Crystal and Molecular Structure of the Copper(I)-thiolate-selenide Complex
[Ph₄P][Cu(SeS₂C₄H₈)(S₂CN₂C₄H₈)] with an Unusual Se-S Bond

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Crystal Structure, Copper Complex, Selenium Complex, Thiolate Ligand

Reaction of a DMF solution of Cu(S₂C₄H₈) with [Ph₄P]₂[WSe₄] affords [Ph₄P]₂[WSe₄-(CuS₂C₄H₈)](1) and [Ph₄P][Cu(SeS₂C₄H₈)(S₂CN₂C₄H₈)] (2) in which a Se atom from the decomposition of the WSe₄ anion has reacted with the pyrrolidyldithiocarbamate (C₄H₈dtc) ligand anion to form the new ligand anion SeS₂C₄H₈. Complex 2 crystallizes with four formula units in the monoclinic space group P2₁/c in a cell of dimensions a = 10.5824(2), b = 18.7575(3), c = 18.3268(4) Å and β = 109.0980(10)°. 6055 independent reflections above background were measured with a diffractometer and the structure was refined anisotropically to R = 0.073. The anion contains a three-coordinated copper(I) atom. The C₄H₈dtc ligand is bonded to the Cu⁺ cation in a terminal fashion, while SeS₂C₄H₈ chelates the Cu⁺ cation. The Se-S bond length is 2.231(4) Å.