



	Experiment title: Lattice dynamics of piezoelectric LGS-type $\text{La}_3\text{Ga}_4\text{Ge}_2\text{O}_{14}$	Experiment number: HS - 940
Beamline: SNBL (BM1A)	Date of experiment: from: 10-Nov-1999 to: 18-Nov-1999	Date of report: 29-Feb-2000
Shifts: 21	Local contact(s): Dr. P. Pattison	<i>Received at ESRF:</i>
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Report:

Only preliminary results can be reported at the present time. This is due to the short time in between the experiment and the deadline for proposals and due to two further measurements at HASYLAB in December and February which had to be prepared and conducted in the meantime.

The pressure dependence of the volume of langasite is depicted in figure 1. Triangles pointing upwards / downwards denote increasing / decreasing pressure. The deviation of the volume at 11.47(7) GPa from the fitted Birch-Murnaghan equation of state might be due to a non-hydrostatic environment within the pressure chamber.

At high pressures, a splitting of $hh0$ -reflections is observed (Figure 2). This effect is fully reversible when pressure is decreased. This splitting reaches a maximum at about 8.5 GPa and might hint on a phase transition.

At 9.70(7) GPa, satellite reflections have been observed (Figure 3), suggesting a modulated structure within the high pressure phase.

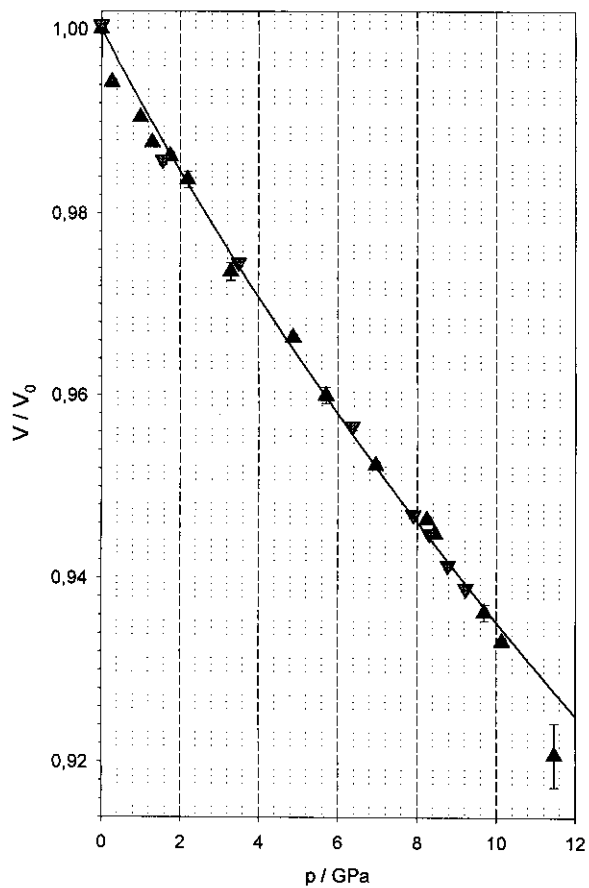


Fig. 1: Rel. Volume vs. p

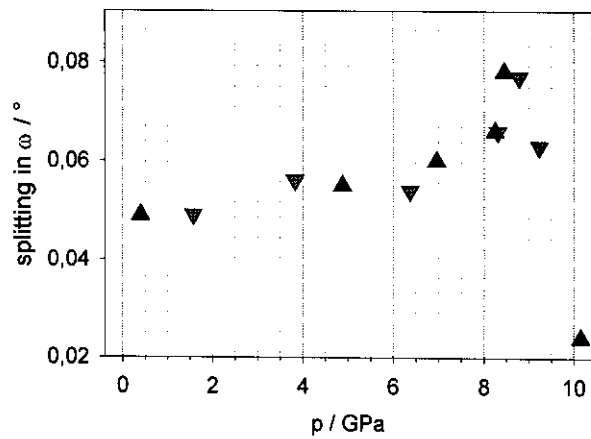


Fig. 2: Splitting of reflection $3\bar{6}0$ vs. p

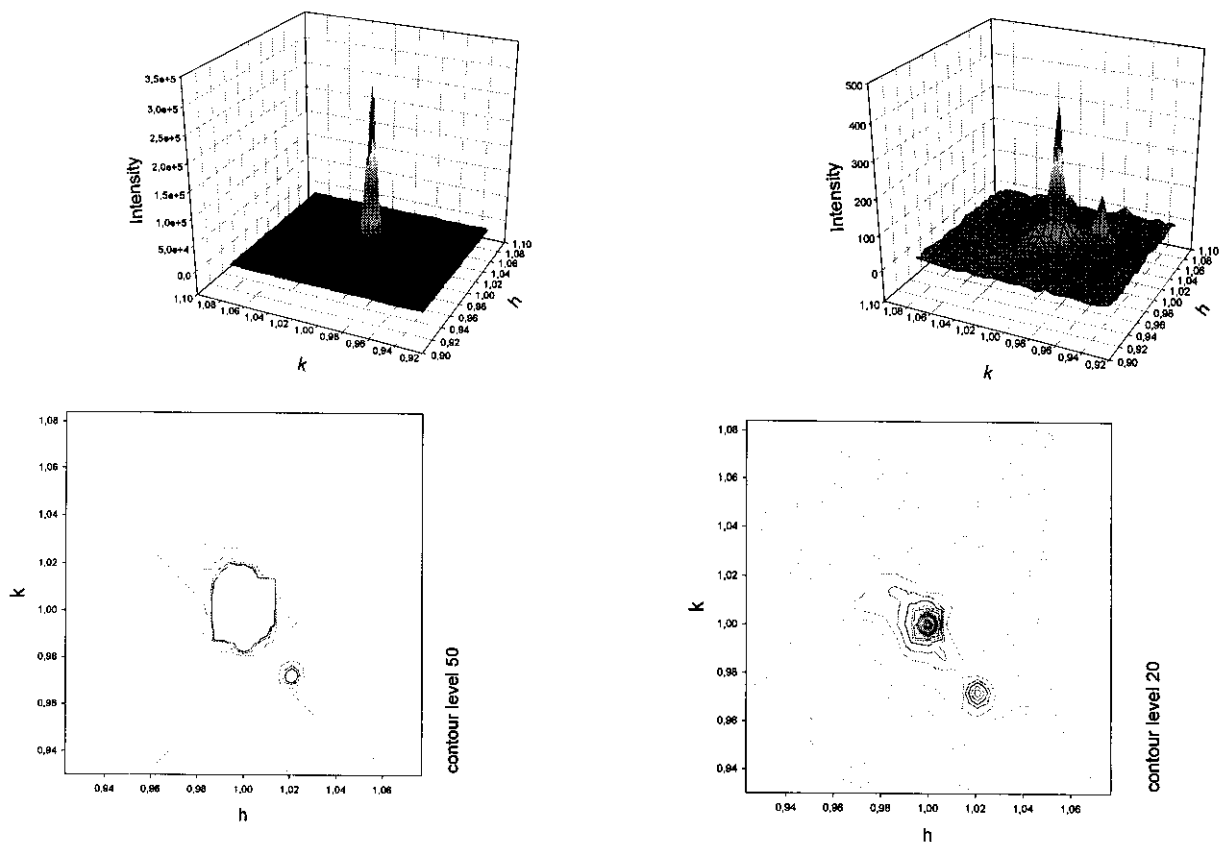


Fig. 3: Sattelite reflection of (111) at 9.7 GPa, cuts at $l = 1$ and 1.007 , respectively