

Synthesis and crystal structure determination of SeCl_2ICl polyhalogene–Chalcogene

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Abstract: In this research, poly halogene–chalcogene SeCl_2ICl was synthesised and the crystal structure was determined by a single crystal X–ray diffraction method. This compound formed at temperature ranges from 70-150°C as ruby–red color and crystallizes in monoclinic crystal system, space group $P2_1/c$ with 4 molecules per unit cell. Lattice parameters of the compound are:

$$\begin{aligned} a &= 6.088 \text{ \AA} & b &= 6.555 \text{ \AA} & c &= 16.032 \text{ \AA} \\ \alpha &= \gamma = 90^\circ & \beta &= 98.02^\circ & V &= 633.5 \text{ \AA}^3 \end{aligned}$$

In addition, D.T.A analysis of SeCl_2ICl crystals at temperature ranges from -70°C to 194°C and IR studies in the lower range of 700cm^{-1} and Raman studies in the lower range of 500cm^{-1} were also carried out.