storage applications, synthesis of adsorbents for environmental applications, graphene materials for fuel cells. Her research interests are Hybrid Nanomaterials for fuel cells, polymer nanocomposites for drug delivery, electrochemical sensors and energy storage applications. Her research results have been published in more than 30 technical papers in international journals.

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