Queen Mary
University of London

Strictly embargoed until 00:01am GMT: Wednesday, 9 January 2007

Press Invitation

Queen Mary launches state-of-the-art microscope unit

Journalists are invited to the opening of Queen Mary, University of London's new **NanoVision Centre**, which will be formally launched by Professor Nigel Brown, Director of Science and Technology at the BBSRC, on **Wednesday, 9 January, 2008 at 4pm**.

Queen Mary's NanoVision Centre is a multimillion pound, state-of-the-art microscope unit, which brings together the latest imaging technologies to open-up new avenues for cutting-edge research. The Centre will combine existing microscopy techniques in unique ways for the first time in the UK.

Dr Andy Bushby, who leads the Centre, explains: "Our scientists will use scanning electron microscopes (SEMs), that use a high energy beam of electrons to image and investigate the structure of materials at a very small scale; and scanning probe microscopes (SPMs), that use a tiny physical probe tip that is moved over of the sample in order to 'feel' the surface.

"Our scientists will also be able to perform experiments using combinations of SPM and SEM. This is incredibly useful as the SPM can push, pull or dissect samples while the SEM watches the process unfold. This will give the team an unprecedented opportunity to examine how complex systems such as biological tissues behave."

The Centre also includes the UK's first 'ultra high resolution 3D environmental scanning electron microscope' (3D ESEM), which allows scientists to build-up three dimensional images of soft matter, such as cell tissue and bacteria. This microscope includes the UK's first WetSTEM detector, which allows the scientists to look through thin sections of cellular and biological tissue to image their internal structures.

As well as the most sophisticated scanning electron microscope currently available, The NanoVision Centre also features the simplest - the UK's first ultra-small, ultra-fast 'desk-top' SEM. This revolutionary piece of equipment allows almost any sample to be viewed at up to 20,000 times magnification in less than 30 seconds - and is as easy to use as a digital camera.

The new capabilities will help medical researchers to reveal the interactions of chromosomes in the nucleus of cancer cells; investigate how bacteria invade cells in infectious diseases; and enable targeted drug delivery strategies to be developed by watching nano-particles being absorbed by nerve cells – work which informs neuroscience research. In biology, detailed molecular studies will help to unravel how plants trap light and turn it into energy in photosynthesis. Nanoscale materials research has huge potential in molecular electronic materials for flexible screens and affordable solar panels; and future computer processing based on semiconducting carbon nanotube molecules. It will also allow the development of biosensors for detecting biological molecules.

The NanoVision Centre builds on QMUL's reputation for high quality interdisciplinary research, bringing together leading scientists and advanced technologies to support research across the institution. Scientists from other institutions will also be able to use

some of the more advance facilities through an EPSRC 'Access to Advanced Equipment' scheme.

Ends

The NanoVision Centre will be launched on Wednesday, 9 January 2007, at 4.00pm at the College's Mile End Campus (E1 4NS).

Journalists will be able to tour the facility and meet the scientists. Professor Brown will then formally open the centre by cutting a nano-scale ribbon, and giving a Flagship Lecture entitled: "A Vision for Bioscience: a new biology for the 21st century." A drinks reception will follow.

High resolution images of samples studied in the NanoVision centre, including bone, bacteria, and salt crystals are available on request.

For more information or to attend the launch, please contact:

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Notes to Editors

The NanoVision Centre

- Our microscopes are able to observe objects ten thousand times smaller than the diameter of a human hair.
- We can pull apart individual molecules using forces of less than a nano-Newton - that's the equivalent weight of less than a billionth of a bag of sugar.
- We can move and manipulate objects with a degree of accuracy of one nano-metre – that's about 10 atoms or one millionth of a millimetre.
- Our ion beam fabrication facilities are accurate enough to make patterns with features of around 20 nanometres. That's good enough to write 6500 standard London Underground Tube maps (all the way up to Zone 6!) onto a pin head.
- The NanoVision Centre has a total value of over £2.75 million.
- Over 100 research staff at Queen Mary will use the NanoVision Centre from more than ten subject disciplines ranging from medical sciences to geology to fundamental physics.
- Nature assembles materials with tremendous complexity, intricacy and precision on a scale of a billionth of a metre. The Centre provides the facilities to visualize these structures, and to promote the development of man-made system with a similar level of control.

Queen Mary, University of London

Queen Mary is one of the leading colleges in the federal University of London, more than 13,000 undergraduate and postgraduate students, and an academic and support staff of around 2,800. Queen Mary is a research university, with over 80 per cent of research staff working in departments where research is of international or national excellence (RAE 2001). It has a strong international reputation, with around 20 per cent of students coming from over 100 countries.

The College has 21 academic departments and institutes organised into three sectors: Science and Engineering; Humanities, Social Sciences and Laws; and the School of Medicine and Dentistry. It has an annual turnover of £200 million, research income worth £43 million, and it generates employment and output worth nearly £400 million to the UK economy each year.