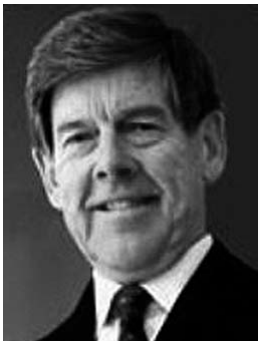
DIAMOND - ENHANCING THE SCIENCE BASE AND INDUSTRIAL COMPETITIVENESS



Lord Broers

Science and engineering are vital to our long-term economic prosperity. The Government faces tough choices, but it is essential that we continue to invest intelligently in our research infrastructure in order to maintain the UK's position as a world leader in science, and at the same time to improve the way we develop technological innovation for industry.

At a time when other advanced countries are investing more in their science base, ministers and business leaders understand that radical cuts in public spending are likely to severely damage our global competitiveness. This is not simply a matter of national prestige, but of economic necessity. The prospect of having to do more with less means that we have to focus our publicly-funded research in areas where we can both advance science and help industry innovate. Simple assessments of impact alone are not sufficient.

Vince Cable has recently called for a modified version of the Technology and Innovation Centres recommended by the Hauser review. I believe this is the right approach, and the vision for a national network of well-funded technology centres focused on areas of clear technical leadership and commercial promise, is one many of us share. Our resources need to be concentrated if we are to be internationally competitive. Cable also cited the Harwell Research campus as an effective example of 'business driven high technology clusters with academic links'. This reflects the increasing focus on industry of facilities such as the ISIS neutron source and the Diamond Light Source

synchrotron, the UK's largest science project of recent years. The light from Diamond, which extends in wavelength from infra-red light to hard X-rays, is used to enable a huge range of analytical and microscopical techniques.

The work of Diamond supporting R&D in leading companies including Rolls Royce on aerospace and energy applications, Pfizer and GlaxoSmithKline on drug discovery and development, and Johnson Matthey on improved emissions control catalysts, was also highlighted by David Willetts at the Royal Institution earlier this summer. He cited Diamond as an example of how publicly funded R&D boosts economic performance, and emphasised the importance of government support for such shared facilities.

Diamond now works with almost 30 companies. For example, Evotec is working on neurodegenerative disease and anti-infective drug discovery. Vertex, a global biotechnology company, uses the synchrotron in the design and manufacture of important new drugs that have progressed into advanced pre-clinical studies to treat major diseases. Cambridge-based Vernalis is using X-ray macromolecular crystallography to assess potential cancer treatments.

Jointly funded by STFC and the Wellcome Trust, Diamond is a good example of how a large-scale national research facility can effectively support both basic science and engineering applications across a wide range of fields. Armed with pioneering techniques in spectroscopy, x-ray diffraction, nanoscience, macromolecular crystallography, optics and magnetism, researchers at Diamond are not only advancing our knowledge of the finest details of the world around us, but are also providing advanced techniques that enable the development of new processes and products for commercialisation.

Since opening its first experimental beamlines in 2007, Diamond has rapidly expanded its capabilities and now works with over 2,000 leading researchers from around the UK. Scientific output increased by nearly 30% over the past year, with 2,700 user visits, and 887 papers and journal articles have now been published.

Working across the spectrum of physical, material and life sciences, Diamond also provides a platform for multidisciplinary collaborative work in areas such as drug design, materials engineering, nanotechnology, renewable energy technologies, environmental remediation and conservation of heritage artefacts such as the Mary Rose. Collaboration is the key to Diamond's success. Academic and industry partners are closely involved in the development and refinement of new technology, and in the operation of the synchrotron. New experimental stations are being developed on a partnership basis, such as the innovative Joint Engineering and Environment Processing beamline where it will be possible to examine industrial components several metres in size.

There are 18 experimental laboratories, so called beamlines, now operating at Diamond, and this is set to grow to 22 by 2012. Demand for beam time is intense, and a peer-reviewed application process ensures that only the most promising proposals are taken forward. Industry research for proprietary applications is set aside separately. Funding for Phase III, which looks at fully maximising the facility with an additional 10 advanced beamlines, will increase the scientific capabilities by some 45% for a further investment of under 25% of the original costs. Much of this research can only be done at Diamond.

Overall Diamond is well positioned to consolidate the UK's leadership in synchrotron based scientific research and enhance its capabilities as a platform for commercially useful innovation and knowledge transfer.