

Objective

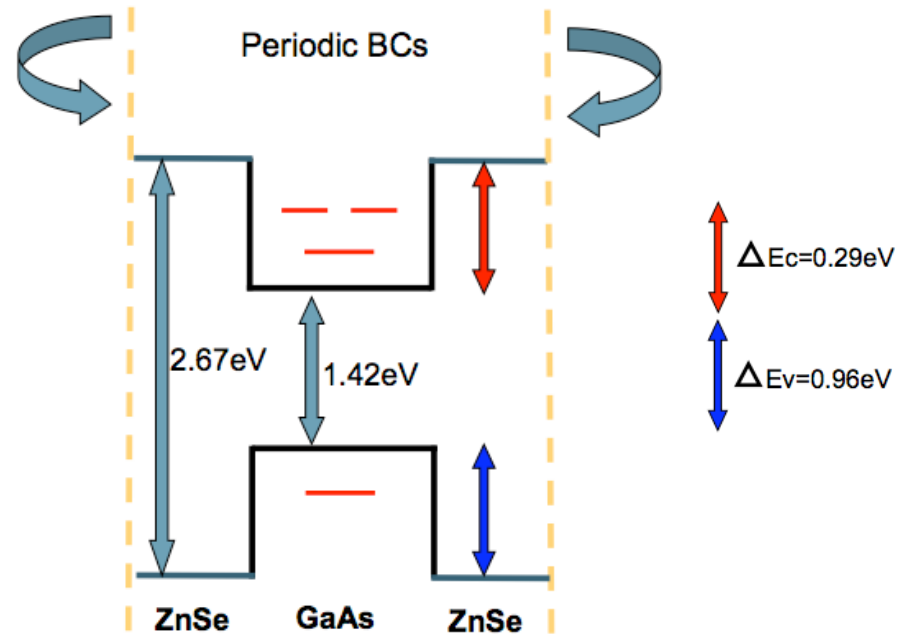
- Band-gap engineering to maximize efficiency of solar cells/LEDs.

Approach

- Construct digital alloys or superlattices of different periods to get the desired band-gap.
- Choose material system such that the band-gap range spans the optimum regions in the solar spectrum.
- Construct periodic structures using tight-binding to find electron/hole resonant levels.
- Use these values to estimate band-gaps for different superlattice periods.

Impact

- Application to solar cell technology is immense.
- Will serve as a guideline for experiments.



Above: Band diagram

Below: Effective band-gaps.

