



## **Nanotechnology Good Science eGuide**

*Good Science is Good Business @ Ansto*

### **OVERVIEW**

Commercial developments in global nanotechnology include widespread industry applications of materials with novel properties and functionality; advanced drug delivery; and new processes and materials for manufacturing industry.

### **ANSTO NANOTECH CAPABILITY**

ANSTO is a major technology player in the nano space in materials and life science applications. ANSTO closely collaborates with industry, and has created a centre of excellence in nanostructured materials in Australia. Importantly, ANSTO possesses a comprehensive 'nano tool box' to measure and characterise nanomolecular properties.

### **Commercial Applications**

- Sensing (environmental monitoring; biosensing)
- Drug delivery/biologicals encapsulation
- Nanostructured materials (particles; optical coatings; controlled porosity materials)

### **Track Record**

- Scalable deposition of TiO<sub>2</sub> photoanodes in dye-sensitised solar cells
- Production of piezoelectric multilayers (PZT)

### **Principal Scientists**

- Dr John Bartlett (Nanostructures)
- Dr Christophe Barbe (Controlled release platform technology)
- Dr Victor Luca (Cation selective ion-sorbents; mesoporous oxides)
- Dr Kim Finnie (Sol-gel encapsulation of biologicals)

### **Research Snapshot**

ANSTO combines extensive R&D with expertise in materials and radiochemistry Current research projects include:

- Nano and microparticles for controlled release in food, chemical, biocide, pesticide, pharmaceutical and cosmetic applications
- Biosynthesis using encapsulated microorganisms
- Low-temperature production of optical coatings by atomic layer deposition
- Mesophase materials for applications in micro-electronics, opto-electronics, sensors, pharmaceuticals, membranes and catalysis
- Cation-selective microporous materials for radioisotope separations

### **'Nano Tool Box' Capability**

Synthesis and characterisation capabilities include:

- Sol-gel processing
- Thin/thick film deposition: spin and dip-coating; atomic layer deposition; screen printing; tape casting
- FTIR; Raman; UV; VIS; NIR analysis
- Particle size analysis
- Spectroscopic Ellipsometry
- Atomic Force Microscopy
- X-Ray diffraction
- Scanning; Transmission Electron Microscopy
- Small angle neutron/x-ray scattering

### **KEY CONTACTS**

- [George Collins](#), Director, Materials and Engineering Science
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