

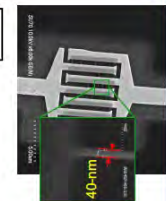
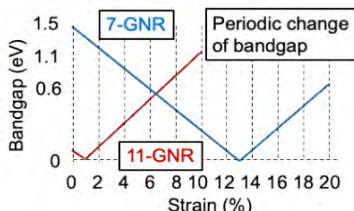


### Improvement in Photo-Sensitivity of Dumbbell-Shape GNR Structure by Using Hetero-Metallic Interconnection Structure ssdm2021

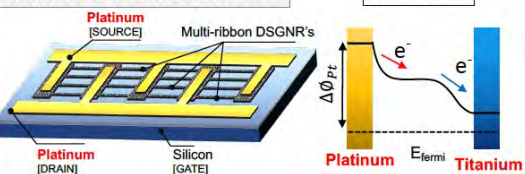
Jowesh Goundar, Tohoku University | Paper Number: C000111 | Session No: E-6-04

**OBJECTIVE:** Development of multi-bandgap solar cell using the area-arrayed semiconductive GNRs narrower than 50 nm

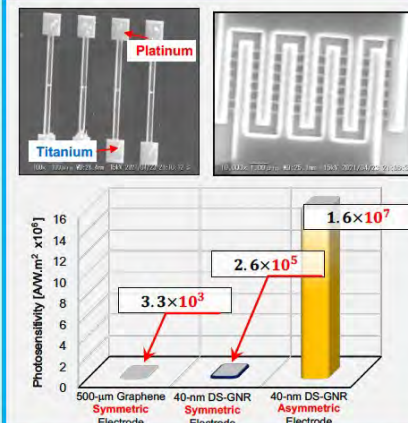
#### Band gap control by width and strain



#### Novel multi-ribbon DSGNR FET



#### Photo-sensitivity improvement

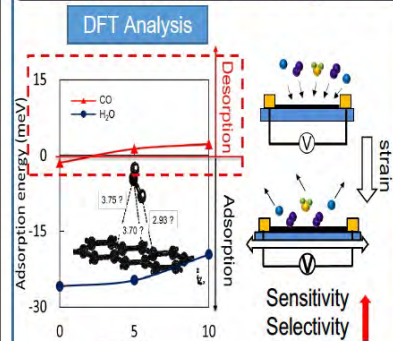


The photosensitivity of 40-nm wide DS-GNR-base devices with the asymmetric electrode was increased by about 5000 times.

### Strain-induced Change of Molecule Adsorption on a Graphene- base Gas Sensor (Abstract: C000108, Session: G-5-04) ssdm2021

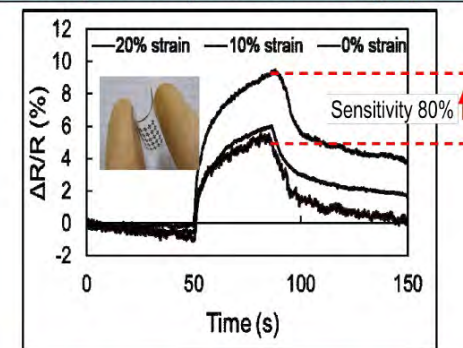
**Objective:** Development of highly sensitive graphene-base gas sensor with **selectivity**

#### Control of the gas adsorption (A)/desorption (D) behaviors by strain



There is a critical strain between A and D!

#### Validation result of the strain-induced change of adsorption of H<sub>2</sub>O molecules on graphene



Adsorption behavior varied drastically under tensile strain!

**Conclusion:** Fabrication process of the largely deformable graphene-base gas detecting sensor was established. Adsorption behavior of gas molecules on graphene was successfully controlled by strain.