New microscope boost for UK nanotechnology research

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A powerful new microscope, currently available only in three universities in Europe and the USA, will position Britain as a leading centre for nanomaterials, researchers announce today.
The ultra-high performance analytical electron microscope (AEM) will support research programmes at the London Centre for Nanotechnology (LCN), an interdisciplinary collaboration between Imperial College London and University College London.

It will provide researchers with extremely high resolution imaging capabilities at resolutions of 0.14 nanometers. The AEM can also analyse materials and give information on the local composition, bonding environment and electronic state of the atoms. Researchers hope this will give them new insights into the complex interrelationships between the atomic arrangement of a material and the properties and performance of a device made from it.

Dr David McComb of the Department of Materials at Imperial, who is leading the project, explains: "The detailed analysis this instrument will enable is essential if UK industry is to play a leading role in developing advanced materials for technological applications."

Research will focus on projects in fuel cell research, magnetic nanostructures, smart coatings, semiconductor quantum dots and biomedical research.

"These projects share a common need for as complete a description as

possible of the structure of interfaces, boundaries and defects - ideally on the atomic scale," says Dr McComb.

Professor Mike Horton, Director of the Bone and Mineral Centre at UCL, adds: "Medicine is a great example of an area benefiting hugely from advances in nanotechnology. The AEM will greatly enhance our capacity to understand, for instance, the processes that directly influence the development of osteoporosis and neurodegenerative disease in an ageing population."

Tim Jones, Professor of Chemistry at Imperial and joint director of the LCN, says: "The ability to measure structure and properties at very localised scales is a primary driver of progress in nanoscience, nanomaterials and nanotechnology. This facility will further consolidate the position of the LCN as a world leading centre for research of this type."

Dr McComb adds: "Currently this type of instrument is only available at three universities in Europe and the US. It is hugely exciting that it will now be installed at Imperial to support nanotechnology research throughout London."

The AEM will be funded by a J2.4m grant from the Engineering and Physical Sciences Research Council. The award also includes four year funding for a post-doctoral research associate and a technician, both based at Imperial.

Source: Imperial College London