Nano RAM TECHNOLOGIES
Tomorrow's Technologies Today

For the fast moving science and technology, the present generation must understand the concept, approach and different applications of the newly emerging field so called **" Nanotechnology".**

For the 1st time in India, **Nano-RAM Technologies** has initiated a **certificate course** for the benefit of different students with background of Engineering, Pharmacy, Medicine, and Science.

The nanotechnology certificate course is designed for: students with the following background (3rd year and 4th year students of B.Pharm) (1st /2nd year M.Pharm students)

Pharma Branches: Pharmaceutics, Pharma analysis, Pharma Chemistry, Pharmacology, Pharmacognosy, Biopharmaceuticals,

Certificate course in- **Nanotechnology Mastery Blueprint "Nanotechnology and its applications– Pharma Perspective"**

Introduction to Nanotechnology

A biological system can be exceedingly small. Many of the cells are very tiny, but they are very active: they manufacture various substances: they walk around" and they do all kinds of marvelous things- all on a very small scale. Also they store information. Consider the possibility that we can make a thing very small that does what we want-that can manufacture an object that maneuvers at that level.

- **Nanotechnology Definition pharma perspective, Background on Research expenditures**
- **Lessons from nature, Various pharma issues, Classification of nanomaterials**

Processing of nanomaterials

The constituent components of conventional devices are carved out of larger materials relying on physical methods. This top-down approach to engineered building blocks becomes increasingly challenging as the dimensions of the target structures approach the nanoscale. Nature, on the other hand relies on chemical strategies to assemble nanoscaled biomolecules. Small molecular building blocks are joined to produce nanostructures with defined geometries and specific functions. It is apparent that nature's bottom up approach to functional nanostructures can mimicked to produce artificial molecules with nanoscaled dimensions and engineered properties.

- Physical methods

e-beam deposition, magnetron sputtering deposition, pulsed laser deposition, thermal deposition, MBE, Atomic layer, etc.,

- Chemical methods

Chemical vapor deposition, Plasma assisted chemical vapor deposition, Electrochemical deposition, Electrophoretic deposition, Sol-gel deposition, Langmuir-Blodgett deposition, Electrospining technique, self-assembled monolayers, Microwave irradiation, gamma irradiation, co-precipitation, sonochemical reaction, hydrothermal, solvothermal chemical reactions, templated assisted deposition techniques etc.,

Characterization of nanomaterials

Characterization and manipulation of individual nanostructures require not only extreme sensitivity and accuracy, but also atomic level resolution. It therefore leads to various spectroscopic and microscopy that will play a central role in characterization and measurements of nanostructured materials and nanostructures. Miniaturization of instruments is obviously not the only challenge: the new phenomena, physical properties and short range forces, which do not play a noticeable role in macroscopic, level characterization, may have significant impacts in the nanometer scale. The development of novel tools and instruments is one of the greatest challenges in nanotechnology.

Rtn. Dr.A.Phani Ratna
Ph.,D, PGDIPM, PGDIF, FISBT, (D.Sc), (EPGSB-IIM-Calcutta)
Managing Director
Corporate Office Address:
Nano RAM Technologies
27-D, Bidadi Industrial Area, Bangalore
Karnataka State, INDIA

Profile: **(15 years abroad, 13 years Industrial, 10 years academic experience)**
1. High-tech know-how, competencies and expertise in nanotechnology to meet industrial needs and strengthen industrial competitiveness in Asia, Europe, and USA. 2. Expertise in the field of the Materials Engineering / Pharmaceutical Technology and service in advanced technology and product development. 3. State of art facility for all Synthesis / deposition / characterization and testing techniques. 4. Scale up process for the developed micro / nanomaterials. 5. Developed 54 nanotech based products and marketing in India / Global 6. Published **272** International publications, **12** Indian patents, **18** national & 3 International awards

Nanotechnology Mastery Blueprint Course

- ❑ **Duration 8h**
- ❑ **Fee Rs. 1,999/ - per student (including GST)**
- ❑ **Consignment of 50 students (min. 25 to start)**
- ❑ **Certificate issued by- Nano-RAM Technologies**
- ❑ **Designed for 3rd / 4th year B.Pharm students**
- ❑ **1st / 2nd year M.Pharm students**

- Spectroscopy techniques

Ultra-violet visible spectroscopy, Fourier Transform Infra Red spectroscopy, X-ray Diffraction, Thermo Gravametric Analysis, Differential Thermal Analysis, X-Ray Photoelectron spectroscopy, Auger Electron Spectroscopy, Particle Size Analyser, BET, etc.,

- Microscopy techniques

Scanning Electron Microscopy, Transmission Electron Microscopy, Scanning Tunnelling Microscopy, Scanning Probe Microscopy, Atomic Force Microscopy, Vibration Spectrometer, SQUID, Magnetic Force Microscopy, etc.,

Emerging Nanoengineered materials for all branches:

Nanoscale Cancer Therapeutics, Nano therapeutics for Skin Diseases, NanoparticIes for Oral Vaccination, Nanoparticles: for Bacterial / Parasite Diseases, Nanogels, Thermoreversible gels, Nanodermal patches for drug delivery, Nanoformulations for improved efficacy of drug delivery, Nanostructured oral thin films, Nanocoatings for tablets, nanomaterials for cosmoceutics, nutraceutics, etc.,

Nano RAM TECHNOLOGIES
Tomorrow's Technologies Today

Pharma industrial Applications of nanomaterials:

- Nanoformulated materials: antiinflamatory. Antiepileptic, antifungal, antigout, antineoplastic, antiparkinson, anxiolytic, antithyroid drugs for to improve bioavailability and efficacy. Transparent nanostructured coatings for tablets, Nanochemicals as excipients, Oral thin films, Healthcare coatings, Fire retardant coatings, Bird repellent coatings, RFID based devices Gas / Pressure / Biomedical sensors, Anticorrosion coatings,.

Products based on nanomaterials for various branches

a. Pharmaceuticals

- Nanoparticles of drug: Particle size reduction, Emulsions, Colloidal dispersions, etc., Nano effect on: digestive, respiratory, central nervous system, urinary, reproductive, endocrine, sense organs etc., mechanism involved: Cell injury, inflammatory and repair, pathophysiology of common diseases. Liquid dosages, solids, fibers, oral films etc.,

b. Pharma analysis

- Nanomaterials characterization: GCMS, HPLC, X-Ray Diffraction, High resolution Scanning Electron Microscopy, Particle size analyser, High Resolution Transmission Electron Microscopy etc.,

c. Pharma Chemistry

- Nanodrugs for: Drug metabolism and Concepts of Prodrugs. Synthetic procedures of selected drugs, mode of action, uses, structure activity relationship (including physicochemical aspects) of the following classes of drugs: Antineoplastic agents, Anti-viral including anti – HIV agents., Immuno-suppressive and immuno-stimulants, etc.,

d. Pharmacology

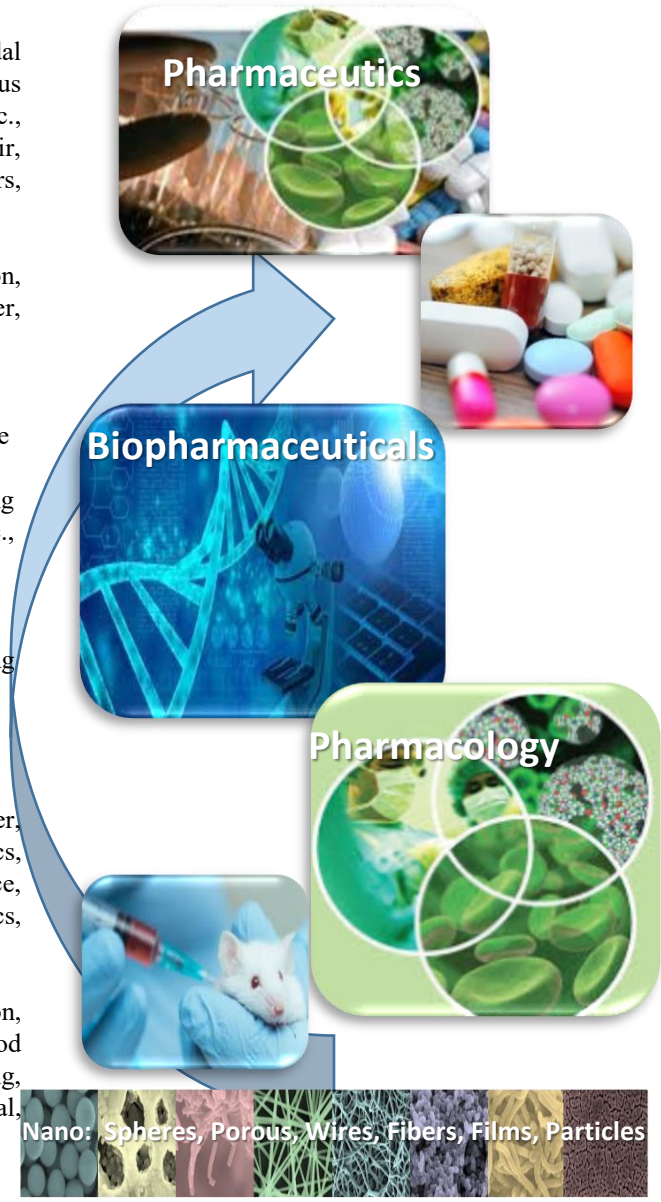
- Nanomaterials for: Clinical Pharmacokinetics and individualization of nanodrug Therapy, Nanodrug delivery systems and their Biopharmaceutic & Therapeutic considerations, Nanodrug Use during infancy and in the elderly (Pediatries & Geriatrics), Nanodrug use during Pregnancy, Nanodrug induced Diseases (diabetic, cancer), Basics of nanodrug interactions etc.,

e. Biopharmaceutical

- Nanomaterials (drug): passage of drugs across biological barrier, influence of absorption, distribution in the body, pharmacokinetics, clinical pharmacokinetics, bioavailability and bioequivalence, immunological preparations, genetic recombination, antibiotics, engyme immobilization, microbial transformation, biologics, etc.,

f. Biotechnology :

- Nanomaterials for: Bacterial, Fungal and Virus inhibition, Fermentation, Enzymes, Immunology, Biosensors, food contamination identification, Membranes, DNA, RNA, Cloning, Healthcare, Bevarage, Nutracuetical, Cosmoceutical, Biopharmaceutical industries etc.,



g. Pharmaceutical-chemical Engineering

h. Pharmaceutical Industrial Management

i. Pharma IP

j Biomedical Engineering

Projects for internship in Nanotechnology

Several small (Thesis work program with duration of 3M / 6M / 12M) projects in different branches are identified for the benefit of students. Interested students can contact for more information to carry out their internship program either with Nano-RAM Technologies or in collaboration with Nano-RAM Technologies and parent institution.

List of Nanotech organizations / companies in world wide

A list of nanotech organizations in India and abroad are also mentioned in the study material so that in future students can get more information from these companies or industries.

Fellowships (M.S and Ph.D in abroad)

In this certificate course, several fellowships available in India and abroad will be mentioned for all branches of students.

Entrepreneurship opportunities in Nanotech

Generic skills and entrepreneurship are needed to translate scientific knowledge into products. Scientists and pharmacists in cooperation with relevant experts should address the societal, ethical, political and health/safety implications of their work for society at large. In the present certificate course several projects will be identified for the benefit of the students to chose and develop their career as **Nanopreneur (entrepreneur in nanotech)**.

Course package (containing all the above materials)

The certificate course contains a study package with all the above mentioned material in the form of book (download in pdf form). This includes the list of nanotech industries in India and abroad, Fellowships available in India and abroad for both M.Pharm, Ph.D programs will also be Covered for the benefit of final year students B.Pharam / M.Pharm.

Advantage: Enrolled students will be given access to view the elaborative course material, videos with examples with a given password and will be taken care to guide for their career counselling for higher studies as well as career settlement and life time member

Access to all
Personality development programs on website.

For more information visit:
www.nanoramtechnologies.com Mobile: +91-9880400737 (WA)
director@nanoramtechnologies.com