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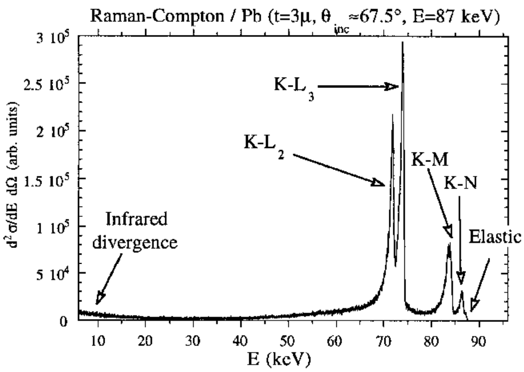
Report:

- the first part of the results has been analyzed - it concerns the "Infrared Divergence" (ID) of the RRC and more generally, the absolute measurement of the RRC double differential cross-section. As it is a quantitative result more than a qualitative one, the completion of this work requires some careful instrument/sample calibration before error bars can be finalized.

The figure shows a typical spectrum obtained with a 3μm target, corrected from other spectrum features like L fluorescence and Multiple Scattering. The autoabsorption correction has already been applied to this spectrum so only a multiplicative coefficient related to absolute flux and detection solid angle needs to be inserted in order to obtain absolute differential cross-sections. The ID can readily be observed at energies bellow 20 keV, all the way down to 5 keV which is our detection cut-off. Also, high quality high energy spectra were obtained, featuring RRC on L_2, L_3, M and N shells.

- the largest error contribution at the present time stems from the uncertainty in the target thickness and in the scattering angle. Both of these error sources can and will be decreased for future experiments by using a modified design of the sample chamber and by doing independent target thickness measurements on- and off-line.

- another error source (physical, not experimental) is the contribution of the bremsstrahlung for the ID region. This can be modeled and also estimated by comparing yields of very thin and thick targets, compared with the photoelectron range in the sample. However, it is worth exploring the possibility of a gas jet target, which will guarantee the elimination of the bremsstrahlung contribution to the ID.



- Regarding the high energy RRC spectra the experiment has yielded promising results - however, the data reduction is not finished yet. The main physical limitation stems from the multiple scattering (MS) contributions to the RRC peak at high energy. In order to correct for this effect several approaches have been used:

1) a system of collimators will be used in the scattering chamber so as to limit the detection acceptance to the beam footprint and

2) a modelling of the MS is underway, based on our inhouse experiments and a MonteCarlo ray tracing code developped both inhouse and in collaboration with Prof. J. Felsteiner from Technion Institute, Israel.

Finally, given the high scientific interest of these measurements, which will settle a *one order of magnitude disagreement* between experiment and theory, further experiments on different Z elements are necessary, in order to track down and eliminate systematic errors and provide confidence in our procedure.