3-Dimensional Photonic Crystal Waveguides
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- **DESCRIPTION OF WORK**
  - Complete 3-D photonic bandgap (PBG)
  - Embedded $\alpha$-Si waveguide: line defect
  - FDTD simulation: low propagation loss in PBG ($\lambda = 1520 \text{ nm} \sim 1590 \text{ nm}$)
  - $\alpha$-Si waveguide: anisotropic etching of Si wafer (KOH, NFC), LPCVD (tube32, NFC), RIE (STS, NFC)
  - Opal (template): self-assembly of silica spheres
  - Inverse opal: Infiltrated $\alpha$-Si by LPCVD (tube32, NFC), etched air spheres by RIE (STS, NFC) & BOE

- **PROGRESSION OF WORK**
  - Fabrications & characterizations of waveguide embedded in inverse opal : In process
  - Be to complete in June 2008

![FDTD Simulation Results](image-url)

![Diagram](image-url)