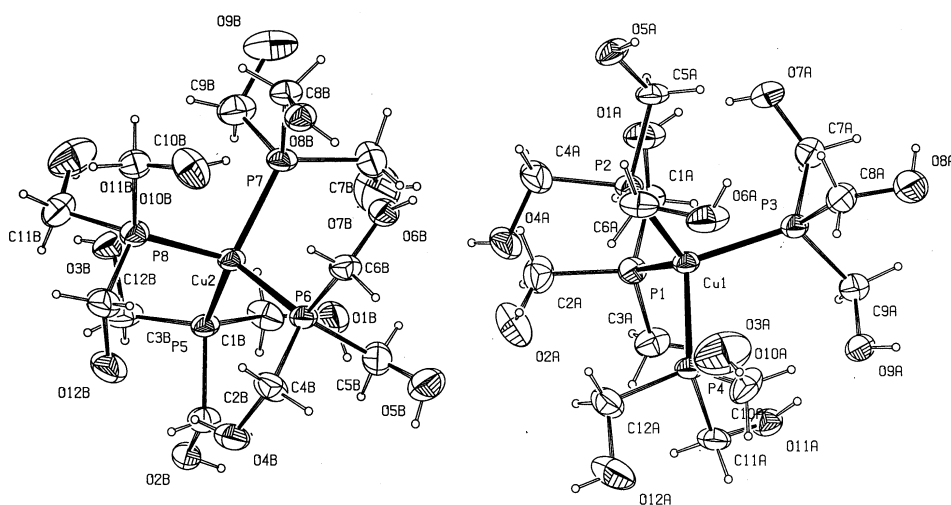


Synthesis, structure and reactivity of a water-soluble copper(I) complex

D SARAVANA BHARATHI¹, ASHOKA G SAMUELSON²,
N K LOKANATH², M A SHRIDHAR² and SASHIDARA PRASAD²
¹Inorganic and Physical Chemistry, Indian Institute of Science,
Bangalore 560 012, India
²Department of Physics, University of Mysore, Manasagangotri,
Mysore 570 006, India

Water-soluble phosphines and their complexes have attracted a great deal of interest because of their potential use in aqueous catalytic organometallic chemistry and biomedical applications. *Tris*(hydroxymethyl)phosphine (THP) is moderately air-stable and water-soluble. While the coordination chemistry of this ligand with Pt, Pd, Ni and Rh has been widely studied, complexes of group 11 transition elements are practically unknown. We report the synthesis and characterization of the first copper(I) complex of THP.



On treatment of $[\text{Cu}(\text{CH}_3\text{CN})_4]\text{ClO}_4$ with THP in a suitable solvent, a white precipitate of the complex $[\text{Cu}(\text{THP})_3(\text{P}(\text{CH}_2\text{OH})_2(\text{CH}_2\text{O}))]$ **1** results which is very water-soluble. Interestingly, compound **1** has the counter anion in the starting material (perchlorate) replaced by an alkoxide arm of the ligand. The same result is obtained while using other copper(I) precursors such as $[\text{Cu}(\text{CH}_3\text{CN})_4]\text{BF}_4$. The loss of HX (X = ClO_4/BF_4) is presumably the result of very efficient crystallographic packing of the nearly spherical molecule in the lattice. The synthesis, structure, and reactivity of complex **1** is presented.