

Vibrational spectra of $[(\text{CH}_3)_3\text{NH}]_3\text{Sb}_2\text{Cl}_9$, $[(\text{CH}_3)_3\text{NH}]_3\text{Bi}_2\text{Cl}_9$ and their mixed crystals.

Autorzy

Grażyna Bator

Th. Zeegers-Huyskens

Rok wydania

1999

Czasopismo

Vibrational Spectroscopy

Numer woluminu

20

Strony

103-111

DOI

10.1016/S0924-
2031(99)00027-2

Kolekcja

Naukowa

Język

Angielski

Typ publikacji

Artykuł

Streszczenie

The IR and Raman spectra of $[(\text{CH}_3)_3\text{NH}]_3\text{Sb}_2\text{Cl}_9$ (A), $[(\text{CH}_3)_3\text{NH}]_3\text{Bi}_2\text{Cl}_9$ (B) and two of their mixed crystals containing respectively 33% (AB.33) and 42% Bi (AB.42) are analyzed and compared. A and AB.33 show ferroelectric–paraelectric phase transition at 364 K and 344 K, respectively. AB.42 and B are paraelectric in the temperature range between 90 and 365 K. Most of the vibrational modes show continuous changes, with the temperature, in the IR frequencies or intensities with no soft mode behavior. However, characteristic $\nu(\text{NH}\cdots\text{Cl})$ and $\delta(\text{NH}\cdots\text{Cl})$ vibrations of weakly hydrogen-bonded species are only observed in A and AB.33 below the temperature of the phase transition and are related to the ferroelectricity. The evolution of the IR spectra with the temperature suggests that the ferroelectric properties are connected with the reorientation of the cations which needs a breaking of the weak $\text{NH}\cdots\text{Cl}$ hydrogen bonds in the paraelectric phase.

Słowa kluczowe

 $[(\text{CH}_3)_3\text{NH}]_3\text{Sb}_2\text{Cl}_9$, $[(\text{CH}_3)_3\text{NH}]_3\text{Bi}_2\text{Cl}_9$, Mixed crystals

Adres publiczny

[https://doi.org/10.1016/S0924-2031\(99\)00027-2](https://doi.org/10.1016/S0924-2031(99)00027-2)

Strona internetowa wydawcy

<http://www.elsevier.com>