

Functionalization of Gold Surfaces Using Benzene-Patterned Self-Assembled Monolayers for Surface-Polarization Controlling Method

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In order to improve the sensitivity of the surface-polarization controlling method to detect aromatic compounds which are hazardous chemicals, self-assembled monolayers (SAMs) in benzene were evaluated using cyclic voltammetry and electrochemical impedance spectroscopy. A cyclic voltammogram for the reductive desorption of SAMs adsorbed from a benzene solution containing 1-octanethiol (OT) suggested that OT adsorbed on Au surfaces competed with bulk benzene molecules. The results of electrochemical impedance spectroscopy also revealed the structure of SAMs with benzene holes. Furthermore, benzene can be specifically identified at less than 1 ppm using the benzene-patterned SAM.

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