

Outside the box: Synchrotron Light for Biotechnology

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Synchrotron facilities are a particular type of particle accelerator that produces synchrotron light, ranging from infrared up to X-rays, which is trillions of times brighter than conventional sources. Synchrotron Light is an extremely powerful tool for the characterization of a wide diversity of materials and processes at atomic level. The outstanding synchrotron light properties such as high brilliance, collimation and continuous spectrum, provides unique advantages compared to conventional techniques such as faster data collection, higher spatial resolution, lower detection limits or flexible sample environments to perform in-situ measurements. Synchrotron light applications to the health and biotech areas will be shown. These sectors are already taking profit from this valuable tool and there are many applications in these areas, as for example:

- To study the interactions at atomic level of a target protein complexed with a new small molecule with therapeutic activity. It is extremely useful for the discovery of new drugs.
- Characterization of pharmaceutical formulations and polymorphism studies.
- Study the effect of a cosmetic product in the skin or hair, from the structural to the biochemical point of view.
- Study the inner structure of a cell

Very often, the industry and the academia are not aware of synchrotron techniques and their applications. For that reason, the European project CALIPSOplus brings together 14 synchrotrons and 8 FELs aiming at removing access barriers and promoting the usage of this type of facilities among the scientific and industrial community. In particular, TamaTA, a specific work package of CALIPSOplus, is granting SMEs access to this type of facilities.

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