ESRF	**Experiment title:** Origin of the Metal Insulator Transition in Pb2CaOsO6	**Experiment number**: HC-1984
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Report:

A crystal of Pb_2CaOsO_6 was mounted and aligned. We looked at the resonance and low energy excitations in several brillouin zones in order to find a minimum of the elastic contribution. The lack of a low energy excitation that could be attributed to magnons

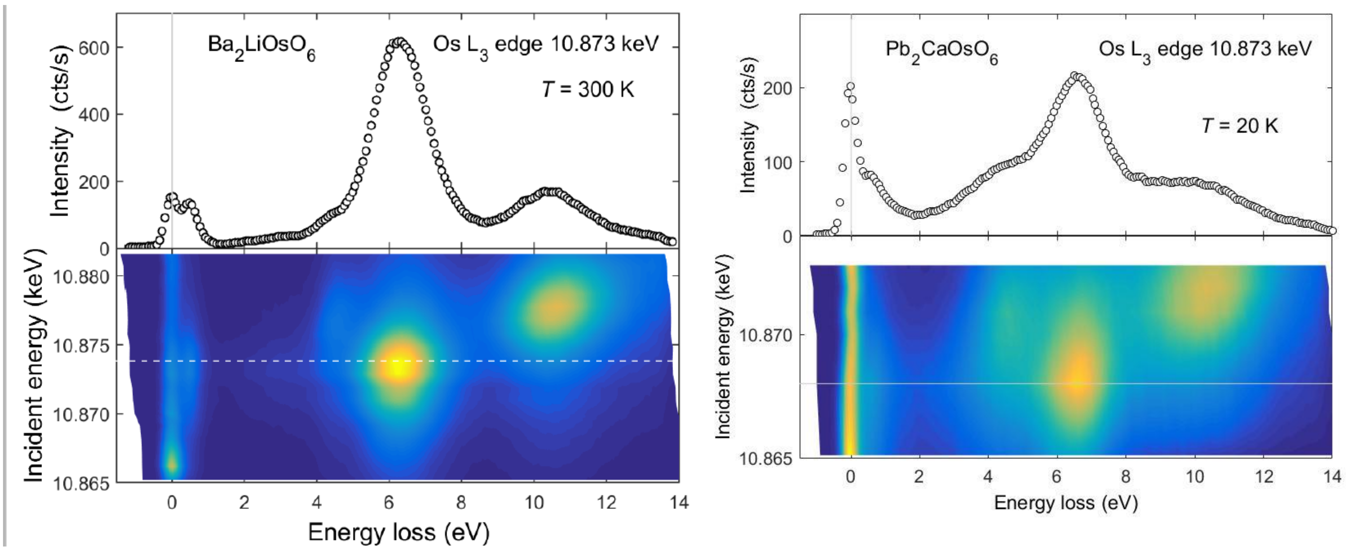

Figure 2. RIXS MAP (left) of Ba_2LiOsO_6 at the Osmium L-edge. The RIXS map clearly shows a strong splitting of both the T_{2g} and E_g states possibly caused by a breaking of crystal symmetry. Preliminary calculations indicate that the feature at 4.5eV may be a mott-hubbard excitation. Right, RIXS map of Pb_2CaOsO_6 which contains strikingly similar feartures to Ba_2LiOsO_6 despite the different Os valence state, and at very similar energy scales. The broadness of the features may be related to a commensurate structural distortion splitting the osmium sites.

observable at any of the wavevectors associated with the magnetic ordering (k=1/2,0,1/2). This investigation was complicated by twinning and the monoclinic crystal structure. We decided to study the low energy intra-T_{2g} excitation as a function of temperature using high resolution, observing a marked increase in broadening (Fig. 2). We measured at T=20,70,100,and 300K. Following this, the remaining 3 shifts of beamtime were used to mount and measure a low-resolution RIXS map of Ba_2LiOSO_6 at room temperature (Fig. 1).

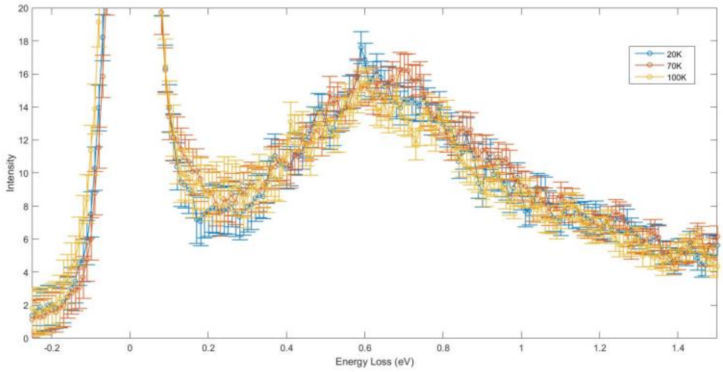

Figure 2. low energy excitation seen at the Os L-edge of Pb2CaOsO6. The excitation is linked the the splitting between the J=3/2 and J=1/2 components of the T2g states, and broadens markedly with increasing temperature, but does not shift in position.