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**Photoinduced Potential Shift of Gold Nanoparticle Overlaid with Photochromic Molecules in the Nano-junction** TOSHIFUMI TERUI, YUKITO NAITOH, RIEKO UEDA, AKIRA OTOMO, Kobe Advanced ICT Research Center, National Institute of Information and Communications Technology, YUTAKA NOGUCHI, Center of Frontier Science, Chiba University, HIDEHIRO YAMAGUCHI, Department of Chemistry and Biochemistry, Graduate School of Engineering, Kyushu University, KENJI MATSUDA, Department of Synthetic Chemistry, Graduate School of Engineering, Kyoto University — We fabricated single electron tunneling (SET) device structure of photochromic molecule – gold nanoparticle compound to know the photo irradiation dependence of the electron transport properties. It will be able to detect signals according to structural change of single molecule. Nanogap electrodes were fabricated by using electromigration technique. We measured the properties of the SET devices of molecule – gold nanoparticle compounds in vacuum probe system. The real-time profile of the source – drain current ( $I_{SD}$ ) of the SET was measured under irradiation with UV light.  $I_{SD}$  indicated a discontinuing jump when SET was irradiated by UV light. This result leads us to the conclusion that the jump of  $I_{SD}$  is change of the potential energy of gold nanoparticle due to the photochromism of molecule at single molecular level by UV excitation.

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