

# ISIS Second Target Station -- protons on target

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The ISIS Second Target Station Project at the STFC Rutherford Appleton Laboratory in Oxfordshire achieved a major milestone on Friday 14 December, at the first attempt and two days ahead of schedule. Protons were successfully extracted into the new proton transfer beamline from the existing ISIS accelerator and delivered to the new target station.

The £140 million Second Target Station Project will double the capacity of the world-leading ISIS research centre and significantly increase its capability for nanoscience applications. It will open for experiments in Autumn 2008 and is expected to operate for at least 20 years.

The high energy beam of protons will be used to release neutrons from a tungsten target. By scattering these neutrons off sample materials, scientists can visualise the positions and motions of atoms. The technique is non-destructive and can be used to study everything from delicate biological specimens to priceless archaeological artefacts.

Professor Keith Mason, CEO of the Science and Technology Facilities Council said “The ISIS Second Target Station will keep us at the forefront of materials research, enabling UK scientists to make breakthroughs that will underpin the next generation of super-fast computers, data storage, sensors, pharmaceutical and medical applications, materials processing, catalysis, biotechnology and clean energy technology.”

During the test, bunches of protons travelling at 84% of the speed of light were transferred from the circular ISIS synchrotron accelerator into the 143m long proton beamline. They were guided by a sequence of 57 steering and focusing magnets onto a graphite test target located inside the new target station. The arrival of the protons was detected by measuring the electrical current induced in the target and the beam profiles along the length of the beam line were checked.

“The ISIS Second Target Station is a part of the much needed expansion of facilities at the Rutherford Appleton Laboratory to meet modern science challenges across a range of research disciplines. The project is on time and on budget. Following a five year construction schedule, we expect to generate our first neutrons in June 2008 and open for experiments in the autumn of 2008.” said ISIS Director Dr Andrew Taylor.

Source: Science and Technology Facilities Council

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