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ESRF X-rays at the service of industry

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The creation and tailoring of new materials are at the heart of current industry challenges. New materials must meet ever more stringent requirements of performance, whilst fitting into the modern cradle-to-grave cycle of material production, use, and recycling. The properties and function expected of materials depend heavily upon their composition and their micro- or even nano-structure. Their “ultimate” characterisation is possible down to the atomic scale using the tools and techniques of large-scale facilities such as synchrotron X-rays. The European Synchrotron Radiation Facility (ESRF) provides the ability to visualise the atomic, nano-, and macro-structure of a huge range of complex materials, often under processing or end-use conditions and in real time. This capability lends itself to an equally wide range of industrial R&D problems which, in particular, have been adopted by the healthcare industry. Beyond drug discovery and development, the ESRF is also very active in providing analysis for micro- and nano-electronics, energy and smart materials, transport, chemistry and catalysis, engineering materials, and home and body care amongst others. In Europe and worldwide, funding agencies are requesting and demanding a stronger economic return from the significant public investments made in central facilities and this is resulting a gradual but firm pressure for stronger interactions with industry. In this context, new business models are springing to life, with more partnerships, more services, and nimble small start-ups bridging the gap between the oft “ivory tower” nature of research infrastructure and the commercially driven industry world. This presentation will present and discuss the increasingly critical role of such large-scale facilities in delivering ultimate materials characterization for innovative industrial and applied R&D, looking to both the current developments and future possibilities as well as review several examples of partnerships between research and industry and the impact these partnerships have on academic research.

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