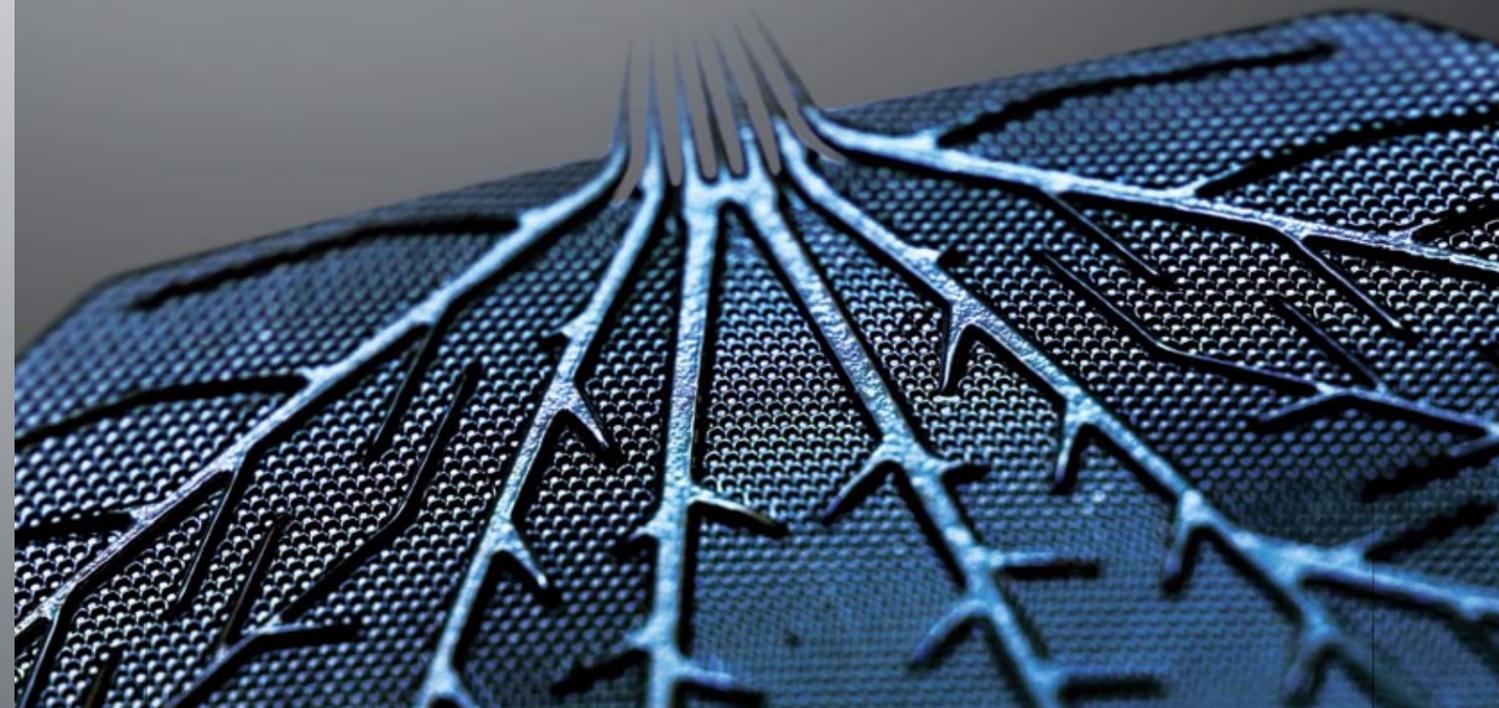


# energy

see the results  
see for yourself...



seed  
change

Birmingham Science City  
ideasforlife

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WARWICK

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## ...see the difference world class facilities and skills can make to your business

### Global Challenge

The global challenge to reduce carbon emissions is bringing about major changes in government policy and investment. New renewable energy technologies, combined with a broad suite of energy-efficiency advances are creating a new highly sophisticated low carbon economy fuelled by investment in research and technology collaboration.

### Birmingham Science City

To facilitate access to the latest thinking, research and equipment Advantage West Midlands have invested over £20M in the energy futures project.

The establishment of this new facility is part of the larger investment by Advantage West Midlands and ERDF in the research infrastructure of the West Midlands region, which unites

the Universities of Birmingham and Warwick in a newly-formed Science City Research Alliance (SCRA). The initiative also includes investment in Translational Medicine and Advanced Materials.

It established the West Midlands region as a leading research and technology centre of expertise.

# real tangible now

## Energy Futures

The project is led jointly by the University of Birmingham and the University of Warwick, but involves many other partners and Universities. It focuses on a number of key technologies including:

- Hydrogen fuel cell technology
- Bio-fuels
- Waste to energy
- Electric/hybrid vehicles
- Thermal technologies
- Smart electricity grids

## Getting Involved

The aim of the project is to encourage industrial and academic collaboration and joint research. It provides an opportunity for business and industry to access the latest thinking and research/testing equipment available in the field.

The objective is to encourage more rapid development of new technologies and to ensure that the West Midlands region is positioned to benefit from the low carbon agenda.

## What Next

To find out how your business could benefit from the programme contact:

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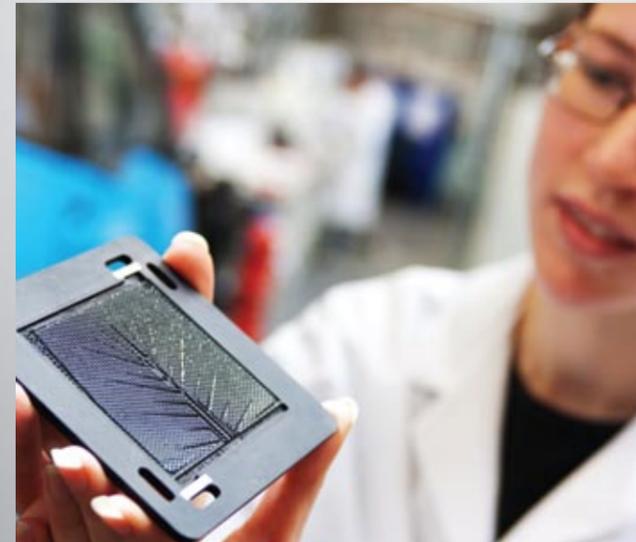
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The world leading Solid-State NMR facility at University of Warwick ▼

Top Image: Hydrogen Fuel Cell Technology  
Bottom Image: Fuel Lubricity Testing ▼



Hydrogen Powered Car, part of a fleet of five at the University of Birmingham ▼



◀ Solar Simulator Installation

# bio-fuels the next generation

Supported by the UK Government, Science City and the Technology Strategy Board in collaboration with Jaguar Cars, this work looks at new "next generation" bio-fuels for diesel cars. The project has a total budget £2.12 million and is supported by a range of industrial partners.

The technical approach of this project is based on the vision of the demand for diesel engines and of the capabilities of bio-diesel production within the next 2 decades and beyond.

While the next generation of cellulosic biomass-derived fuels will make an increasing impact, the first generation family of fatty acid esters will continue to be a major source of bio-fuel components. At the same time, the variety of fuel properties will become even wider as the decentralized production of bio-fuels continues to grow.

Partners for this project include, Jaguar/Land Rover, Green Fuels, Johnson Matthey and Shell.



## keeping us cool taking out the heat

In order to reduce significantly the world's carbon dioxide emissions, we have to look at all areas of consumption – one key area is in the increasing use of air-conditioning systems.

The University of Warwick, at the forefront of research in heat driven adsorption refrigeration, heat pumps and air conditioning technologies, have established the Sustainable Energy Engineering Design (SEED) research group, led by Professor Bob Critoph, to undertake research in low carbon

energy technologies and design essential to underpin a sustainable built environment.

Sorption technology uses heat energy rather than electricity to provide cooling for air-conditioning systems or for industrial cooling applications. The technology can also be applied to air-conditioning in vehicles where the waste heat from the engine drives the cooling system resulting in fuel savings. Air conditioning in automotive vehicles increases fuel consumption by

around 5% yearly. Sorption energy air conditioning systems will run from engine waste heat and so reduces fuel consumption by a similar amount.

Warwick has also been developing systems for automotive air conditioning applications. A proof of concept prototype providing 1.6 kW of cooling has been tested and met performance requirements for a class C 1.9 litre turbo diesel car (e.g. Ford Focus).