FLUX SYNTHESIS OF NEW TARTRATOBORATE POLYMERS AND CYCLIC OLIGOMERS

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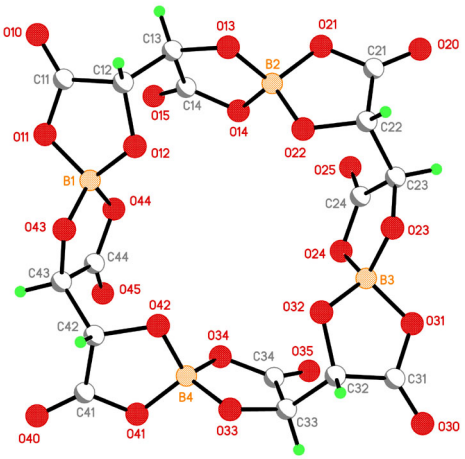
Molten boric acid 'flux' synthesis was initially developed by us for the preparation of borate-rich clusters [1], recently we found these conditions can lead to new bis(salicylato)borates through direct reaction of boric and salicylic acids with either inorganic or organic bases.[2] We were interested to see whether this could be extended to other chelating ligands involving carboxylate and alcohol groups. The use of chiral ligands is of further interest since their bis-chelation leads to new stereogenic center at boron. Reaction of L-tartaric acid with boric acid and KOH yields either the known monomeric salt K $[B(L\text{-}TAR^{2-})_2]nH_2O$ or the new chiral chain polymer $K[B(L\text{-}TAR^{4-})]$ H_2O depending on reaction stoichiometry. The chain polymer has a novel 3-fold helical structure. If *meso*-tartaric acid is used an analogous chain polymer $K[B(meso\text{-}TAR^{4-})]$ H_2O is formed, which has 2-fold screw translational symmetry. Different reaction conditions in this case can lead to phase-pure isolation of the novel cyclic oligomer $K_4[B_4(meso\text{-}TAR^{4-})_4]$, shown below. This has a central cavity which binds a potassium ion in the solid state, which presumably assists its supramolecular formation. The *meso*-polymers and oligomers are chiral since the stereochemistry of the boron centers is the same within each molecule. The integrity of these tartratoborate chains and rings in solution and their use in further preparation of chiral solids is under investigation. The Research Grants Council (HKSAR) is thanked for financial support of this work (grant 6043-05)



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