E	ESI	RF	•.

Beamline:

Shifts:

GILDA

12

Experiment title: Structural and transport properties of silver iodomolybdate glasses		Experiment number : 08 – 01 - 165
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EXAFS spectra at the Ag-K edge have been collected for AgI, Ag₂O, Ag₂MoO₄ and glasses with the x Ag₂MoO₄ (1-x)AgI (x=0.33 and 0.25) compositions. For the x=0.33 composition spectra have been collected also for the corresponding crystal. The spectra have been collected at liquid nitrogen, room temperature and 60 °C. The aim of the experiment was twofold: to investigate the local structure of Ag in the above glasses and to get insights into the very high ionic conductivity and the very low value of the glass transition temperature into these systems (45 – 50 °C). The data analysis is still in progress. We found that it is not possible to obtain a sensible fit of the spectra without inserting into the post edge background two double excitation peaks. This is illustrated by the figure in which the results for AgI are shown.

For the moment, the most interesting result is that the local structure of Ag is very similar (at 77 K) in the glass and crystal with the 0.33 composition. The local chemical environment is in both cases constituted by c.a. 1.5 oxygen atoms at 2.4 Å and 1.5 iodine atoms at 2.9 Å. The main difference between the two spectra is that in the glass the radial distribution functions of both oxygen and iodine are non-gaussian, while in the crystal they are. This is nicely related to the very high ionic conductivity (with silver as a mobile ion) in the glass, which is not found in the crystal.

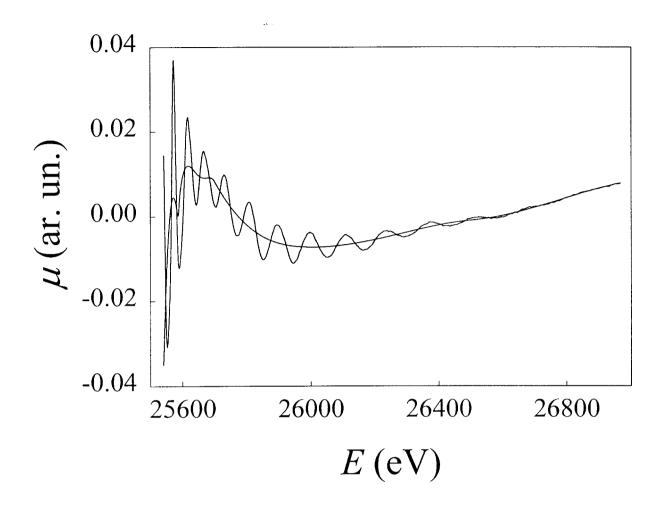


Fig. 1. – Ag-K edge EXAFS spectrum of AgI at liquid nitrogen temperature, with the fitted post edge background. The double excitation peaks near 25600 eV are clearly apparent.