Si/InAs Composite Channels: Low Effective Mass and DirectBandgap Structures

Objective:

- Composite channels consist of Si/InAs QW of varying InAs widths.
- We aim to improve the Si effective mass and bandgap, Δ.

Approach:

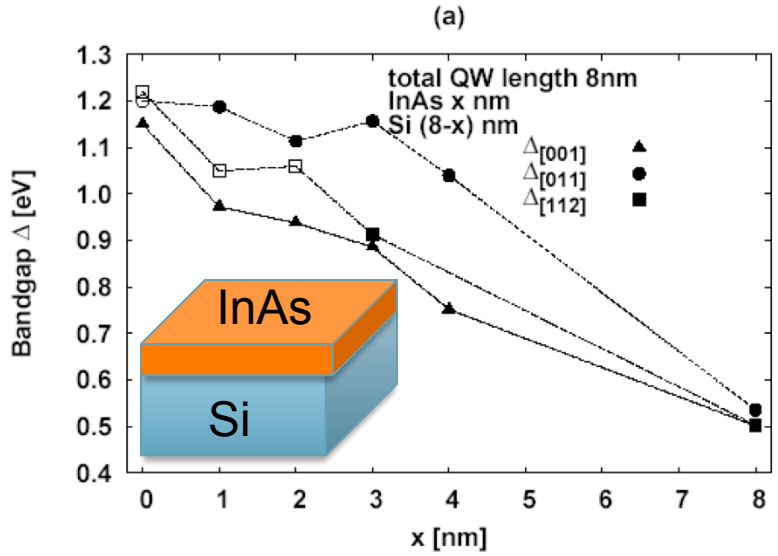
- Consider 8nm QW: Si(8-*x*)nm/ InAs *x*nm and use NEMO-3D to compute dispersion relations and:
  - Calculate Δ as a function of *x*
  - Obtain the effective mass *m**

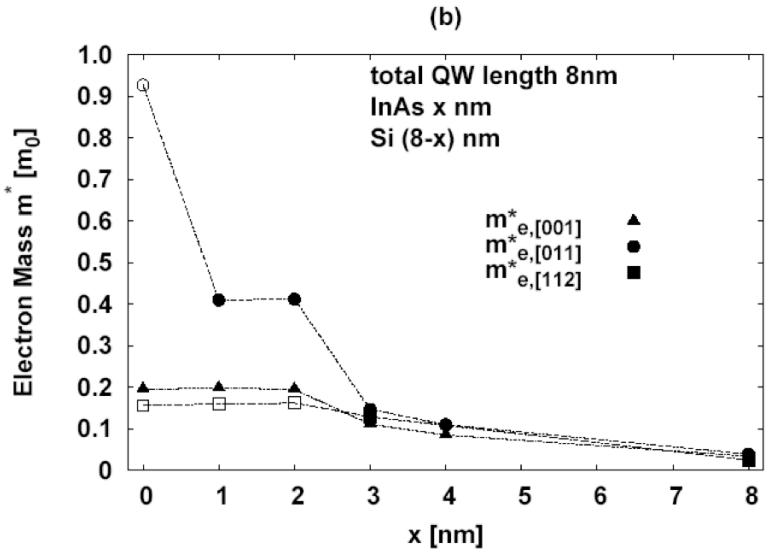
Result:

- Both Δ and *m** decrease as a function of InAs content, *x*

Publication:

MRS Conf. Proc., 2007





PURDUE UNIVERSITY Marta Prada