Nanomaterials

Department of Mechanical Engineering Sciences

Faculty of Engineering & Physical Sciences

Monday 16 April to Friday 20 April 2018

Nanomaterials is also part of the Advanced Materials MSc programme which is accredited by IOM3 and IMechE.
The Course
This course will present a review of the state of the art of materials structured at the nanoscale. Nanoscale structure in metals, polymers and ceramics can have a marked influence on structure-property relationships with the possibility of providing behaviour not seen in coarser scale structures. In addition certain new classes of materials may also be produced at this size level, for example, carbon nanotubes, graphene and a variety of colloidal structures. The processing and applications of nanomaterials will also be examined along with the requirements and techniques for characterising a range of nanomaterials in isolation and as part of complex systems.

Aims
The aim of this course is to introduce the various classes of nanomaterials: ranging from isolated nanostructures, through to nanostructures integrated in bulk materials. The course covers applications ranging from existing commercial nanomaterials found in everyday products through to the future generation of nano-enabled products.

Outline of the Course
• Nanomaterials: past, present and future
• Materials characterisation at the nanoscale
• Top down and bottom up manufacture of nanomaterials
• Carbon Nanotubes, graphene and other species
• Nanometallics
• Nanoceramics
• Waterborne Polymer Nanoparticles & Composite Particles
• Applications & Properties of Nanocomposite Films & Nanoparticles
• Dispersion of Nanoparticulates in Polymers
• Mechanical Properties of Nanoreinforced Polymers
• Nanolayers at Polymer/Metal Interfaces
• Nano-assisted manufacturing
• Nanostructured Coatings for Wear Resistant applications
• Applications of nanomaterials
• Nano-sensors

Who Should Attend?
The course is directed at engineers and scientists who require a thorough grounding in the benefits of nanomaterials and related technology. These are applicable to a wide range of industrial scenarios. As the field of nanomaterials is developing very rapidly, the course provides an ideal opportunity to review the scope and applicability of the currently available and emerging nano-structured materials. While the course is open to all, a scientific or engineering education to degree level, or a higher education qualification in physics or chemistry is desirable.

MSc in Advanced Materials
This short course is offered as a module in our part-time or full-time Modular MSc Programme in Advanced Materials. Further details of our programme can be found on our web pages.
surrey.ac.uk/postgraduate/advanced-materials

Key Points
surrey.ac.uk/mes/study/pd/courses
For Course Calendar & Online Registration Form
Courses run for one week from 9am – 5pm Monday to Friday
Delegates may request a list of local accommodation
Enquiries to: 01483 686122
Previous attendees

- Well-structured days and didn’t tire as one would expect for an intensive course. Lecturers were easy to approach.

- I have found the course both informative and enjoyable. I am very impressed with the overall course organisation.

- Very good overview on materials, applications and analysis properties.

Comments from delegates

Centre for Engineering Materials

The course is delivered from the Centre for Engineering Materials, home to the biggest concentration of materials researchers at Surrey with interests spanning all materials groups form the nanoscale through to macroscopic engineering structures. Across the University there are over 50 academics, residing in six engineering/physical science departments, for whom materials is a primary research interest.

Together they form materials@surrey.ac.uk/materials. The research, which is recognised as being internationally excellent, spans topics as diverse as the production of graphene through to the mechanical testing of metre long sections of Victorian water mains. Much of the work is underpinned by the University’s world-leading capability in characterisation, which comprises both facilities and expertise. Further, Surrey has a history of working in partnership with industry and a proven track record in delivering academically acclaimed and industrially relevant postgraduate courses.

The University is also home to the thriving, much-admired Engineering and Physical Sciences Research Council (EPSRC) Centre for Doctoral Training in Micro and NanoMaterials and Technologies surrey.ac.uk/minmat, which was established in 2009, and subsequently refunded in 2014, with awards amounting to over £9 million from the EPSRC and sponsorship of engineering doctorate students from over forty companies, to date.
For further information please contact:
MSc Short Course Administrator
Faculty of Engineering and Physical Sciences
University of Surrey
Guildford, Surrey GU2 7XH, UK

T: +44 (0)1483 686122
E: advancedmaterialsmsc@surrey.ac.uk
surrey.ac.uk/mes/study/pd/courses