LIMMS

Hirakawa Group

[Quantum nanophysics and its device applications]

Department for Elecronics and Informatics

http://thz.iis.u-tokyo.ac.jp

Quantum Semiconductor Electronics

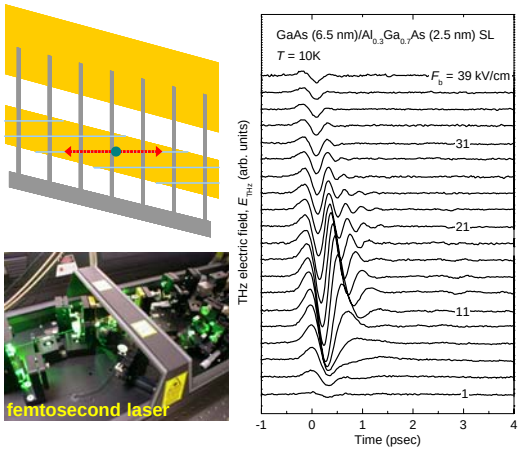
Department of Electronic Engineering and Information Systems

Quantum nanophysics and its device applications

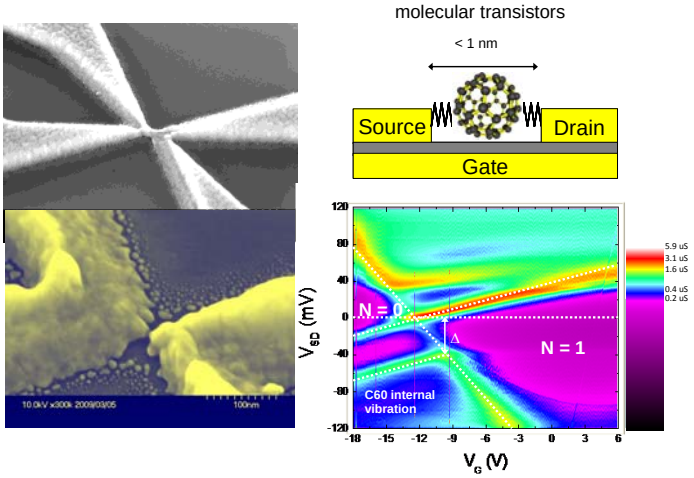
Various intriguing physics shows up in quantum nanostructures owing to size quantization and electron-electron interaction effects. We investigate such novel physics in quantum nanostructures and look into their device applications.

- Carrier dynamics and device applications of quantum nanostructures in the THz range
- Physics and applications of single quantum dot transistors
- Nanoscience and nanotechnologies toward novel single molecular devices
- Molecular beam epitaxy of semiconductor quantum structures and nanofabrication technologies

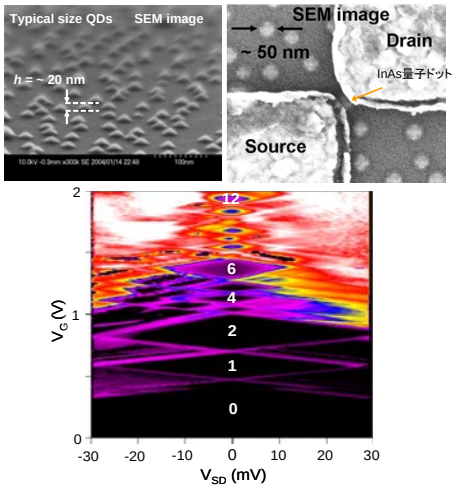
Bloch oscillation in semiconductor superlattices and its application to THz oscillators



Fabrication of atomic-scale nanogap electrodes and single molecular transistors



Physics and applications of single quantum dot transistors



Crystal growth of quantum nanostructures by molecular beam epitaxy