

World-leading SuperSTEM microscope that can see single atoms is unveiled

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SuperSTEM's Dr Quentin Ramasse with the new super-powerful electron microscope. Credit: STFC

A new super powerful electron microscope that can pinpoint the position

of single atoms was unveiled today at the Science and Technology Research Council's Daresbury Laboratory in Cheshire. The microscope will help scientists push boundaries even further in fields such as advanced materials, healthcare and power generation.

The £3.7 million Nion Hermes Scanning Transmission Electron Microscope, one of only three in the world, is housed in the Engineering and Physical Sciences Research Council (EPSRC) SuperSTEM facility at Daresbury.

The microscope not only allows imaging of unprecedented resolution of objects a million times smaller than a human hair, but also analysis of [materials](#). This means that researchers will not only be able to clearly identify the atoms, but observe the strength of the bonds between them. This will improve understanding of their electronic properties when in bulk and how they may perform when used.

Minister for Universities, Science and Cities, Greg Clark, said: "The UK is a world leader in the development and application of STEM (Scanning Transition Electron Microscope) techniques, and this new super-powerful microscope will ensure we remain world-class.

"From developing new materials for space travel to creating a better, cheaper treatment for anaemia, this new super-powerful microscope lets UK scientists examine how materials behave at a level a million times smaller than a [human hair](#). This exciting research will help lead to breakthroughs that will benefit not only our health but the environment too."

Professor Susan Smith, Head of STFC's Daresbury Laboratory, said: "SuperSTEM is home to real world-leading, even Nobel prize winning, research. It will be exciting to see what ground-breaking findings this new microscope will reveal, as it enables our UK academics, and their

collaborators within the world-wide scientific community, to expand the frontiers of materials science."

Professor Philip Nelson, EPSRC's Chief Executive said: "This EPSRC investment in state-of-the-art equipment is an investment in UK science and engineering. It will give scientists access to a tool that can delve into the heart of materials, discoveries made using this microscope will aid research and lead to innovations that benefit society and our economy. The EPSRC SuperSTEM facility at Daresbury has already delivered us new knowledge and applications and this new equipment will continue that pedigree."

Provided by Science and Technology Facilities Council

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