Supporting Information

Multimetallic complexes and functionalized nanoparticles based on unsymmetrical dithiocarbamate ligands with allyl and propargyl functionality

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The X-ray crystal structure of 6a

The included dichloromethane solvent molecule in the structure of **6a** was found to be disordered. Three orientations were identified, of *ca*. 41, 36 and 23% occupancy, their geometries were optimised, the thermal parameters of adjacent atoms were restrained to be similar, and all of the atoms were refined isotropically.

The X-ray crystal structure of 11

The C(45)- and C(57)-based phenyl rings in the structure of **11** were found to be disordered, and in each case two orientations were identified, of *ca*. 74:26 and 71:29% occupancy respectively. All four orientations were refined as optimised rigid bodies, the thermal parameters of adjacent atoms were restrained to be similar, and only the non-hydrogen atoms of the major occupancy orientations were refined anisotropically (the remainder were refined isotropically). The included dichloromethane solvent molecule was also found to be disordered. Two orientations were identified, of *ca*. 31 and 19% occupancy, their geometries were optimised, the thermal parameters of adjacent atoms were restrained to be similar, and only the non-hydrogen atoms of the major occupancy orientation were refined anisotropically (the remainder were refined isotropically); inspection of the thermal parameters suggested that the solvent was not more than about 50% occupancy in total.

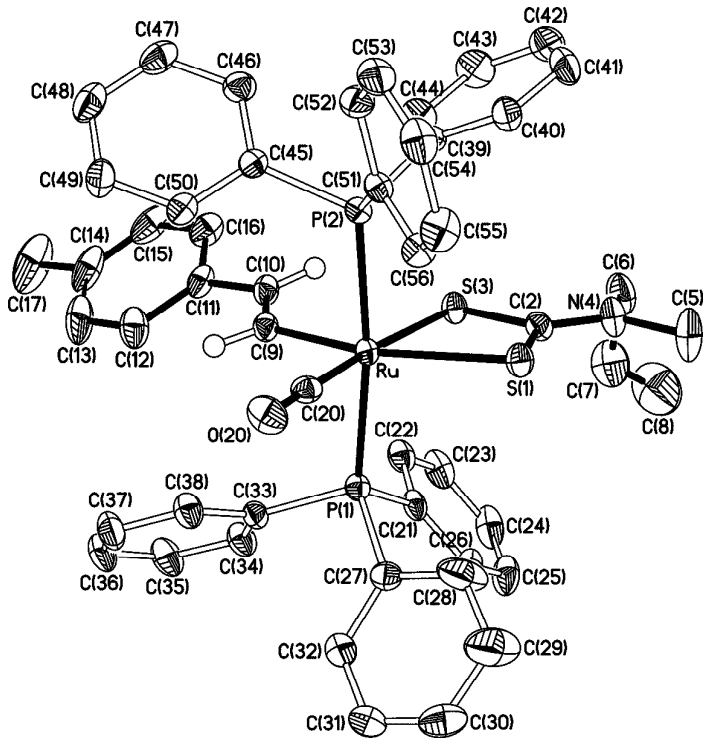


Fig. S1 The crystal structure of **6a** (50% probability ellipsoids).

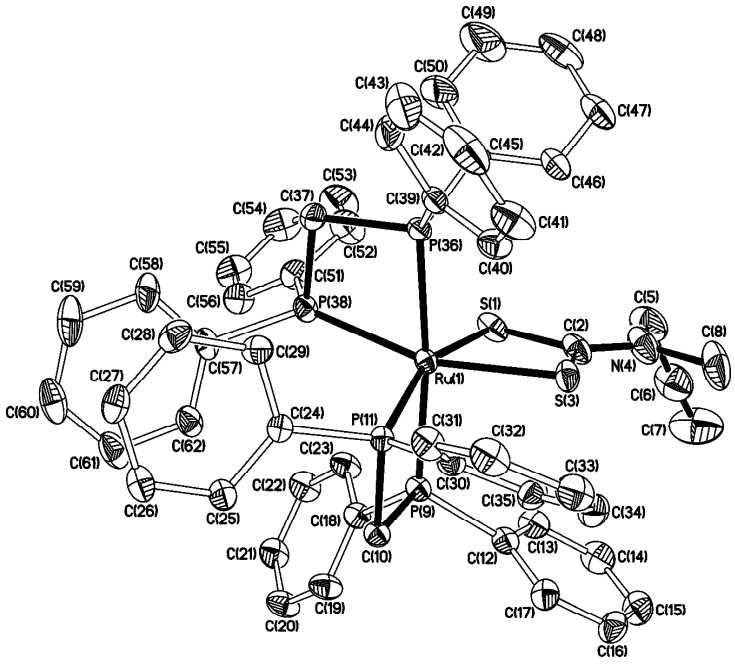
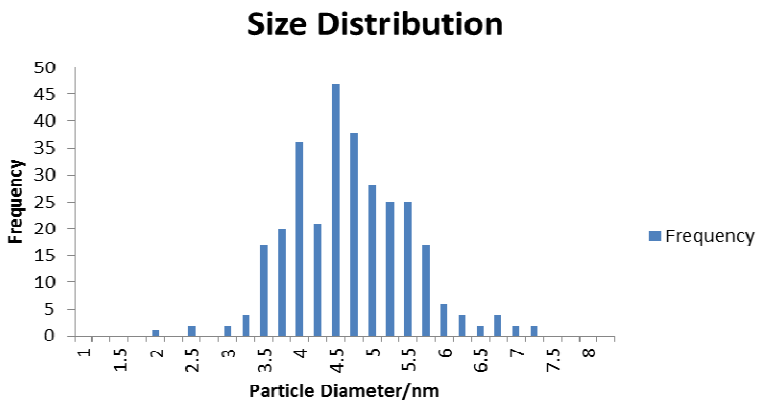


Fig. S2 The structure of the cation present in the crystals of **11** (30% probability ellipsoids).

Transmission Electron Microscopy (TEM)

The average size and size distribution of the nanoparticles (4.8 ± 1.0 nm) was determined using TEM.



Thermogravimetric analysis (TGA)

TGA was used to estimate the proportion of the mass attributable to the surface units. A sample of mass 2.488 mg of **NP1** was heated from 30 °C to 700 °C at a rate of 10 °C per minute (total points recorded in run: 4020). The reduction in mass was 28.6%, leaving gold metal as the only residue.