

Healthcare research using Diamond



Innovative use of technology, together with rigorous controls to ensure product security, is needed to meet demanding requirements for healthcare technology development particularly around cost, portability and usability. As the focus moves from the hospital to the home, healthcare research and development is increasingly driven by the needs of the patient end users rather than clinicians. The requirement to develop robust, reliable, lower energy and cost-effective point-of-care devices is more important than ever before. While it remains essential to business strategy to balance the needs and opportunities in both developed and emerging markets, increasingly complex regulatory frameworks are delaying the time to market, so a good understanding of the science behind the product and access to the widest possible variety of research and development tools is vital to ensure success.

Located in South Oxfordshire, a region widely recognised for a strong technology business focus, the Diamond Light Source is a sophisticated synchrotron light facility which can generate highly intense beams of light ranging from IR and UV to X-rays, all of which are making research at the cutting edge of modern science possible. Diamond provides specialist analytical techniques for the atomic to microscale characterisation of materials ranging from high performance components and devices to through to diagnostic tools and drug delivery technologies.

In order to facilitate the use of Diamond by researchers working in industry, an Industrial Liaison team has been established, comprising highly qualified scientists experienced in a range of technique areas. This team can help to translate your research problem into an analytical solution by making use of its diverse expertise in synchrotron methods.

Depending on your specific requirements, we offer a range of service levels:

- **Beamtime only – you come to Diamond and collect your own data**
- **Data collection service – we collect your data and send it to you for analysis**
- **Full analysis service – we collect and analyse your data and present you with a detailed report**

Some examples of ways in which Diamond can be used for providing research and development solutions for the healthcare industry are outlined overleaf.

For further information please contact the Diamond Industrial Liaison Office on



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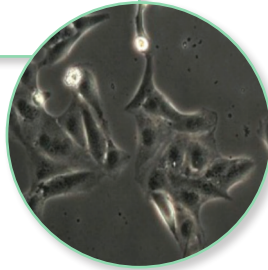
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Diagnostics

- Understand chemical and structural changes at interfaces in sensor technologies;
- Explore novel imaging technologies for diagnostic methods;
- Develop and test detector technologies;
- Probe the performance of chemical and biological sensor technologies;
- Chemical imaging at the cellular level.



Implants

- Investigate chemical speciation during corrosion processes;
- Explore failure mechanisms: cracks, voids, fatigue and wear;
- Investigate the microstructure of novel materials;
- Follow structural evolution during cycling: examine the effects of ageing on components.



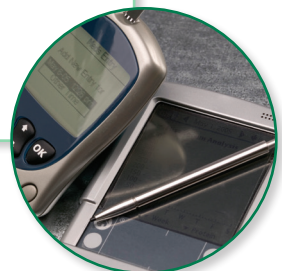
Novel Materials

- Structural identification and characterisation of biocompatible materials;
- Follow the effect of sterilisation treatment on material structure and properties;
- Investigate composite materials and artificial tissues.



Devices

- Structural identification and characterisation of biocompatible materials;
- Follow the effect of sterilisation treatment on material structure and properties;
- Investigate composite materials and artificial tissues.



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