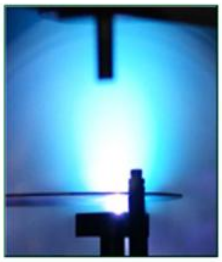
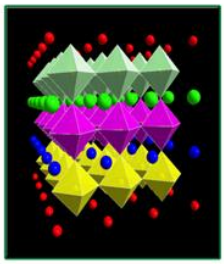
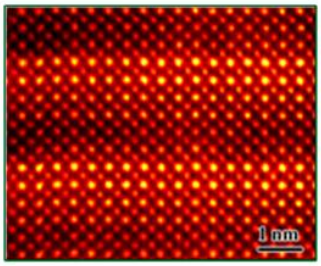
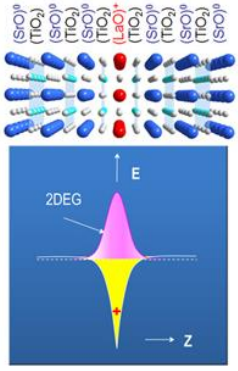
Interfacial Oxide Heterostructures:
Converting and Manipulating Energy Quanta by Interfacing

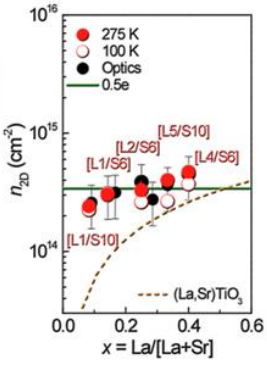
- Designing interfacial oxides atom-by-atom by pulsed laser deposition
- Discovering artificial materials by controlling atomic-scale interfaces
- Understating local behaviors for improving global functionalities
- Manipulating energy flow across interfaces

Interface Electronic Reconstruction

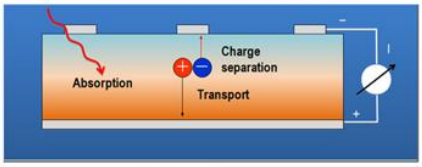
Electronic reconstruction for generating high mobility electrons at oxide interfaces

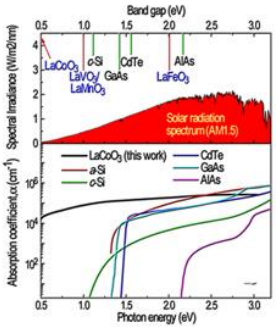


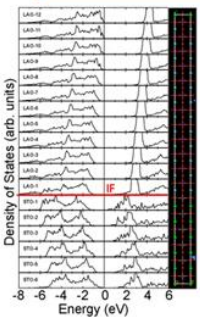


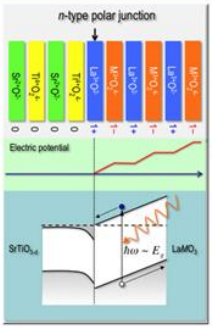
Interfacial Polar Oxides for Next Generation PVs

Focus areas:
- Solar light absorption
- Band gap engineering
- Carrier transport
- Charge separation



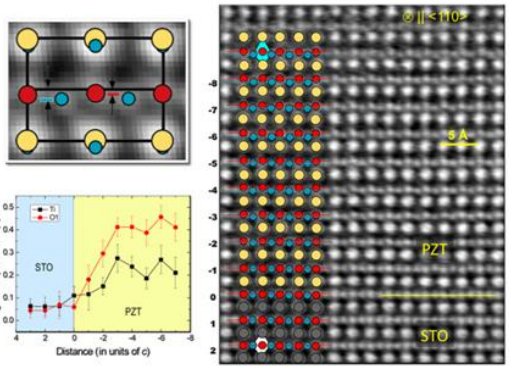






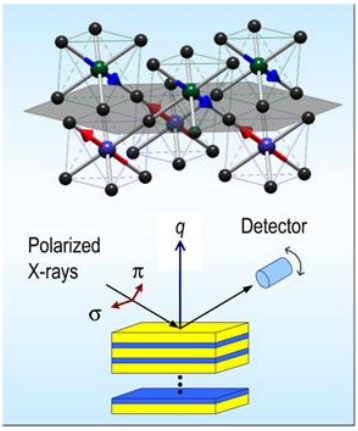
Polar Heterointerfaces

Atomistic rearrangements by electrostatic boundary conditions at the interface: Charge screening



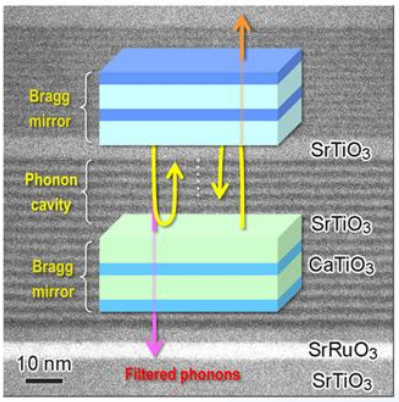
Interface Magnetism

Spin coupled interfaces for exploring new magnetic oxides



Thermoelectric Oxides

Controlling thermal energy flow (i.e., filtering phonons) by zone folded superlattice crystals



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