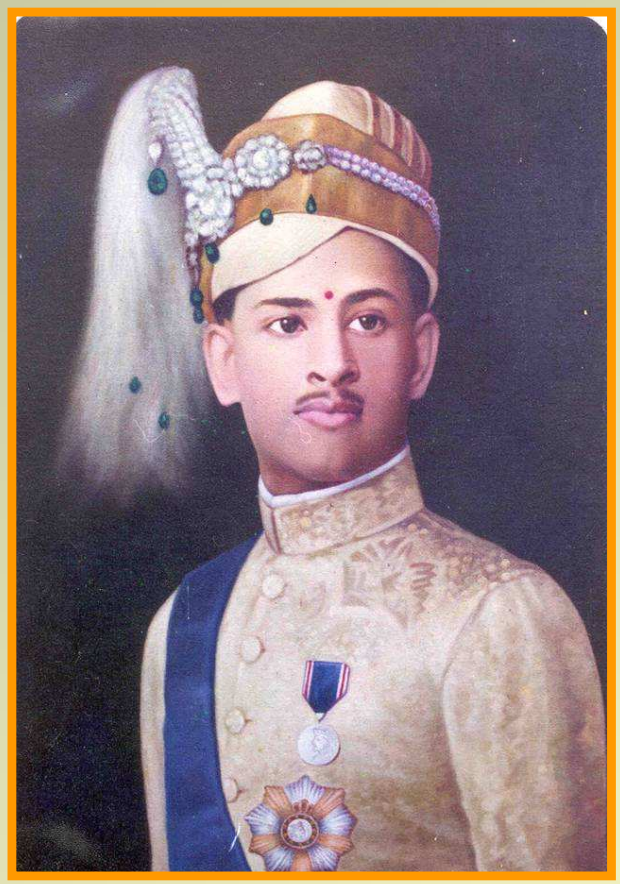
SREE CHITRA TIRUNAL INSTITUTE FOR MEDICAL SCIENCES & TECHNOLOGY TRIVANDRUM, INDIA

http://sctimst.ac.in



Uniting technology with medical science

1980 “SCTIMST Act” -
Institute of National Importance

Tertiary Care Medical Centre
for Cardiac and Neuro Specialties

Biomedical
Technology Wing

Achutha Menon Centre for
Health Sciences Studies

"SCTIMST ACT, 1980" -- MANDATE

1. promote biomedical engineering and technology;
2. provide and demonstrate high standards of patient care in advanced medical specialties;
3. develop post-graduate training programmes of the highest quality in advanced medical specialties and biomedical engineering and technology.

Biomedical Technology Wing

Satelmond Palace Campus

MISSION

Promotion of Biomedical Engineering & Technology

1. **Biomaterials testing & Device evaluation**
2. **Product development & Research**
3. **Training**

Testing Services for Industry / other R&D groups- conforming to ISO 17025

- **BIOMATERIALS TESTING**
  - Biocompatibility as per ISO 10993 standards
- **MEDICAL DEVICE EVALUATION**
  - Modeling & simulation
  - Functional evaluation - in-vitro systems
  - Animal evaluation - LARGE & small Animal models
  - Sterility / pyrogenicity & Package Validation

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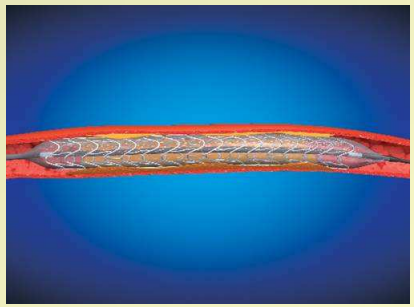
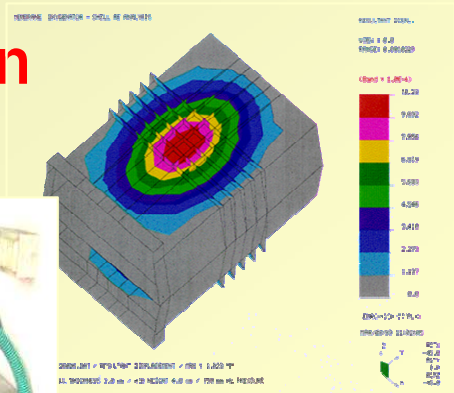
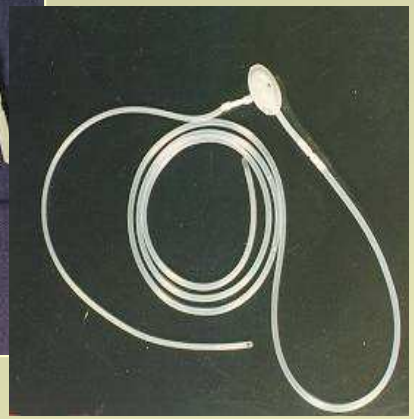




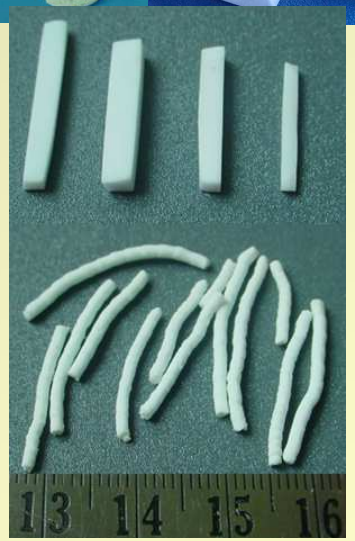
Commercialised Technologies

Blood Bags

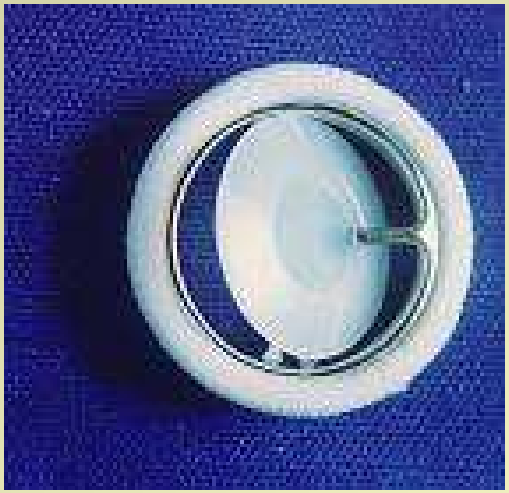


Hydrocephalus shunt

Hydroxy apatite



Heart Valve



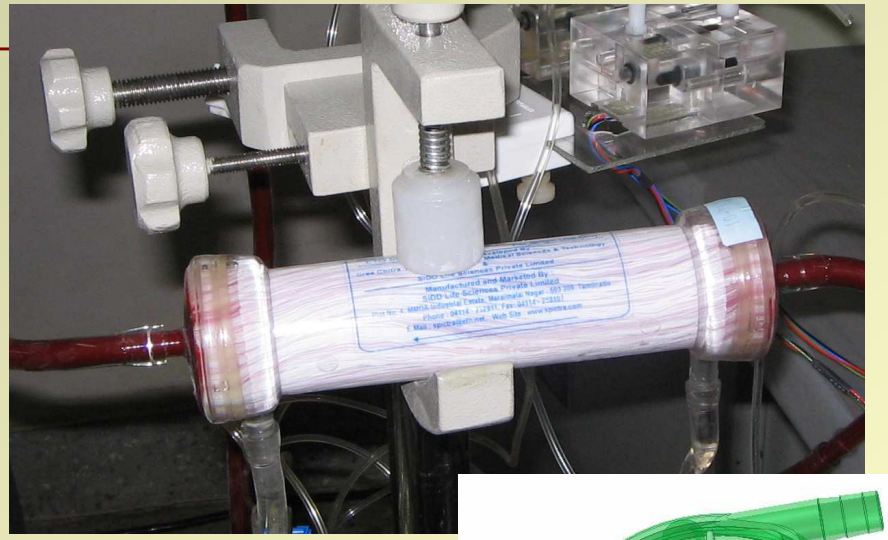
Dental composites

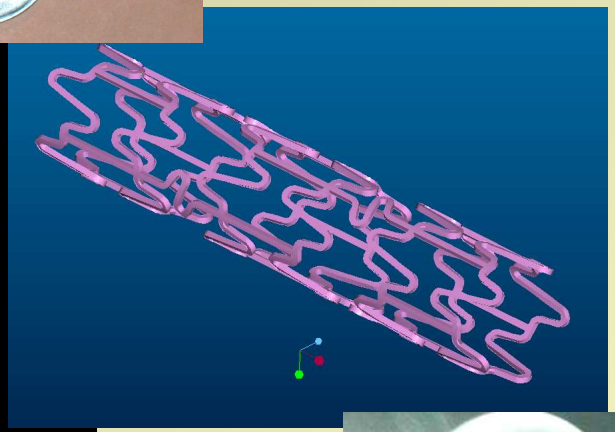
Membrane Oxygenator

Cardiovascular Devices

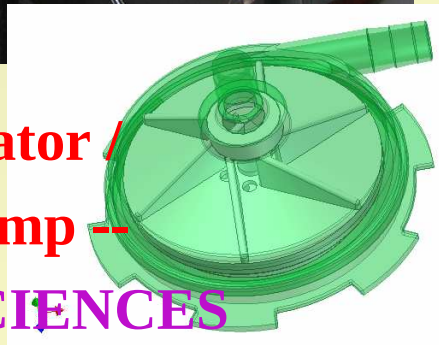
LVAD

VSSC





Hemocencenrator / centrifugal pump -- SIDD LIFESCIENCES



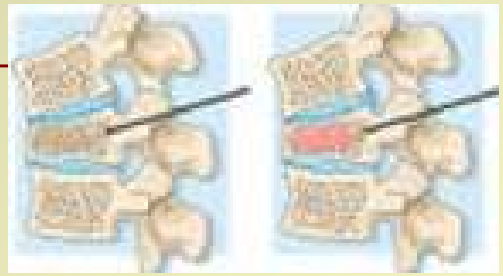
Vascular grafts - New Heart valve model -Drug eluting stent -TTK HEALTHCARE

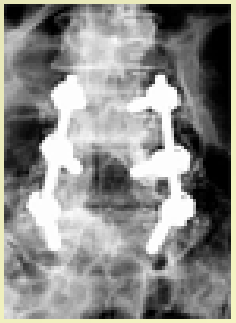
Degradable coatings

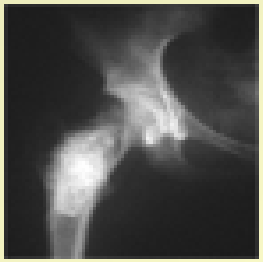
Blood compatible coatings

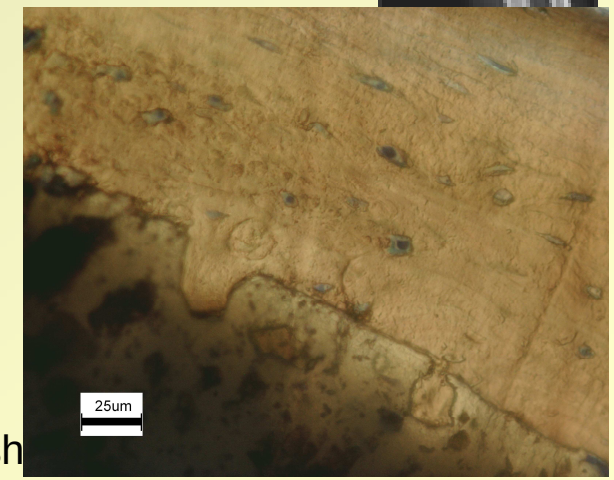
Dental & Orthopedic Products

- **Bioceramic products**
  - HABG composites
  - Cal Phosphate injectable bone cements
- **New Dental materials**
  - Glass ionomer & Dual Cure Resin cements
  - PU based composites
- **Polymer-ceramic composites**









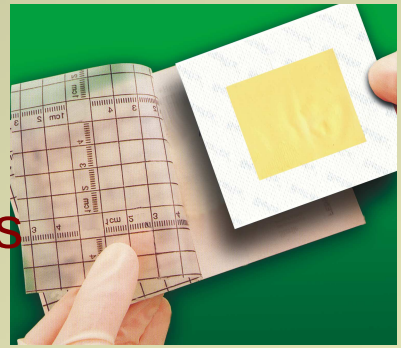
Bioactive Glass + aromatic polyester

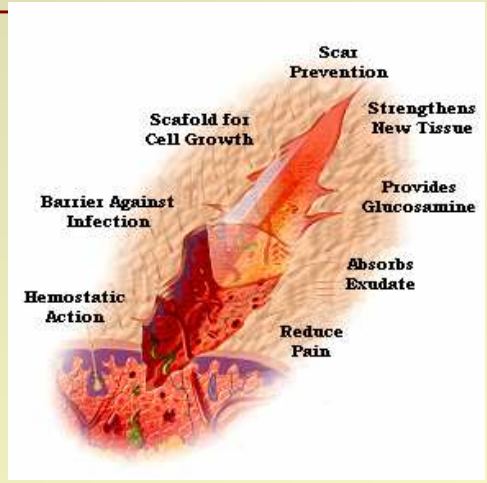
Wound Dressings & Hemostats

Chitosan Film Wound Dressings

* Chronic Ulcer Wounds

* Donor Sites



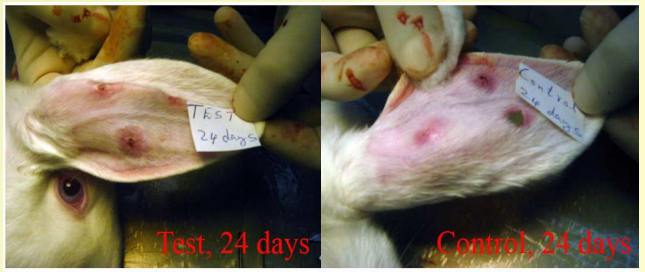


<u>India Sea-foods, Kochi</u>

Chitosan Hemostatic Sponges & Powders- for Military use

<u>Fibrin sheet based wound dressings</u>

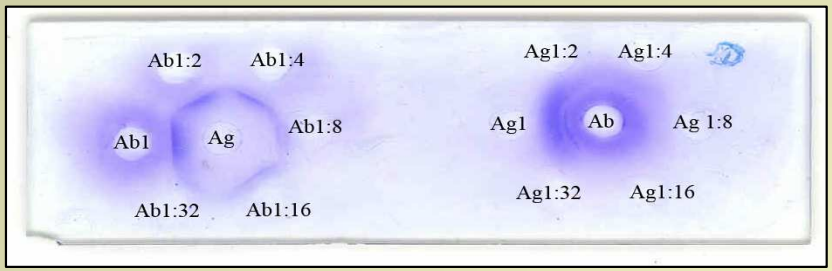
TGF-α Growth factor



Test is well healed.
Inflammation in control

BIOLOGICAL PRODUCTS

- **Fibrin glue - ATMRF, Baroda x**
- **Fibrin Sheet with Platelet Growth Factor for Wound Care**
- **TPF scaling-up in progress**



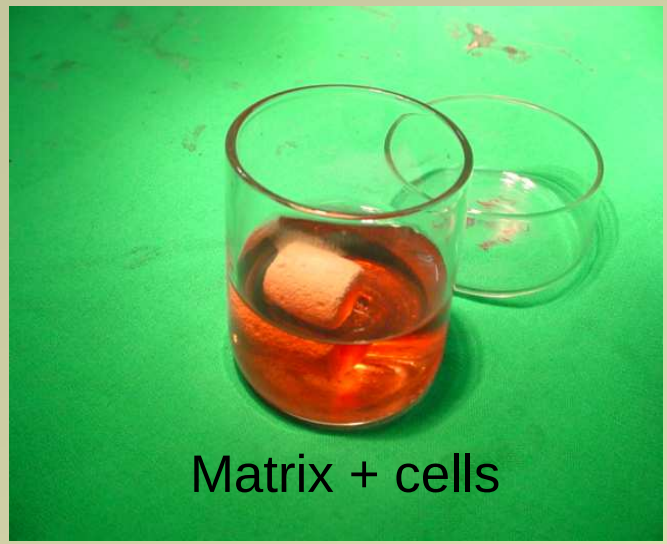
Venom: antivenom reaction (Precipitin lines in agarose)

Chicken egg derived Anti-Viper Venom

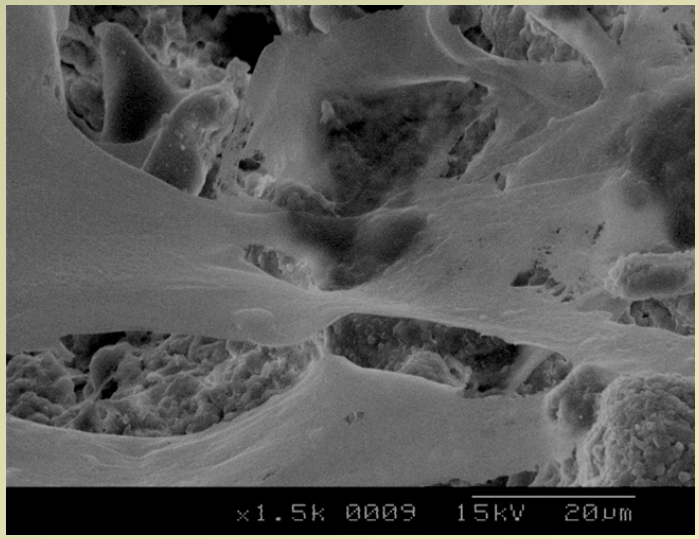
Tissue engineering

- Bone tissue engineering - large segmental defect
- Corneal epithelium TE / Ocular surface regeneration
- Cornea & Lung - test system for vitro toxicity
- Liver, Cartilage & Small diameter Artery
- De-cellularised Bovine Pericardium & Jugular vein - (in collaboration with Kerala Livestock Development Board for Quality animals)

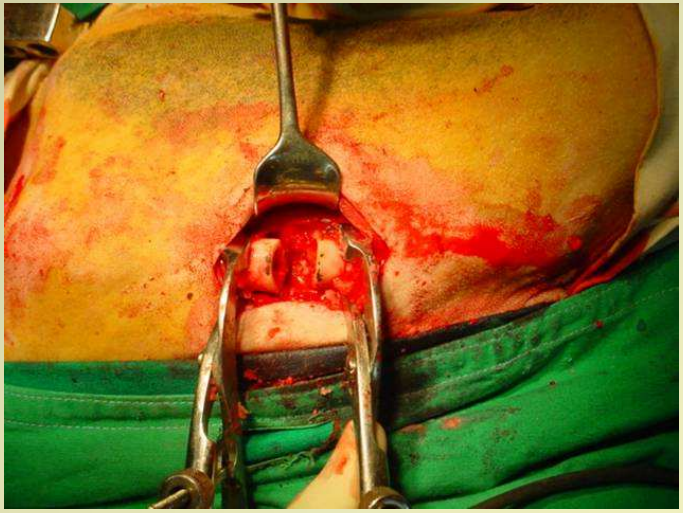
Bone Tissue engineering for large segmental defect repair



Matrix + cells



Cell-seeded ceramic



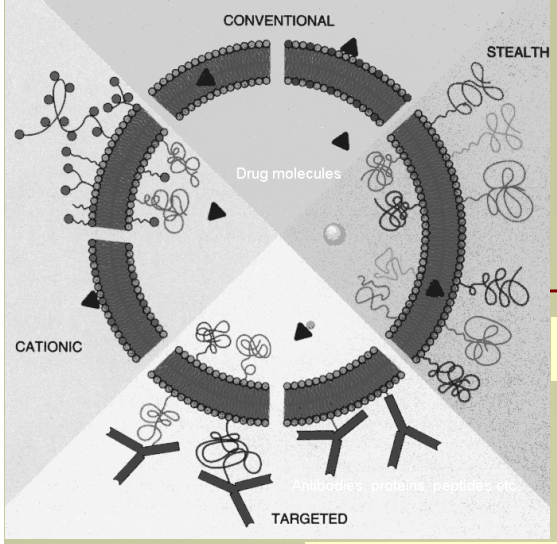
2 months post - Implantation

Transplantation study using bioengineered Corneal cell sheet in rabbit

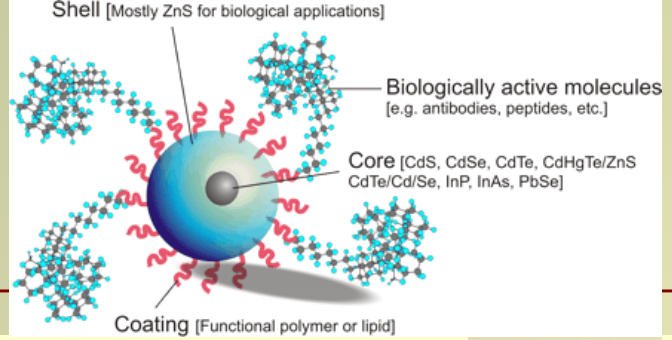
LSCD model before transplantation

After transplantation of cell sheet

Facility for Nano Drug Delivery systems

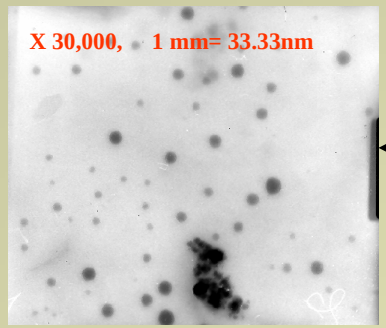


Liposomes

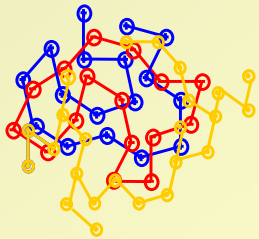


Quantum Dots for imaging

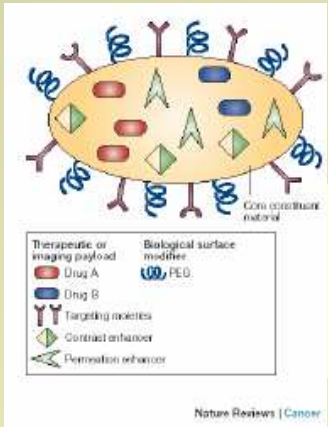
Antibody Conjugated Nanoparticles



Nanoparticles



Vectors for Gene Therapy



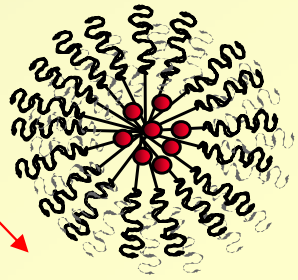
Cancer Therapy

Multifunctional nanoparticle

Dendrimers

Bioconjugates

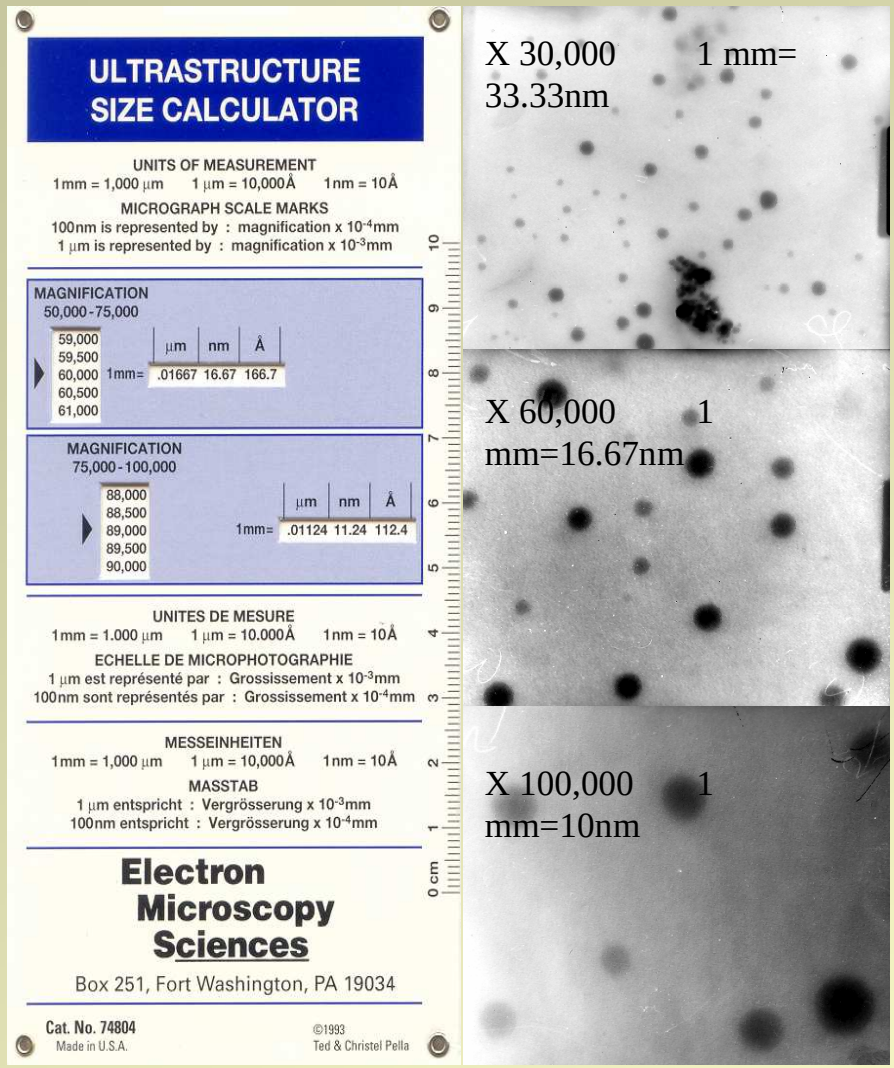
Nanotubes



Polymeric Micelles

Indo-Dutch workshop

Oral insulin delivery



USV Ltd., Mumbai

1. **Scaling up**
2. **Preclinical safety evaluation**

- **NMITLI / CSIR program.**

Recent Initiatives (Major)

- **Indo-Russian Centre for Biomedical Technology - Jan 2008**
- **Joint Degree Programs with IIT Madras & CMC Vellore**
  - M.Tech in Clinical Engineering & PhD in Biomedical Tech
- **DBT Centre of Excellence in Tissue Engineering - Dec 2007**
- **DST - Facility for Advanced Drug Delivery Systems using Micro/Nano biomaterials - March 2008**

ACKNOWLEDGEMENTS:

All my colleagues in the BMT Wing

Thank You