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-iodobenzenesulfonyl)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