



DRUG DEVELOPMENT

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 drug development research are outlined overleaf.



Applications

Enteral formulations

- Determination of atomic molecular structure;
- Investigation of the polymorphism and co-crystal formation in APIs;
- Understanding changes in formulations under varying conditions (e.g. pH, temperature) over both short and long timescales.

Parenteral formulations

- Analysis of lyophilised materials undergoing dissolution;
- Characterisation of complex phase behaviour in formulations;
- Understanding the behaviour of excipients under varying conditions and compositions.

Topical formulations

- Investigation of the microstructure of dispersions, emulsions, foams etc;
- Understanding variations in behaviour of excipients with varying batch or storage conditions;
- Direct imaging of drug delivery mechanisms e.g. inhalers.

Manufacturing

- Direct imaging of manufacturing issues such as cracking and granulation in tablets, bubbles in capsules;
- Mapping the structure and chemical distribution of precipitates and impurities in pharmaceutical formulations;
- Investigating the stability of APIs under manufacturing conditions.

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For further information

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