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Controlling Rotational Molecular Rotor by Selection of Anchoring Sites HYO WON KIM, Seoul National University, M. HAN, H.-J. SHIN, S. LIM, Y. OH, K. TAMADA, M. HARA, Y. KIM, M. KAWAI, Y. KUK, SEOUL NATIONAL UNIVERSITY TEAM, TOKYO INSTITUTE OF TECHNOLOGY COLLABORATION, RIKEN ADVANCED SCIENCE INSTITUTE COLLABORATION, TOHOKU UNIVERSITY COLLABORATION, THE UNIVERSITY OF TOKYO COLLABORATION — In future nano-electro-mechanical-systems (NEMS), a molecular motor may become a key component to produce nanoscopic dynamical motions. At the level of a single molecule, rotational motions of various molecules have been observed on clean metal or semiconductor surfaces in scanning tunneling microscope (STM) images. Based on the observations, molecular bearings, nanocars, pinwheels, a rack and pinion device, wheels and gears have been proposed using a hindered molecular rotation. Despite extensive studies, the control of rotational motion in a molecular rotor is quite difficult. In this talk we report a controlled rotational-motion of an azobenzene derivative, EtO-Azo-C10, by inducing a reversible hopping motion between an immobile and a mobile site on a Au(111) surface with tunneling electrons in STM geometry.

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