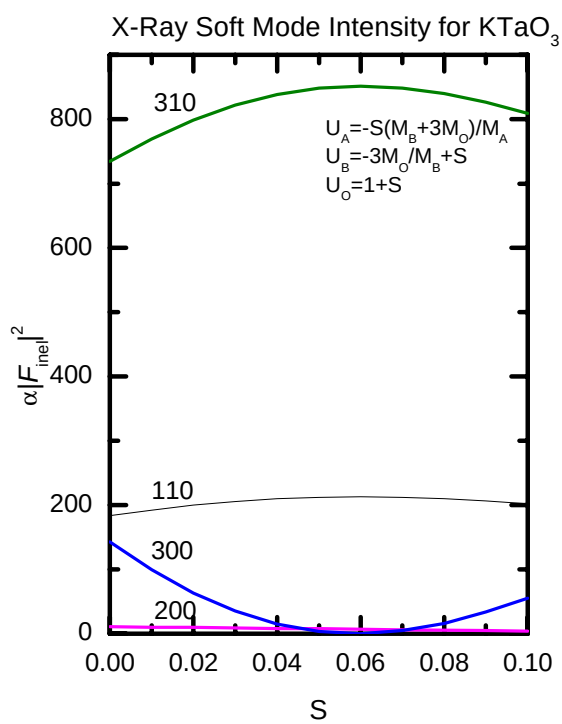
Memo no. 10 (c). D. La-Orauttapong & G. Shirane **07/20/01**

X-Ray Soft Mode Intensity for $KTaO_3$

Lattice constant: a=4.01 Å
Atomic Number: *b* (K)= 19
b (Ta)= 73
b (O)=8
Mass: M_K=39
M_{Ta}=181
M_O=16
Atomic displacement (consider only S1 and S2 mode) :
$u_K = -S\,(M_{Ta}+3M_O)/M_K$
$u_{Ta} = -3M_O/M_{Ta}+S$
$u_{01}=u_{02}=u_{03}=1+S$
where S=S2/S1

The calculated inelastic intensities of $KTaO_3$ for an arbitrary normalization factor are listed in the table at a parameter S=0 and also are plotted in the Figure as a function of the parameter S.

(h k l)	$\alpha\lvert F_{inel}\rvert^2$ (Cal)
2 0 0	11
3 0 0	142
1 1 0	183
3 1 0	734