

Supporting Information

Multimetallic arrays: Bi-, tri-, tetra- and hexametallic complexes based on gold(I) and gold(III) and the surface functionalisation of gold nanoparticles with transition metals.

Edward R. Knight,^a Nina H. Leung^a Amber L. Thompson,^a G. Hogarth^b
and James D. E. T. Wilton-Ely^{a,c} *

a) Chemistry Research Laboratory, University of Oxford, Mansfield Road, Oxford OX1 3TA, UK.

b) Department of Chemistry, University College London, 20 Gordon Street, London WC1H 0AJ, UK. c) Department of Chemistry, Imperial College London, South Kensington Campus, London SW7 2AZ, UK. E-mail: j.wilton-ely@imperial.ac.uk

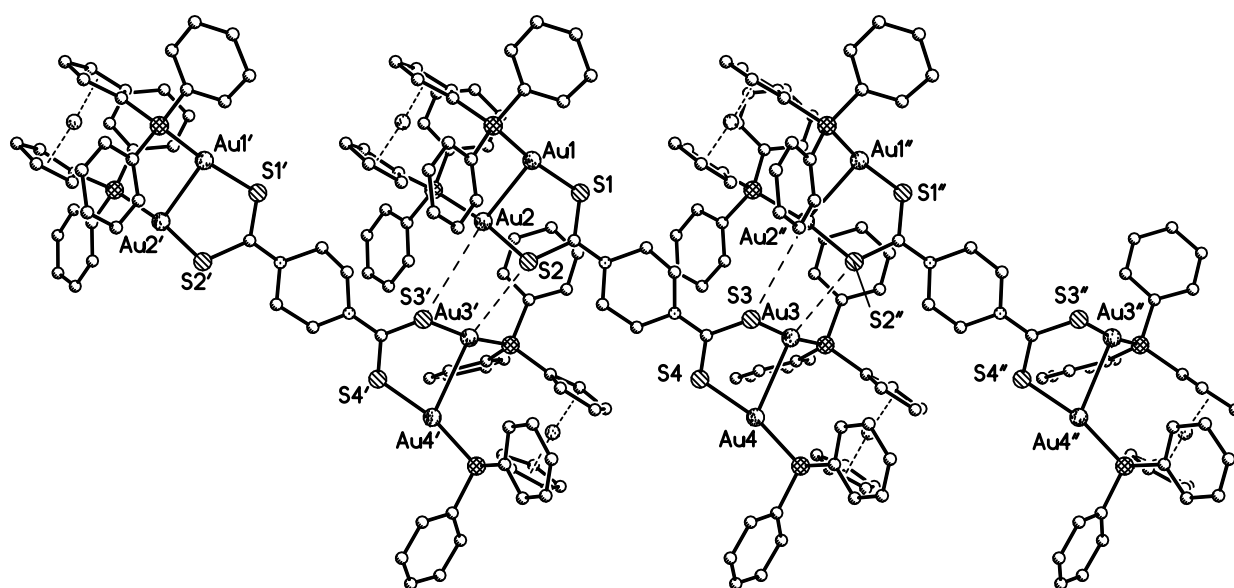


Fig. A. Illustration of packing in the solid state in **3**. The intermolecular gold-sulfur distances are Au2-S3 = 4.155(2), Au3-S2 = 3.585(2) Å.

The dithiocarbamate complex $[(\text{dppm})\text{Au}_2(\text{S}_2\text{CNC}_4\text{H}_8\text{NH}_2)]^{2+}$ was considered to be a potentially useful starting point for further reactions, however, reaction of $[(\text{dppm})(\text{AuCl})_2]$ with the zwitterion $\text{S}_2\text{CNC}_4\text{H}_8\text{NH}_2$ led to isolation of the previously reported bimetallic complex

$[\{(dppm)Au_2\}_2(S_2CNC_4H_8NCS_2)](PF_6)_2$. Such symmetrization behavior has also been observed by us in some palladium and platinum compounds.²² It was not initially clear that the complex formed was the same as that reported earlier¹⁸ so single crystals of the product were grown from slow diffusion of ethanol into a dichloromethane solution of the complex.

The crystal structure obtained from the symmetrisation of showed a similar cyclic Au_{16} structure. However, in contrast to that reported previously, the structure was not found to be chiral and is a polymorph (Fig. B).

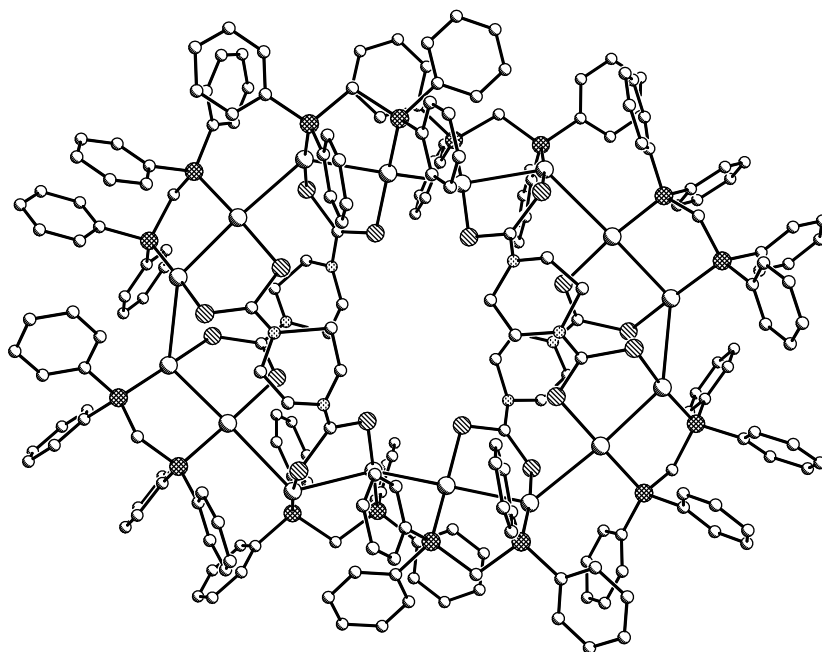


Fig. B. Molecular structure of $[\{(dppm)Au_2\}_2(S_2CNC_4H_8NCS_2)](PF_6)_2$.

Cell parameters: $a = 24.397(9) \text{ \AA}$, $b = 25.948(16) \text{ \AA}$, $c = 27.854(17) \text{ \AA}$, $\alpha = 67.77(7)^\circ$, $\beta = 75.72(5)^\circ$, $\gamma = 63.95(5)^\circ$, $V = 14595(14) \text{ \AA}^3$, Space group = $P \bar{1}$.