# Preparation of covalent long-chain trialkylstannyl and trialkylsilyl salts and an examination of their adsorption on gold.

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Streszczenie

We report the attachment of alkyl residues to a gold surface through a tin atom. Covalent trialkylstannyl and trialkylsilyl salts of trifluoromethanesulfonic, trifluoroacetic, and *p*-toluenesulfonic acids containing one to three $C_{18}H_{37}$ chains and two to no $CH_3$ groups in the molecule have been synthesized. They were tested for adsorption on gold from solution under ambient conditions using ellipsometry, FTIR spectroscopy, contact angle, and electrode-blocking measurements. All nine trialkylstannyl salts form similar stable monolayers with the loss of the acid residue and form no multilayers. The monolayers differ from those formed from alkanethiols. They are much thinner, less ordered, less hydrophobic, and only slightly electrode-blocking. Their stability to solvents, bases, acids, and reductants is somewhat lower than that of a 1-octadecanethiol monolayer, but their resistance to heat and oxidants, including air, is slightly better. The distinctive properties of these monolayers may be of interest in certain circumstances, but we expect the attachment of molecules to gold through a tin atom to be of the most value in work with single-molecule structures. The trialkylsilyl salts showed no tendency to adsorb onto gold under these conditions.

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