Sulfur ligand mediated electrochemistry of gold surfaces and nanoparticles: what, how, and why - DTU Orbit (25/12/2018)

Sulfur ligand mediated electrochemistry of gold surfaces and nanoparticles: what, how, and why
Gold surfaces are widely used in electrochemistry whilst gold nanoparticles have very many uses, with both the surfaces and the particles often being protected by sulfur-bound organic ligands. The ligands not only provide chemical stability but also directly participate in many desired processes. This review considers the diversity of known atomic structures for gold-sulfur interfaces, how these structures facilitate a diversity of mechanisms in electrochemical applications, and why this is possible based on recent advances in the basic understanding of the electronic structure of gold-sulfur bonds. Believed once to be Au(I)-thiolate in character and hence distinctly different to physisorbed thiols and disulfides, chemisorbed bonds are shown to be Au(0)-thiyls instead. A wide range of in-situ STM electrochemical and other data is interpreted from this perspective.

General information
State: Published
Organisations: Department of Chemistry, NanoChemistry, Organic Chemistry, University of Technology Sydney, University of Sydney
Contributors: Chi, Q., Ford, M. J., Halder, A., Hush, N. S., Reimers, J. R., Ulstrup, J.
Pages: 7-15
Publication date: 2017
Peer-reviewed: Yes

Publication information
Journal: Current Opinion in Electrochemistry
Volume: 1
Issue number: 1
ISSN (Print): 2451-9103
Original language: English
DOIs:
10.1016/j.coelec.2016.12.004
Source: PublicationPreSubmission
Source-ID: 128150532
Research output: Research - peer-review › Journal article – Annual report year: 2016