Low-melting molecular complexes of chloroform and dichloromethane. Dmitry S. Yufit, Judith A.K. Howard, Department of Chemistry, Durham University, South Rd., Durham, DH1 3LE, UK
E-mail: d.s.yufit@dur.ac.uk

In continuation of our studies of low-melting co-crystals [1], both components of which are liquid under ambient conditions, the crystals of new molecular complexes of chloroform (I) and dichloromethane(II) have been grown in situ and structurally characterized. The structures of new co-crystals of II with cyclohexanone, 1,4-dioxane and butanone-2 are compared with corresponding complexes of I and with the structures of pure components of these co-crystals. In spite of seeming simplicity of the components, the structures display a variety of types and motifs of intermolecular interactions. Indeed, if the (Cl)C-H...O contacts are present in all studied structures, different spatial arrangements of these contacts combined with a delicate balance of weaker interactions of C-H...Cl, C-H...O and even of O...Cl types make the structures of each of these compounds unique, curious and challenging for prediction. Examples of unforeseen products of co-crystallization experiments will also be discussed.


Keywords: low-temperature crystallization, molecular complexes, intermolecular interactions