

Poster Presentations

**[MS31-P05] Dynamic Structural Science
-Watching Chemistry Happen,
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Structural science has evolved significantly in the past years. Nevertheless, the results obtained are traditionally time averaged snapshots of stable compounds. The Dynamic Structural Science (DySS) consortium has been set up to develop and extend current methods into a regime where the whole reaction can be followed. For this, we are developing novel techniques that will allow time-resolved data collection to become more streamlined and accessible to all. Our goal is to expand time resolved structural techniques across the pico- to microsecond time-frame, over which the most fundamental chemical processes occur. So far these have been mainly elucidated by indirect spectroscopic probes. We will now supplement these using time-resolved crystallography to visualise the structures of transient intermediates in small molecules and macromolecular systems. For small molecule systems, accessing ps and ns timescales will give us the ability to monitor local structural changes accompanying chemical events such as photochemistry, and nuclear motions. In biological systems the challenge is to not only access the fast localised changes that define the reaction chemistry, but also to visualise the long range conformation changes which occur over longer timescales and often gate the reaction chemistry which are linked to biological responses. The information gained will feed into a synthetic and properties development programmes focusing on optoelectronic, sensors, biological light activated systems, and catalytic metalloenzyme mimetics. We will work in partnership with end-users to tackle challenges in developing applied materials where the insight into real-time processes offered by DySS at RCaH can give a real competitive edge.