

Crystal Engineering of Arylammonium Perhalometallates

Melanie Rademeyer, Christos Tsouris, *School of Chemistry, University of KwaZulu-Natal, Durban, South Africa.* E-mail: rademeyerm@ukzn.ac.za

The ultimate aim of crystal engineering is the design of crystal structures, and as a result, materials with desired properties. A fundamental requirement of crystal engineering is the understanding of the role of non-covalent interactions occurring in the solid-state structure.

A number of crystal engineering studies have focused on the identification of interaction synthons in compounds of the type LMX_4 where L is the 4,4'-bipyridinium cation [1] or the pyridinium cation [2].

This study focuses on the identification of non-covalent interactions in a family of primary arylammonium perhalometallate organic-inorganic hybrid materials. A number of novel crystal structures, some isostructural, will be reported.

The hydrogen bonding- and aromatic interactions present in these crystal structures will be highlighted, and their influence on the molecular packing illustrated. Crystal engineering synthons will be identified, and compared to synthons identified in related structures.

[1] Gillon A.L., Orpen A.G., Starbuck J., Wang X., Rodriques-Martin Y., Ruiz-Perez C., *Chem. Comm.*, 1999, 2287-2288.

[2] Felloni M., Huberstey P., Wilson C., Schroder M., *CrystEngComm.*, 2004, 6, 87-95.

Keywords: non-covalent interactions, organic-inorganic hybrids, crystal engineering