

Figure S1 I-V curve of a contact between the surface of the SWNH/p and the Pd electrodes in vacuo at 303K.

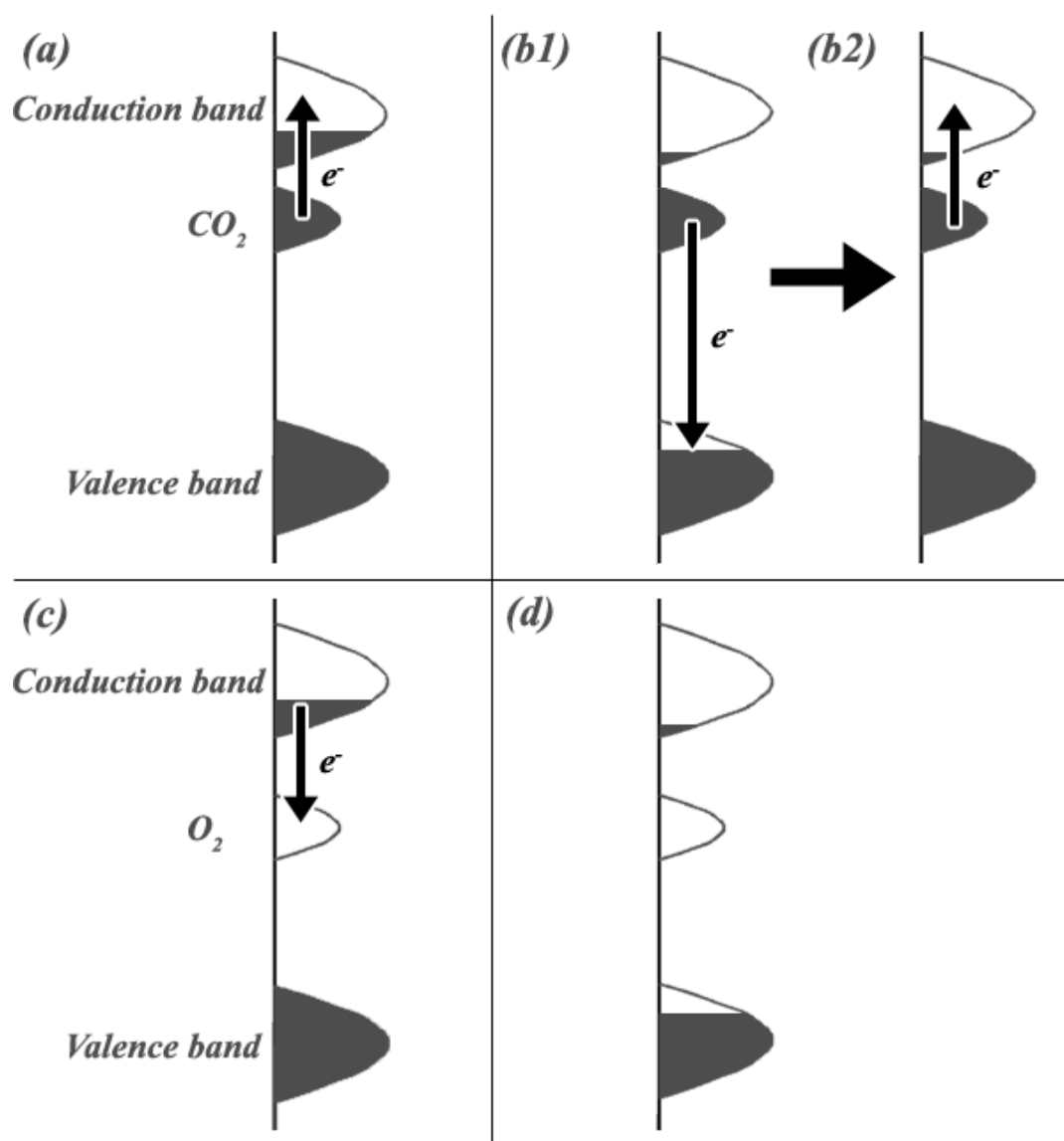


Figure S2 Qualitative band models for electrical conductivity changes of SWNH/p and ox-SWNH/p on CO_2 and O_2 adsorption. (a) Model for CO_2 adsorption on SWNH/p. The carrier electrons are injected to the conduction band from the CO_2 chemisorbed band. (b) Model for CO_2 adsorption on ox-SWNH/p. As ox-SWNH has almost no pentagons, holes in the valence band are carriers. When CO_2 is chemisorbed, electron transfer from CO_2 annihilates those holes (b1). After the annihilation on further CO_2 adsorption, the electron transfer from CO_2 to the conduction band induces the electrical conductivity increase. (c) Model for O_2 adsorption on SWNH/p. Carrier electrons in the conduction band are trapped by the chemisorbed O_2 . (d) Model for O_2 adsorption on ox-SWNH/p. The electron dose not transfer between O_2 chemisorption level and both bands.