On the structural phase transition in a perovskite-type diaminopropanetetrachlorocuprate(II) $NH_3(CH_2)_3NH_3CuCl_4$ crystal.

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Streszczenie

Chemical preparation, differential scanning calorimetry and thermal stability differential thermal gravime-try studies, positron annihilation lifetime investigations, optical observations as well as electric properties of theNH3(CH2)3NH3CuCl4crystal are presented. On the basis of the differential scanning calorimetry response thestructural phase transition of the first order was observed at 436 K. The enthalpy and entropy of the phase transi-tion are equal to 1120 J/mol and 2.57 J/(mol K), respectively. Differential thermal analysis and thermogravimetricanalysis studies confirmed the phase transition at 436 K and one can conclude the chemical and thermal stability ofthe compound up to about 480 K. Optical observations showed a continuous change of colour from yellow to darkbrown above the phase transition to 436 K. Dielectric measurements showed a significant increase of conductivityupon approaching the phase transition regions, with a significant increase above the phase transition temperature.An activation energy dependent on the temperature range, and different for each particular phase, is obtained frommeasurements of complex impedance.