ESRF	**Experiment title:** F420:NADP Oxidoreductase (FNO)	**Experiment number**:
Beamline: ID13	**Date of experiment**: from: 8.11.00 to: 9.11.00	**Date of report**: 2001/2/28
Shifts: 1.5	**Local contact(s)**: Dr. Manfred Burghammer	*Received at ESRF:*

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Report:

FNO is found in methanogenic archaea growing on ethanol as the electron donor. It catalyzes the reduction of cofactor F_{420} by NADPH. The structure of FNO had already been determined by the applicants, however, the crystals, some of which cocrystallized with NADPH and F_{420}, did not contain NADPH and/or F_{420}. Data from a new form of crystals, again cocrystallized with NADPH and F_{420}, indicated the presence of the substrates. The crystal size of only ~$100 \times 40 \times 20$ µm^3 did not allow data collection in house. Thus for data collection to the best resolution possible, the use of the microfocus beamline ID13 was mandatory.

Crystal data:

The crystals showed the space group $P2_12_12_1$, with cell dimensions a = 54.9 Å, b = 69.8 Å, c = 145.5 Å, which correspond to 2 molecules in the asymmetric unit. Data were collected up to 1.65 Å resolution resulting in a set of unique reflections with a completeness of 91% and in R_{sym}= 8.3%.

The refinement of the structure (R_{cryst}/R_{free}= 0.185/0.208) prooved the presence of both, NADPH and F_{420}. This structure reveals the first glance of F_{420} bound to an enzyme and allows to propose an reaction mechanism on an atomic basis.