ESRF	**Experiment title:** High resolution powder diffraction study of highly correlated electron systems	**Experiment number:** HS-3 13
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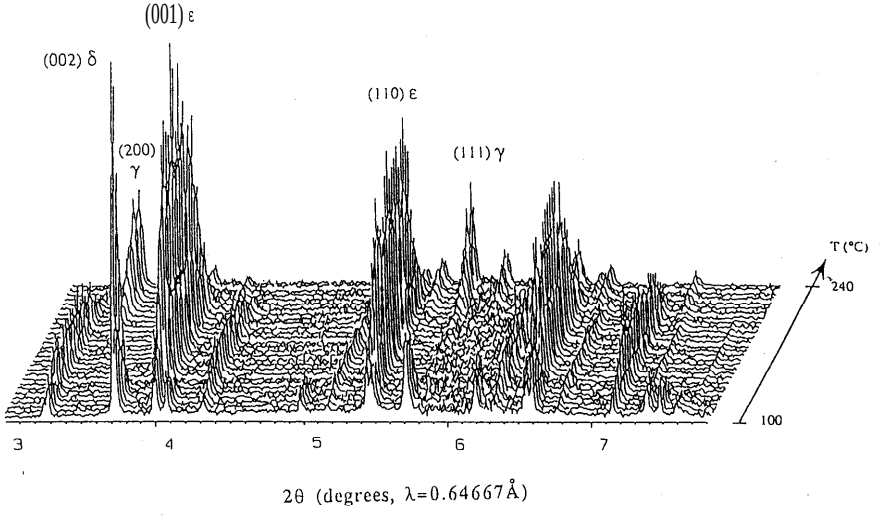
Report:

The preliminary work plan was modified during our stay at ESRF. It appeared in the litterature the single x-ray crystal structure of CaV_2O_5 which gave less interest to look at this compound. However we took the opportunity to use a heating system to study in dynamic the structural transformation of $\delta\, LiV_2O_5$ into $\varepsilon\, LiV_2O_5$ and then into $\gamma\, LiV_2O_5$ with the increase of temperature. This work was very successful and a publication was submitted in january in the Journal of Solid State Chemistry. The main results are summarized in the following abstract:

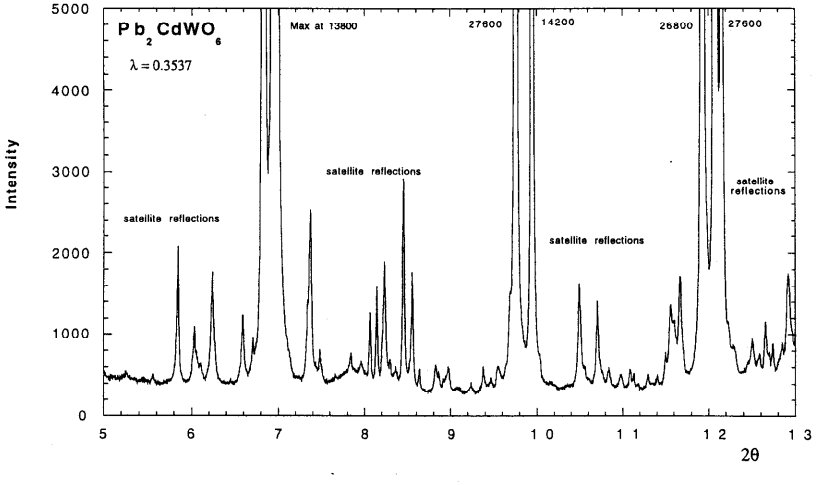
The structural evolution and the domains stability of the $\delta, \varepsilon, \gamma$ phases of the lithium vanadium oxde bronze LiV_2O_5 has been evidenced by synchrotron x-ray powder diffraction in the temperature range 100 - 250°C. It is shown that $\delta\, LiV_2O_5$ is stable below 120°C and that complete transformation in the high temperature form $\gamma\, LiV_2O_5$ is achieved above 220°C. The crystal structure of the intermediate phase $\varepsilon\, LiV_2O_5$ has been determined by Rietveld analysis. It crystallises in the orthorhombic system space group $P2_1mn$ and the cell parameters at 140°C are a=11.3552(6)Å, b=3.5732(2)Å and c=4.6548(3)Å. T he electronic localisation of the vanadium atoms over two different crystallographic sites is found for this phase as for another bronze $\alpha'\, NaV_2O_5$.

The temperature evolution of the x-ray powder patterns of δLiV_2O_5 on heating are presented on this figure.



Concerning the compounds $Bi_4V_4O_{14}$, $Bi_4V_8O_{22}$ and MgV_2O_5, x-ray powder patterns were collected but they are still to be analysed in view of the recent results obtained in September 97 at the ILL. For MgV_2O_5 additionnal peaks (small satellites) are present which could indicate the presence of a superstructure.

In the case of the incommensurate phase Pb_2CdWO_6 satellite peaks were clearly identified during this experiment as shown on the following figure.



These data should allow to determine the origin of this modulation.