4) Comments on the Lifshitz conditions

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Comments on the Lifshitz conditions

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It is known that there are many phase transitions triggered by irreducible representations which are inactive from the viewpoint of the Lifshitz condition.

We examine this feature by studying concretely the Fourier-transformed dipole interaction matrix based on the model which reflects the symmetry aspect of the Rochelle salt crystal.

On the Phase Transition of $\text{K}_2\text{SeO}_4$

Yutaka Takagi and Akikatsu Sawada

It seems almost certain that the M phase of $\text{K}_2\text{SeO}_4$ belongs to $\text{Pna}_21$ ($C_{2v}^9$), though the crystal lacks the evidences of the polar nature. This apparent contradiction can be solved by assuming that the high temperature phase of the crystal belongs to $D_{6h}^4$, and the M phase arises as the greatest common measure of two orthorhombic nonpolar phases $D_{2h}^{16}$ and $D_{2h}^{14}$ which are, respectively, induced by the modulations of the wave vectors $k = \frac{1}{2} a_2^* + \frac{1}{3} a_3^*$.