ESRF	**Experiment title:** Structural dynamics accompanying catalysis in a light activated enzyme as studied by time-resolved WAXS	**Experiment number**: LS-2465
Beamline: ID09	**Date of experiment**: from: 29/01/2016 to: 02/02/2016	**Date of report**: 05/03/2018
Shifts: 12	**Local contact(s)**: Gemma Newby	*Received at ESRF:*

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Report:

Protochlorophyllide (Pchlide) oxidoreductase (POR) is one of the three known light activated enzymes that exist in Nature. The ternary NADPH:Pchlide:POR complex is stable in the dark and enzymatic activity is initiated by light in the 440-460 nm and 630-640 nm wavelength regions, providing a unique opportunity to study the structural dynamics involved in catalysis on a time-scale from nano- to milliseconds after laser-light triggering.

During LS-2465, we worked to find the right conditions and an effective protocol for stabilizing and regenerating the ternary complex long enough to measure time-resolved scattering patterns. We got evidence of clear difference patterns in the ms timescale (Figure 1), thus confirming the sensitivity of TR-WAXS to POR structural dynamics, but we did not have the time to collect a full dataset in the whole relevant time range.