

Nanomaterials as theragnostic materials against cancer

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After the onset of nanotechnology research field, it found many applications in various research areas. However, beyond any doubt we would be able to mention that bio field is the main benefactor of the application of nanotechnology. In bio field, nanomaterials found very good and promising applications in the field of bioimaging and theragnostic applications. Theragnostics including nanodrug delivery against cancer found many good applications due to the possibilities of delivering drugs precisely to the cancer cells without any collateral damages to the healthy tissues, which was one of the main problems haunted and nullified the applications of many good drugs. By using nanotechnology, surface modification of drugs, packing the hydrophobic drugs inside biocompatible polymers etc. earned huge dividend. Along with the delivery of drugs, recently, imaging moieties also started incorporating in the same nano assembly, that provided diagnosing capability too. This technology found imprint in the research field as theranostics (theragnostics) (Therapy + Diagnosis), facilitated to conduct diagnosis as well as therapy simultaneously.

Bio:

Prof. D. Sakthi Kumar is currently working as Deputy Director for Bio Nano Electronics Research Centre (BNERC) and as Professor in Graduate School of Interdisciplinary New Science, Toyo University, Kawagoe, Saitama, Japan. He received his B.Sc., M.Sc., and Ph.D. in 1989,1991,1998 respectively from Mahatma Gandhi University of Kerala, India and Post Graduation in Artificial Intelligence and Machine Learning (AI-ML) at University of Texas, Austin in 2020. After receiving his Ph.D.; he worked as research associate at the Thin Film Laboratory, Dept. of Physics, IIT Delhi, India. He joined BNERC after winning prestigious JSPS, Japan postdoctoral fellowship in 2001.

He is interested in research fields such as developing bio-nano devices and nanodrugs to fight against cancers, biomaterials, scaffolds for implantations, Application of AI in biofield, bio/chemical/optical sensors, plant nanotechnology, carbon nanotubes for bio imaging and as a treatment method for cancers, quantum dots for bio imaging and solar cell applications etc. He edited 3 books (1 in Press). He is having 155 peer reviewed research articles including many review articles (Many of them came as cover page articles of leading journals), published many book chapters (22) and having 9 patents in his credit and delivered many invited talks (20+) in international seminars. Under his guidance 23 students received their doctoral degrees. For his work in biopolymers; The Society of Polymer Science, Japan honoured him with Asia Excellence Award in 2012. He is currently serving as Editorial Board Member of Scientific Reports (Nature Publishing Group).

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