

Abstract Submitted  
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**Adsorption of Dimethyl Disulfide (DMDS) on a Metallic Quantum Well System** LEVAN TSKIPURI, SYLVIE RANGAN, ROBERT BARTYNSKI, Rutgers University — We have studied the bonding of the thiol molecule dimethyldisulfide ( $\text{SCH}_3$ )<sub>2</sub> on ultrathin Cu films that exhibit metallic quantum well (MQW) states using inverse photoemission (IPE), reflection-absorption infrared spectroscopy (RAIRS) and temperature programmed desorption (TPD). This thiol is similar to more complex organic molecule that exhibits the self-assembled properties on metal surfaces. After a room temperature exposure of the Cu surface to the thiol molecule at a dose of  $\sim 2.5$  L, a  $c(2 \times 2)$  low energy electron diffraction (LEED) pattern confirmed that the adsorbate forms an ordered overlayer. A large sulfur signal is observed in Auger electron spectroscopy (AES) and the C-H stretch mode was observed in IR with a frequency of  $2915 \text{ cm}^{-1}$  confirming molecular adsorption. Changes in the IPE spectrum upon adsorption are dominated by suppression of the substrate-related features, although some weak adsorbate-induced peaks are also observed. Both experimental and theoretical evidence indicates that electronic orbitals involved in molecule-surface bonding are in the same energy range as the MQW states of the substrate and the possible influence of MQW states on molecular adsorption and self-assembly of the thiol molecule will be discussed.

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