ESRF

Experiment title:
HIGH ANGLE MICROFOCUS FIBRE DIFFRACTION STUDIES OF TRANSITIONS BETWEEN RIGHT AND LEFT HANDED CONFORMATIONS OF METHYLATED DNA

Experiment number:
LS 341

Beamline:	**Date of Experiment:**		**Date of Report:**
ID13	from:18.10.95	to: 20.10.95	27.6.96

Shifts:	**Local contact(s):**	*Received at ESRF :*
6	Dr. C. Riekel	09 JUL 1996

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Report:

The aim of this proposal was to undertake time–resolved high angle x-ray fibre diffraction studies of confirmational transitions between left and right handed forms of the poly[d(G–m5C)].poly[d(G–m5C)] double helix. The experiment was designed to exploit the high brilliance of the microfocus x-ray beam on ID13 by allowing the study of extremely thin samples for which we expected to observe humidity driven transitions with a very high degree of cooperativity throughout the sample.

Polynucleotides were synthesised specifically for these studies by incubation of the appropriate triphosphate with the large fragment of DNA polymerase I. Fibres were prepared from this material for a wide range of salt strengths and with thicknesses ranging from 2μm to 10μm. A specially designed sample cell was constructed to accommodate these fibres in such a way that the humidity of the fibre environment could be controlled.

Unfortunately during the period of this allocation, no usable beam time became available for this work and the study could not be completed. It had been hoped that some additional beam time would become available in which to undertake this experiment, but this has not proved possible.