



Industrial research using Diamond

OIL

The eternal dream to explore matter at its deepest level has continually driven scientists to build more and more powerful instruments from simple microscopes to elaborate X-ray sources.

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 as diverse as novel pharmaceuticals, catalytic materials, coatings, motor oils, and large engineering components.

Our dedicated Industrial Liaison Team of highly skilled

scientists is available to support you in every step of your research. The team can help to translate your R&D challenges into meaningful analytical solutions by making use of its diverse expertise in synchrotron methods.

Some examples of how Diamond can be used for oil research and development are outlined overleaf.



Applications

Fuels, chemicals & additives

- Identify and characterise the structure of crystalline solids and waxes;
- Understand interfacial phenomena relating to friction, lubrication and wear;
- Explore phase behaviour in oil additives, detergents and lubricants.

Downstream processing

- Investigate catalyst behaviour under *in situ* conditions;
- Follow corrosion processes under realistic conditions;
- Achieve structural and chemical information to aid the development of high performance materials and coatings.



Pipeline and processing

- Follow chemical composition changes during corrosion;
- Uncover the chemical composition of worn films;
- Test failure and fatigue in pipes and welds in a non-destructive way;
- Image microscale cracks and pores in pipes and welds.

Upstream exploration & production

- Investigate the structure of complex functional materials, e.g oilfield fluids;
- Study solid-solid and solid-liquid interfaces including clay and mineral systems;
- Analyse particle shape, particle growth and size distribution in colloidal suspensions.



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For further information

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