

## **Scanning tunneling spectroscopy on Au thin film structures deposited on highly oriented pyrolytic graphite**

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The local electronic structure of nanoscale Au islands and of Au thin films on highly oriented pyrolytic graphite (HOPG) surfaces is investigated by scanning tunneling microscopy and spectroscopy (STM/STS) in ultra-high vacuum (UHV). The Au islands are produced by field evaporation from the tunneling tip. Thin films are produced ex situ by dc sputter deposition. For all sample types, the  $I(V)$  curves show discrete maxima and thus negative differential conductivity. Up to five current maxima were found equally spaced for a voltage range of  $\pm 1.5$  V. Additionally, variations in the  $I(V)$  curves were observed with varying island height. The results are discussed on the basis of a Au/HOPG intercalation process.