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Structural changes of proteins revealed by time-resolved SAXS

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Dronpa may be regarded as the prototype of photochromic proteins. These fluorescent proteins can be reversibly switched between a fluorescent bright and a non-fluorescent dark state by light excitation of the chromophore. Although the X-ray structure of Dronpa in both states has been determined in great detail little is known about the actual switching process itself.

We performed time-resolved SAXS experiments in solution to gain a detailed picture of the structural dynamics in this photo-switchable protein. For that purpose, our optical laser system has been attached to the cSAXS beamline and the optically induced changes have been probed by X-rays. Constructing three dimensional models from the data uncovered conformational alternations of the beta-can topology.

In this talk, I will report on these experiments and demonstrate the capabilities of time-resolved photo-SAXS techniques in soft condensed matter science.

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Soft Condensed Matter

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talk

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