

Nanomaterials and Nanochemistry

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Nanochemistry applications in advanced drug delivery: Nano-targeted delivery for therapeutic and imaging

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Targeted delivery of drug incorporated nanoparticles, through conjugation of tumor-specific cell surface markers, such as tumor-specific antibodies or ligands can not only enhance the efficacy of the anticancer drug but also reduce the unwanted toxicity of the drug. Additionally, multifunctional characteristics of the nano-carrier system would allow for simultaneous imaging of tumor mass, targeted drug delivery and monitoring. A summary of recent progress in nanotechnology as it relates specifically to nanoparticles and anticancer drug delivery will be reviewed. Nano Nutraceuticals using combination of various natural products provide a great potential in cancer management. Additionally, various Nanomedicine approaches for the detection and treatment of various types of clots organ specific delivery, vascular targeting, improved PK / PD, and vaccine will be briefly discussed.

Learning Objectives:

Highlight the Role of Nanobiotechnology and other enabling technologies in the followings:

1. Targeted Drug Delivery
2. Improved PK and PD
3. Early detection (Imaging)

4. Targeted Delivery of Chemotherapy for optimal efficacy and safety
5. Nano synthesis and assembly of various platforms for Targeted Delivery
6. Nanobiotechnology in shortening the time and risk of Drug Discovery and Development.

Speaker Biography

Dr. Mousa finished Ph.D from Ohio State University, College of Medicine, Columbus, OH and Post-doctoral Fellowship, University of Kentucky, Lexington KY. He also received his MBA from Widener University, Chester, PA. Dr. Mousa is currently an endowed tenure Professor and Executive Vice President and Chairman of the Pharmaceutical Research Institute and Vice Provost for Research at ACPHS. Prior to his academic career, Dr. Mousa was a senior Scientist and fellow at The DuPont Pharmaceutical Company for 17 years where he contributed to the discovery and development of several FDA approved and globally marketed diagnostics and Therapeutics. He holds over 350 US and International Patents discovering novel anti-angiogenesis strategies, antithrombotics, anti-integrins, anti-cancer, and non-invasive diagnostic imaging approaches employing various Nanotechnology platforms. He has published more than 1,000 journal articles, book chapters, published patents, and books as editor and author. He is a member of several NIH study sections, and the editorial board of several high impact Journals. His research has focused on diagnostics and therapeutics of angiogenesis-related disorders, thrombosis, vascular and cardiovascular diseases.

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