
PT J

TI Characterization of thiolate species formation on Cu(111) using soft x-ray photoelectron spectroscopy

AU Kariapper, MS Grom, GF Jackson, GJ McConville, CF Woodruff, DP

SO JOURNAL OF PHYSICS-CONDENSED MATTER

VL 10

IS 39

AP ISSN 0953-8984

AP ISSN 0953-8984

BP 8661

EP 8670

PY 1998

TC 39

AB Soft x-ray photoelectron spectroscopy of the S 2p levels at relatively high spectral resolution has been used to characterize the interaction of methanethiol, CH₃SH, ethanethiol, C₂H₅SH and dimethyl disulphide, (CH₃S)₂ with a Cu(111) surface at temperatures from approximately 130 K to 500 K. The results are consistent with previous reports of the formation of a surface thiolate species at intermediate temperatures, but also provide clear evidence for two distinct surface intermediates in addition to the intact molecules and chemisorbed atomic sulphur reported previously for this surface. These two intermediates appear to be similar to the two thiolate species reported in studies on Ni(III). Prior structural studies of the Cu(111)/CH₃S- surface at room temperature show the surface to be reconstructed, and the lower temperature species identified here is assigned to a thiolate species on an unreconstructed surface, reconstruction being hindered at low temperatures. Additional evidence is found for two different atomic sulphur states in a narrow temperature range.

UT WOS:000076493000005

ER
