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Surface photoisomerization activity vs. functionalization of azobenzene derivatives LUIS BERBIL-BAUTISTA, JONGWEON CHO, NIV LEVY, MATTHEW J. COMSTOCK, DAN POULSEN, JEAN M.J. FRECHET, MICHAEL F. CROMMIE, University of California at Berkeley — Azobenzene and its derivatives can be reversibly photoisomerized between their *cis* and *trans* conformations in solution. The photoisomerization process is wavelength selective and results in a large length change. Hence, it is ideally suited to actuating molecular nanomachines on surfaces. However, it has recently been shown [1] that to recover photoisomerization activity on a metallic surface molecules must be functionalized with bulky spacing groups to decouple the optically active part of the molecule from the surface. This results in various trade-offs between molecular optical activity and overall flexibility/functionality. We have explored the photoisomerization activity of different azobenzene derivatives on metallic surfaces using a scanning tunneling microscope (STM) with optical access to the sample. The effects on molecular photo-activity and self-assembly for different substituent groups has been studied. [1] Matthew J. Comstock, Niv Levy, Armen Kirakosian, Jongweon Cho, Frank Lauterwasser, Jessica H. Harvey, David A. Strubbe, Jean M. J. Fréchet, Dirk Trauner, Steven G. Louie, and Michael F. Crommie Phys. Rev. Lett. **99**, 038301 (2007)

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