MAJIMA & IZAWA Lab.

Single-Nanoscale Material Fabrication and Their Optoelectronic Nanodevices

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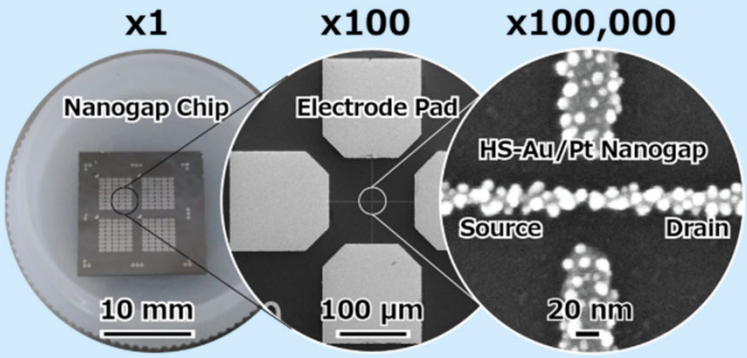
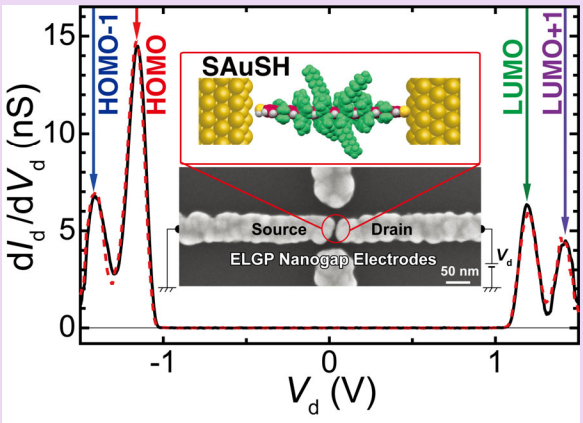
- **Single-Nanoscale Device Fabrication by Electron-Beam Lithography (EBL) and Electroless Au-Plating (ELGP)**
- **Single-Molecule Bridged Resonant Tunnel Transistor**
- **ELGP Nanopore DNA Sequencer, Nano-Scale Gas Sensor**
- **Organic Optoelectronic Device such as OLED, OPV**

Majima & IZAWA lab. develops single-nanoscale optoelectronic devices with mottos of originality, execution and realization.



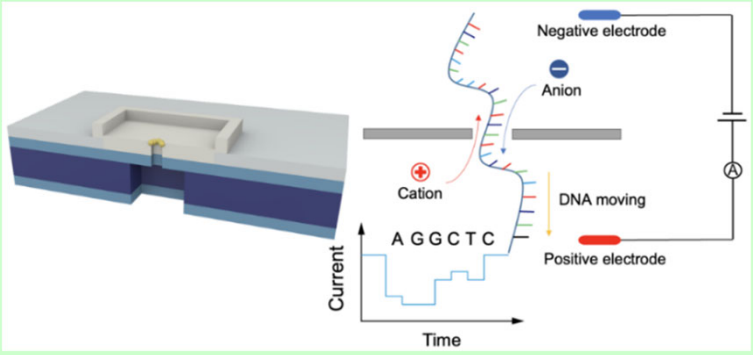
Ultrafine Pt nanogap electrodes by EBL

- Robust Pt nanogap electrodes up to 773 K
- 0.7 nm gap separation by ELGP
- Ultra-high-performance nanogap gas sensor



Single-molecule bridged resonant tunnel transistor

- Resonant tunneling through molecular orbital
- Long resonant tunnel distance of 4.3 nm
- Single-molecule bridged resonant tunnel transistor



ELGP Nanopore DNA Sequensot

- ELGP nanopore DNA sequencer with 2 nm pore
- Au nanopore by EBL and ELGP
- Long reads without cutting DNA
- Base calling by ELGP nanopore sequensor

Organic light emitting diode (OLED) operated by a 1.5 V battery

- Novel emission mechanism using upconversion
- The mechanism is related to organic photovoltaic (OPV) and photon upconversion