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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:

a = 6.088 Å b = 6.555 Å C = 16.032 Å

$\alpha = \gamma = 90°$ $\beta = 98.02°$ V = 633.5 $Å^3$

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.