

20.4-06 COMMENSURATE PHASES IN $(\text{NH}_4)_2\text{ZnCl}_4$.

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The powder (diffractometer DRON 1.5) and single crystal (Weissenberg goniometer and STOE 2-circle diffractometer) temperature studies were made on $(\text{NH}_4)_2\text{ZnCl}_4$.

It was found that with decreasing temperature the cell parameter c of the pseudo-hexagonal axis changes as c_0 , $4c_0$, $3.5c_0$ and $3c_0$, where c_0 is the fundamental period of the structure. The phase transition from normal high temperature phase to the commensurate one with modulation vector $q = 1/4 c^*$ has been detected at 397.5 K. The superperiod $3.5c_0$ has been observed only in coexistence with the superperiod $4c_0$ in the temperature range from 277 K to 272.9 K. No indications for the incommensurability of that intermediate phase was found. A first order phase transition from the superstructure with $3.5c_0$ to the superstructure with $3c_0$ occurs at 272.9 K. The satellite scattering changes discontinuously its position from $q = 2/7 c^*$ to $q = 1/3 c^*$ revealing the "lock-in" character of that transition. A coexistence of two superperiods $4c_0$ and $3c_0$ takes place between 272.9 K and about 270 K. The intensities of selected normal and satellite reflections were studied as functions of temperature in vicinity of phase transitions. The temperature dependence of the lattice parameters and modulation parameter from 293 K to 113 K is presented.