ESRF	**Experiment title:** The structure of amyloid fibrils by X-ray fibre diffraction	**Experiment number:** LS881
Beamline: BL4, ID2	**Date of experiment:** from: 25th Feb to: 26th Feb 1998	**Date of report:** 9.5.1998
Shifts: 3	**Local contact(s):** Jonathan Grimes	*Received at ESRF:*

Names and affiliations of applicants (* indicates experimentalists):

Dr Louise Serpell, Medical Research Council, Laboratory of Molecular Biology, Cambridge.
, Dr Margaret Sunde, Oxford Centre for Molecular Sciences, NewChemistry, Oxford

Report:

X-ray fibre diffraction data was collected from a variety of amyloid fibrils from sources described in our proposal. These included a novel amyloid-like fibrils which is formed invitro from the Sup35 yeast protein, which shows homology to the human prion protein. Using the high intensity beam at the ESRF we collected a diffraction pattern which showed that the fibrils are b-sheet in structure having a cross-b fibre diffraction pattern consistent with other amyloid fibrils. In the table below we show the measurements of reflections for each of the specimens collected from. We are using this data to understand more about the structure of amyloid fibrils. This data was collected in february and we are currently processing the data. These are the preliminary results.

Amyloid Specimen	Meridional Reflections	Equatorial Reflections
sup35	4.8, 2.4	9.83
Amyloid A	4.72, 4.46, 3.25	10.5, 47.5
Lysozyme	4.81, 4.12, 2.38	14.1, 21.21
Fibrinogen	4.76, 4.56, 3.78, 2.38	7.15, 9.98, 14.96, 26.6
SH3 peptide	4.92, 3.70	9.84

In addition to this data which was acculumulated from several patterns with different specimen to film distances, we collected a rotation series from a specimen made up of synthetic amyloid fibrils from Abll-25. This showed that the specimen had a preferrred orientation giving a semi-crystalline diffraction pattern. This pattern is shown below and we are currently processing and indexing these patterns using the CCP13 suite of programs from Daresbury. We hope to get a similar specimen for diffraction made up of the yeast prion protein (Sup35) for our next trip to the ESRF.