CHEMICALS

Industrial research using Diamond

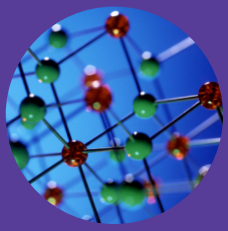
The eternal dream to explore matter at its deepest level has continually driven scientists to build more and more powerful instruments from simple microscopes to elaborate X-ray sources.

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 chemicals research are outlined overleaf.

diamond.ac.uk/industry



Applications

Organic chemistry

- Understanding mechanisms of catalytic reactions using stopped-flow techniques;
- Studies on organic porous cages used for hydrogen storage and carbon capture and storage;
- Investigations of heavy metal complexes (e.g. phosphine ligands) used in medical imaging.

Inorganic chemistry

- Studies on multiple phases of transition metal oxides used in catalysis and electrochemistry;
- Investigations on lanthanide speciation in complexes used in separation & extraction of nuclear waste materials;
- X-ray chemical imaging of individual catalyst particles.

Physical chemistry

- Probing the atomic structure of the electrochemical double layer at the electrode and alkaline electrolyte interface;
- Characterisation of new semiconductor materials applied in industrial production processes;
- Structural analysis of micro, meso and soft matter materials.

Processing

- Direct studies of the structure and interactions of catalysts with reagents under various environmental conditions e.g. three-way catalysts, fuel cells;
- Probing formation of surface layers on anodes during operation.

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For further information

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