Electronic Supplementary Information (ESI)

Repeated photoswitching performance of azobenzenes adsorbed on gold surfaces: A balance between space, intermolecular interactions, and phase separation

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Figure S1  (a)-(c) AFM images and height profiles continuously monitored without changing the position of the Et-SS (ortho-alkylated azobenzene) sample for 30 hours under 18-19 °C and 32-35% relative humidity condition. The height contrast between the brighter and darker regions becomes more pronounced as small worm-like domains merge with each other. (d) AFM image of phase-separated Et-SS SAMs on an Au(111) surface after dark incubation for 2 days.
Figure S2  [A] UV-vis absorption spectral changes of Me-SS in dichloromethane solution as a function of exposure time of 365-nm light (~0.3 mW/cm²). [B] $^1$H NMR spectral changes of Me-SS in CDCl$_3$ before (initial: all-trans state) and after (cis-rich state) UV light irradiation. [C] $^{13}$C NMR spectrum of all-trans Me-SS in CDCl$_3$. 

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Figure S3  (a) Absorption spectral changes of Me-SS SAMs as a function of thermal cis-to-trans isomerization time after 365-nm light. (b) First-order plot for thermal cis-to-trans isomerization of Me-SS in dichloromethane. The first-order rate constant of Me-SS was found to be approximately 0.018 h$^{-1}$. 
Figure S4  AFM topographic images, height profiles, root mean-square (RMS) surface roughness values (Å) of Me-SS SAMs on an Au(111) surface as a function of alternating irradiation with 365-nm and 436-nm light. The dimension of the respective images (a-h) is 400 × 400 nm$^2$. The respective RMS surface roughness values (Å) were calculated on the flat area of 100 × 100 nm$^2$. 

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