



	<b>Experiment title:</b>  Structure analysis of light-responsive and human disease related proteins	<b>Experiment number:</b>  MX-539
<b>Beamline:</b>  ID 23-2	<b>Date of experiment:</b> from: 12/04/07 to: 13/04 /07	<b>Date of report:</b>  14.02.08  <i>Received at ESRF:</i>
<b>Shifts:</b>  3	<b>Local contact(s):</b>  Dr Joanna TIMMINS	
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# **Report:**

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Photosystem II (PSII) is multisubunit complex embedded in the thylakoid membrane of higher plants, algae and cyanobacteria that catalyzes the oxidation of water to atmospheric oxygen.

So far the highest resolved structure of PSII with resolution of 3Å was obtained in the previous proposal period MX-335. But there is strong need to obtain higher resolution structure to overcome limitations of current model.

Apart from improving the preparation and crystallization of dimeric PSII, we have isolated PSII monomer that is enzymatically as active as dimer and shows the same subunit composition.

We were able to collect two datasets from monomer crystals of moderate quality, see table:

Space group C2221 a=121.2 b=226.6 c=339.4	
Wavelength [Å]	0.976
Resolution [Å]	30-4.5
Rsym	0.146(0.575)
Completeness [%]	85.7
I/sigma	5.46 (2.16)

Number of observations	87429
Number of unique	24253

We also started experiments with Xe/Kr saturation using gas-chamber in order to investigate possible channels and pathways in PSII. We used the Oxford Cryosystem Xcell with highest possible pressure up to 15 bars, varying time of saturation. Crystals showed some resistance to pressure, but lower diffraction power (less than 5 Å) was observed.