	Experiment title: High-pressure low-temperature x-ray diffraction of Li isotopes	**Experiment number**: HS 2121
Beamline: ID 09	**Date of experiment**: from: 13. June 03 to: 17. June 03	**Date of report**: 2. Sept. 04
Shifts: 12	**Local contact(s)**:M. Hanfland	*Received at ESRF:*

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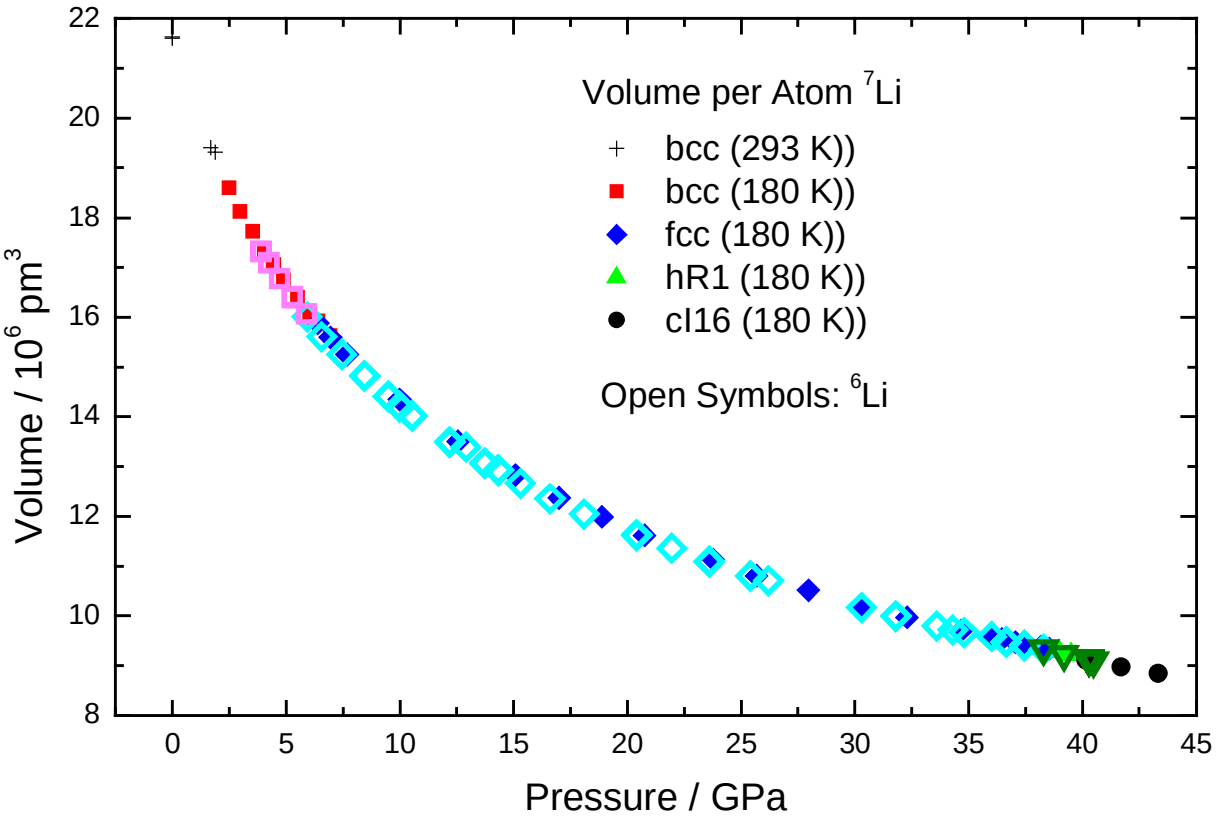
Report:

The data have been analysed and we do detect a difference in transition pressures between the isotopes ^{6}Li and ^{7}Li. In order to investigate the nature of these differences ab-initio band-structure calculations are presently being performed. Since differences of transition pressures of different isotopes of the same element require not only total energy calculations, but also determinations of the phonon energies, the task is very demanding and will not be finished before winter this year. The combined experimental and theoretical results will be submitted in a joint publication to Physical Review Letters. A figure showing the differences of the transition pressures at 180 K (and the identical volume of both isotopes) is shown below.


Volume per Atom 7Li
bcc (293 K))
bcc (180 K))
fcc (180 K))
hR1 (180 K))
cI16 (180 K))
Open Symbols: 6Li
Volume / 10^6 pm^3
Pressure / GPa
22
20
18
16
14
12
10
8
0
5
10
15
20
25
30
35
40
45