

## **One-Day Course: Nanobiosensors, Cranfield University, 25<sup>th</sup> September 2009 Programme**

- 9.00 – 9.30**      **Registration and Refreshments**
- 9.30 – 9.45**      **Introduction**
- 9.45 – 10.45**    **Introduction to Nanobiosensors**  
*Dr Jeff Newman, Cranfield University*
- Why Nano?
  - What is a nanobiosensor?
  - Detection strategies, biosensor physics and device engineering
  - Catalytic and affinity sensors
  - Natural and synthetic receptors
  - Applications of nanobiosensors
- 10.45 – 11.00**    **Refreshments**
- 11.00 – 11.50**    **Nanosized Biosensors**  
*Professor Seamus Higson, Cranfield University*
- From biosensors to nanobiosensor devices
  - Nanofabrication technologies (top-down and bottom-up approaches)
  - Nanobiosensors made by top-down approaches (e.g. nanopatterning by dip-pen nanolithography)
  - Nanobiosensors made by bottom-up approaches (e.g. DNA self-assembly/recognition and functionalised carbon nanotubes)
- 11.50 – 12.40**    **Nanomaterials for Biosensors**  
*Professor Sergey Piletsky, Cranfield University*
- Fundamental concept and size concerns
  - Carbon nanotubes in biosensing
  - Nanoparticles, nanocrystals and quantum dots in biosensing
  - Fullerenes, dendrimers, biological molecule and nanostructured silicon in biosensing
  - Nanorods, nanowires and nanocantilevers in biosensing
- 12.40 – 13.20**    **Lunch**
- 13.20 – 14.10**    **Integration of Nanobiosensors in Nano-biosystems**  
*Dr Sam Tothill, Cranfield University*
- Nanosensor arrays
  - Microfluidic and/or nanofluidic systems
  - Lab-on-a-chip
  - Molecular machines/devices
  - Other nano-bio devices & systems

**14.10 – 15.00**

**Medical Nanobiosensors**

*Dr Yi Ge, Cranfield University*

- Medical diagnostics
- Nanobiosensors for medical diagnostics
- Nanobiosensors for other medical applications
- Future perspectives

**15.00 – 15.50**

**Trends in the Nanobiosensor Market**

*Professor Anthony Turner*

- Overview of nanobiosensor technologies and their stage of commercialisation
- Intellectual property
- Commercial products
- Factors affecting long-term prospects
- Analysis of the industry
- Global market trends

**15.50 – 16.00**

**Summing up and Closing Remarks**