



	Experiment title: New insight into elastic properties and amorphisation of feldspars	Experiment number: ES-986
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Shifts: 9	Local contact(s): Davide Comboni, Michael Hanfland	<i>Received at ESRF:</i>
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Report:

Albite (Ab, $\text{NaAlSi}_3\text{O}_8$), anorthite (An, $\text{CaAl}_2\text{Si}_2\text{O}_8$) and microcline (Mc, KAlSi_3O_8) are the major feldspar minerals that are abundant in various geological environments. In the previous studies we have discovered new high-pressure polymorphs of An, Ab and Mc at pressures above ~ 10 GPa. The aim of the current experiment was to address elastic softening of feldspars in the pre-transitional pressure region, hysteresis of the phase transitions, and amorphization mechanism of alkali feldspars.

In the course of the experiment, by means of single-crystal XRD we have studied Ab and An up to 15 GPa with a pressure step of 0.3-0.5 GPa. The preliminary analysis shows that the collected data is of the good quality and allows to address the elastic softening of these compositions as well as as to reveal the structural mechanism driving the softening.

We have faced a difficulty to select a good quality single crystal of Mc and intermediate Ab-An compositions. Selection of the crystals and DACs re-loading have consumed a significant portion of the experimental time, specially due to the reason that only one person was allowed onsite due to the Covid measures. Ab-An composition was measured up to 15 GPa with a pressure step of 0.3-0.5 GPa. Microcline is still to measured therefore the additional experimental time might be needed to accomplish the goals of the proposal and to prepare the publication.