



	Experiment title: Structure and Dynamics of liquid Rb at high pressures and temperatures.	Experiment number: SC-3823
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Report:

We performed XRD experiments aimed at studying the static structure factor of liquid Rb as a function of pressure at high temperature. The experiment was extremely challenging, due to the high chemical reactivity of liquid Rb.

We tried to confine the sample into transparent polyethylene containing rings to avoid contact with the Re gasket. Unfortunately a chemical reaction occurred at high temperature. We tried also some DACs loaded with Rb by using a KCl containing ring inside a Re gasket but we encountered some problems: the Rb sample escaped at high pressure and room temperature from one DAC, we broke one diamond in another DAC, and the Rb was contaminated right after the loading in a third DAC.

We then loaded a DAC using only a standard Re gasket. This type of loading guarantees a much more stable Rb sample even at 573 degrees but some minor contamination is produced. As a matter of fact small solid crystals seem to be present inside the liquid Rb, producing narrow and weak diffraction peaks, which we avoided to integrate during the analysis. These additional peaks change position in the diffraction image at every measurement, indicating that they are moving inside liquid Rb.

In Fig. 1 we show the waterfall of XRD measurements in the liquid state as a function of pressure. The evolution clearly displays a modification of the static structure factor becoming more important at high pressures.

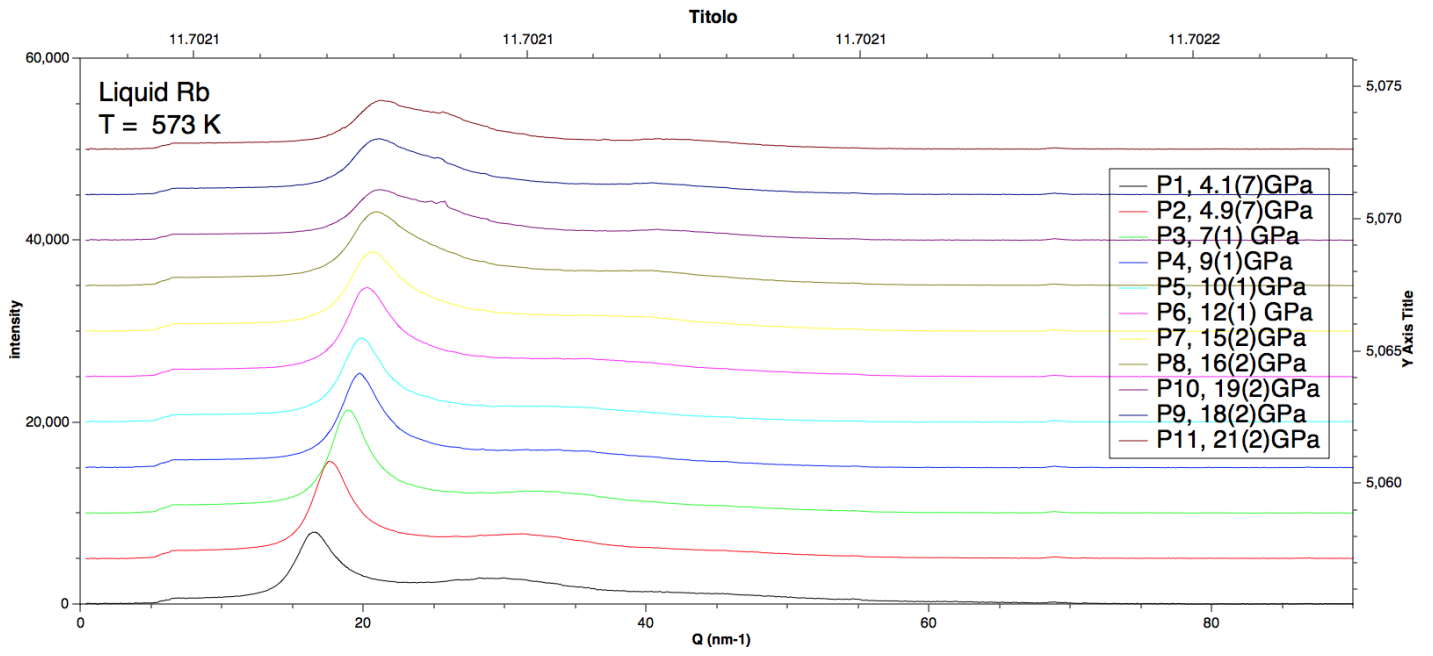


Figure 1