Dielectric Dispersion of New Ferroelectric Cobalt Halide Dimers: Bis-ethanolammonium-hexahalocobaltate, $\text{(C}_2\text{H}_8\text{NO})_2\text{Co}_2\text{X}_6$, $X = \text{Cl/Br}$

M. F. Mostafa and S. S. Arafat

Physics Department, Faculty of Science, University of Cairo, Giza, Egypt

Reprint requests to Dr. M. F. M.; E-mail: mohga@frcu.eun.eg

Z. Naturforsch. 55 a, 595–604 (2000); received February 29, 2000

The AC conductivity in the frequency range $5.0 \text{ Hz} - 10.0 \text{ kHz}$, the magnetic susceptibility in a field of $14.7$ and $17.8 \times 10^4 \text{ A/m}$, and differential thermal analysis at $78 \text{ K}$ up to room temperature for bis-(ethanolammonium)$\text{Co}_2\text{X}_6$, $X = \text{Cl and Br}$ are reported. The bromide dimer undergoes an order-disorder transition at $302 \text{ K}$ and a displacive type ferroelectric transition at $T \sim 220 \text{ K}$. The chloride dimer shows two transitions, the first being in a displacive ferroelectric one at $T \sim 210 \text{ K}$ showing critical slowing down. The second phase transition, occuring at $282 \text{ K}$, is found to be inactive in the electric measurements.

PACS: #76, 74

Key words: Dielectric Permittivity; Phase Transition; Ferroelectric Transition.