



Experiment Report Form



	Experiment title: Determining the Structural Behaviour of Potassium at Unprecedented Compressions	Experiment number: HC-4673
Beamline: ID27	Date of experiment: from: 4 March 2022 to: 7 March 2022	Date of report: 2022-09-12
Shifts: 9	Local contact(s): T. Poreba, M. Mezouar	<i>Received at ESRF:</i>
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Report:

The aim this experiment was to investigate the structure of potassium (K) up to 300-400GPa. We prepared multiple samples of K for the experiment, but unfortunately found that upon arrival the samples had reacted or were otherwise impure. We were thus unable to complete the experiment. It may be that was due to higher than ideal levels of O₂ or H₂O in our glove box or indeed a poor-quality sample.

Instead, we spend the bulk of the experiment time performing preparatory investigations of a sodium (Na) sample in anticipation of our subsequent experiment HC-4887. We successfully brought the Na sample up to ~195GPa, collecting an excellent single-crystal diffraction pattern from the host-guest tI19 phase, but the diamonds failed upon pressure increase and we were unable to observe the hP4 phase.