

**Experiment title:**

Water Co-ordination around heavy halide ions in aqueous electrolytes.

Experiment number:

CH-650

Beamline: BM29	Date of experiment: from: 8 th Feb 1999 to: 11 th Feb 1999	Date of report: 9 th August 1999
Shifts: 9	Local contact(s): Dr Stuart Ansell	<i>Received at ESRF:</i>

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Report:

XAFS spectra were recorded for a range of solutions containing Rb, Br, Cs, I, and Li, at the K-edge of Rb, Br, Cs, and I for two reasons.

Primarily they were measured so that we would have a second method of determining the structure in ionic liquids. The results could then be used to compare with those obtained from anomalous X-ray ray diffraction, previous experiment SC417.

Secondly as a means of determining accurately the Kramers-Kronig relationship for each element under investigation. This was useful as it allowed the anomalous scattering data previously recorded for Rb and Br, experiment SC417, to be more accurately determined.

Early analysis of the results has indicated that the first coordination sphere is likely to be H₂O at the distance expected from other measurements which is in good agreement with the data previously determined by AXD.

It has also shown there is little difference in the local structure with change in concentration. Further examination of the data is required in order to check the results from AXD once the analysis of the AXD data is complete.

A raw spectrum is shown in Figure 1 from a RbBr in H₂O solution at 6M, which is close to the saturated solution limit.

Of real interest to note is the data we have recorded from the I K-edge, this data allows to begin to understand the local structure in solutions that contain Iodide. It is of value as it is difficult to obtain data from AXD, at these energies due to energy range difficulties.

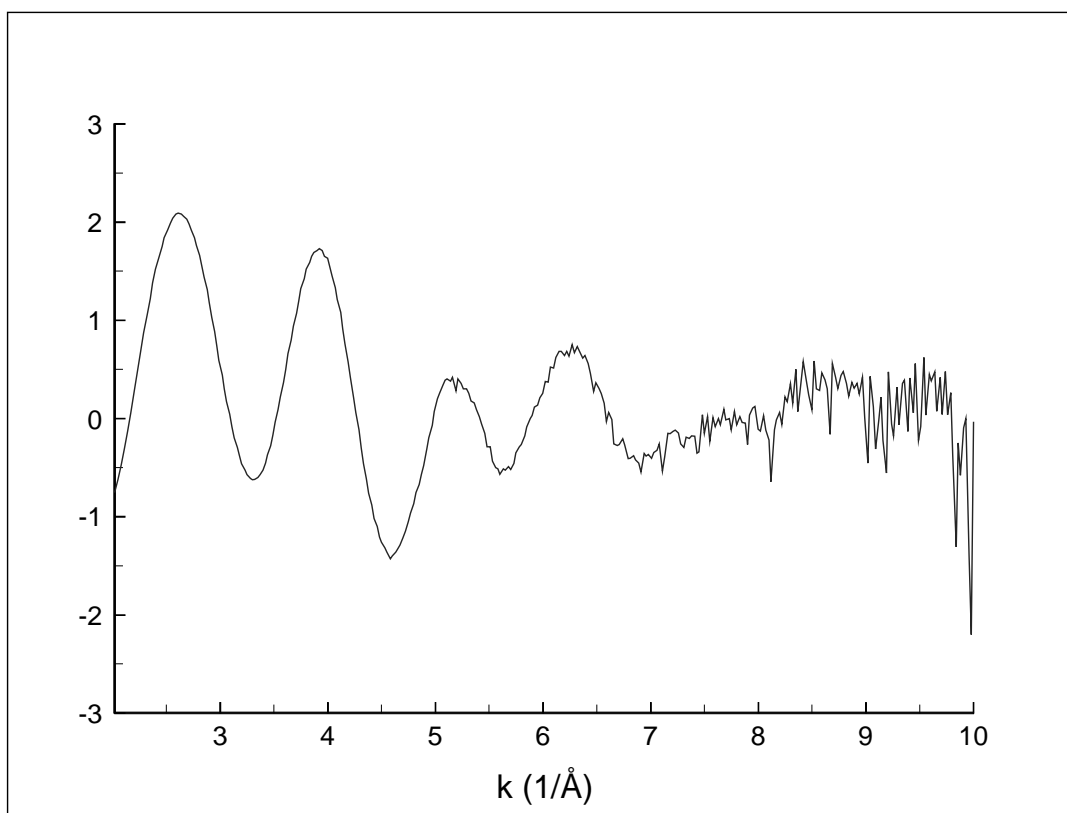


Figure 1- Raw, background subtracted data from a 1Molal RbBr in H₂O solution.