Electronic supplementary information

A Novel Method for Creation of Free Volume in a One-Component Self-Assembled Monolayer. Dramatic Size Effect of para-Carborane

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Experimental section

Instruments

FTIR-RA spectra were measured with Infinity Gold FTIR (Mattson Instruments). UV-vis absorption spectra were measured with a UV-vis spectrometer (HITACHI). SPR measurements of SAM were taken with a Surface Plasmon Spectrometer (Resonant Probes – Surface Analytical Instruments GmbH). A p-polarized He-Ne laser beam with a wavelength of 632.8 nm was used as an incident beam, and the setup was based on the Kretchmann and Raether configuration. In the photoisomerization reaction measurements of SAM, an ultrahigh-pressure mercury lamp (Nikon) with color filters was used as the UV (364 nm, 2.44 mW / cm²) and vis (440 nm, 2.70 mW / cm²) light source. ¹H NMR and ¹³C NMR spectra were recorded on a JEOL JNM AL-300 (300 MHz) spectrometer. IR spectra were recorded on a SHIMADZU FTIR-8200A spectrometer. High resolution mass spectra were obtained on a HITACHI M-2500S, Bruker APEX spectrometer.
$^1$H NMR spectra of 1 and 2
Figure S1. UV-vis absorption spectra of (a) 1 (dashed line) and (b) 2 (solid line), 1.0 x 10^{-2} mM in Chloroform.
**Figure S2.** Real-time adsorption kinetics of (a) 1 and (b) 2 onto the gold surface monitored by kinetics scan mode of SPR.