ESRF	Experiment title: DAFS OF LOCAL AND LONG RANGE ORDERING IN LAYERED SEMI-CONDUCTORS	Experiment number: HC 587
Beamline: D1 Swiss-Nor	Date of experiment: from: 26th jun 96 to: 30th jun 96	Date of report: 14th Aug 96
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Report: We performed successfully DAFS measurements at the Ga K-edge, probing super-ordering in InGaP/GaAs epitaxial growth.
The measurements were performed at the Swiss-Norwegian CRG beam line, equipped with a six circle diffractometer. The improvement of the software, allowing to collect automatically the diffraction peak versus the energy of the photons, was fundamental to the feasibility of the experiment. ,

The aim was to record DAFS data of lattice matched InGaP/GaAs epitaxially grown, and presenting a cationic ordering along the <111> direction. In this case the Bragg peak of the (-5/2,5/2,-5/2) reflection is present and structural data can be extracted.
The sample chosen was grown on GaAs with a miscut angle of 6∞ respect to the (001) direction are reported in the figures.

The modulus of the Fourier transform of the DAFS signal are reported; the signal to noise ratio enable to perform the data analysis.
The Fourier transform of the (044) DAFS signal is shown in fig. a for the GaAs substrate and in fig. b for the InGaP epilayer. The difference ,in the Fourier transform confirms the symmetry selectivity of our reflection choice. In fig. c the Fourier transform of the (-5/2,5/2,-5/2) DAFS signal is reported. The aim of the data analysis will be to extract via iterative Kramers-Kronig analysis the local structure of the Ga in the epilayer, comparing the information averaged on the whole epilayer ((044) measure) and the information arising from the superordering local domain (forbidden (-5/2,5/2,-5/2) measure).

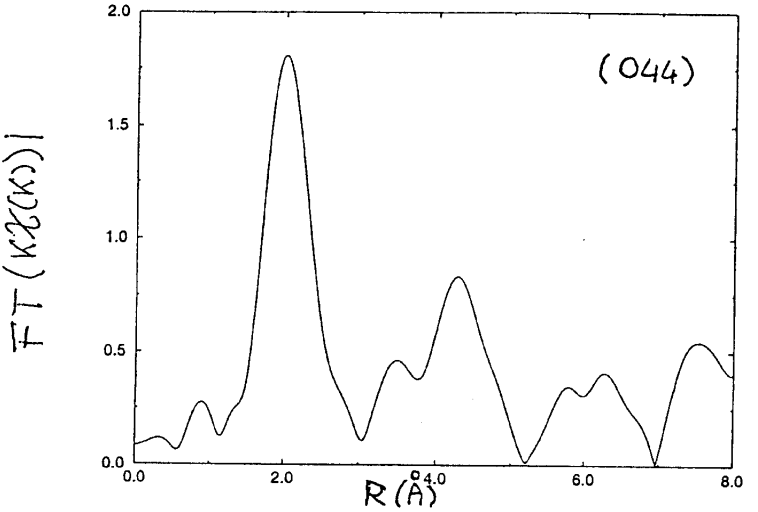

Fig. a

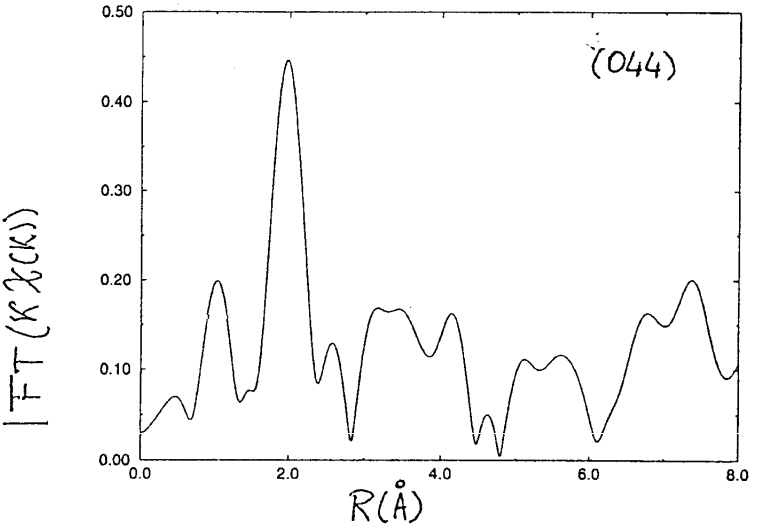

Fig. b

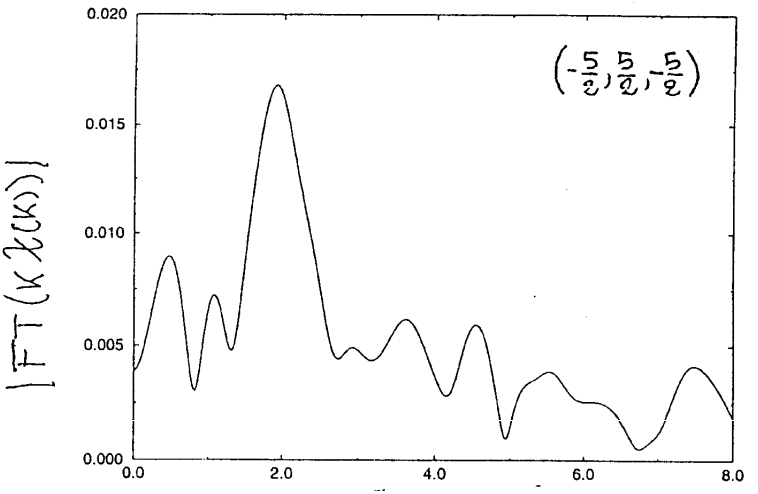

Fig. c