

ELECTRONIC TRANSPORT THROUGH SULPHUR-GOLD SINGLE ATOM JUNCTIONS

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Abstract: Sulphur appears as a binding group in many molecules that are considered as candidates for molecular electronics. In this work we study electronic transport through a single S atom between gold electrodes. A submonolayer of sulfur is deposited electrochemically on gold and an STM is used to create individual atomic junctions by repeatedly moving the gold tip into and out of contact with sample. The measurements are performed at low temperatures (down to 0.25 K) in a Helium 3 cryostat. The analysis of the current vs displacement curves shows two typical configurations for the atomic junction. We compared our results with ab initio calculations performed by the group of K.W. Jacobsen in Lyngby (Denmark).