

ROCKET FUEL POWERS NEW SCANNING TECHNOLOGY

IMPACT!

Engineering and Physical Sciences Research Council | Case study 10



7 MRI

New technology will improve the sensitivity of scans and reduce costs.

New technology that improves the sensitivity of MRI scans has been developed with support from EPSRC.

The technique, based on manipulating space shuttle fuel, could allow doctors to learn far more from a traditional MRI scan and lead to faster diagnoses.

IMPACT ON HEALTHCARE

- Developments will improve the sensitivity of MRI scans and reduce imaging costs.
- The technology will allow doctors to make faster and more accurate diagnoses in a wider range of conditions.
- New techniques will also improve popular analysis methods used by chemistry researchers.

Better medical scans

The new scanning technique, developed by a research team at the University of York, is based on manipulating parahydrogen – the fuel of the space shuttle.

The team has taken parahydrogen and transferred its magnetism to a range of molecules. This results in molecules that are more easily detected than was previously possible. It is the first time parahydrogen has been used in this way.

Professor Gary Green, from the University of York, said: "Our method has the potential to help doctors make faster and more accurate diagnoses in a wide range of medical conditions. The technique could ultimately replace current clinical imaging technologies that depend on the use of radioactive substances or heavy metals, which themselves create health concerns."

Improving chemistry research

The new method will also have major implications for scientific research as it radically reduces the time taken to obtain results using Nuclear Magnetic Resonance technology – the most popular method for obtaining analytical and structural information in chemistry.

Professor Simon Duckett, from the University of York's Department of Chemistry and director of the Centre for Magnetic Resonance said: "We have been able to increase sensitivity in NMR by over 1,000 times so data that once took 90 days to record can now be obtained in just five seconds. Similarly, an MRI image can now be collected in a fraction of a second rather than over 100 hours."

"This development opens up the possibility of using NMR techniques to better understand the fundamental functions of biological systems."

The research was supported by EPSRC, BBSRC and MRC.

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