Secondary Interactions in Gold(I) Complexes with Thione Ligands, 4.
Three Further Salts of the Bis(imidazolidine-2-thione)gold(I) Cation [1, 2]

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Three structures of the form bis(imidazolidine-2-thione)gold(I) disulfonylamide [disulfonylamide = benzene-1,2-di(sulfonyl)amide (1), di(4-chlorobenzenesulfonyl)amide (2), di(4-iodobenzesulfonyl)amide (3)] were determined. Compound 3 crystallizes with four independent formula units. The cations in 1 and 3 show an antiperiplanar conformation about the S···S axis, whereas the corresponding torsion angle in 2 is 72°. The packing in 1 consists of linked ribbons in which the NH groups of neighbouring cations are bridged by O–S–O groups of the anions. Compound 2 exhibits a complex layer structure in which several multi-centre hydrogen bonds are observed. The structural subunits of compound 3 involve an alternating anion-cation chain for two of the cations and inversion-symmetric anion-cation dimers for the other two cations. Short C–H···Au contacts (shortest H···Au 2.63 Å in 2) contribute to the packing of compounds 2 and 3.

Key words: Thiones, Disulfonylamides, Gold, Hydrogen Bonds