DSC Investigations of the Phase Transitions of $[M(NH_3)_6](ClO_4)_2$ and $[M(NH_3)_6](BF_4)_2$, where M = Co and Cd

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Solid polymorphism of four compounds of the type $[M(NH_3)_6](XY_4)_2$, where M = Co^{2+} or Cd^{2+}, and XY_4 = ClO_4^- or BF_4^- has been studied at 100 - 300 K by DSC. One or two phase transitions of the investigated compounds have been found. For the compounds with M = Co the phase transitions have not yet been described in the literature. For the compounds with M = Cd the phase transition-temperature is in good agreement with the results obtained by NMR and EPR. Generally, for $[M(NH_3)_6](BF_4)_2$ compounds (M = Mg, Fe, Co, or Ni) the phase transition temperature T_{C1} is lower than that for the corresponding $[M(NH_3)_6](ClO_4)_2$, but for compounds with M = Cd it is higher. However, the enthalpy and entropy changes at the T_{C1} phase transitions of $[M(NH_3)_6](BF_4)_2$ are always lower than those for $[M(NH_3)_6](ClO_4)_2$. Moreover, for the compounds of this type a correlation between the transition temperature T_{C1} and the crystal lattice parameter *a* has been found.

Key words: Phase Transitions; DSC Method; Chlorate(VII) and Tetrafluoroborate of Hexaaminacobalt(II) and Hexaaminacadmium(II).