Analysis of 1-D & 2-D photonic band gaps in PMN-PT

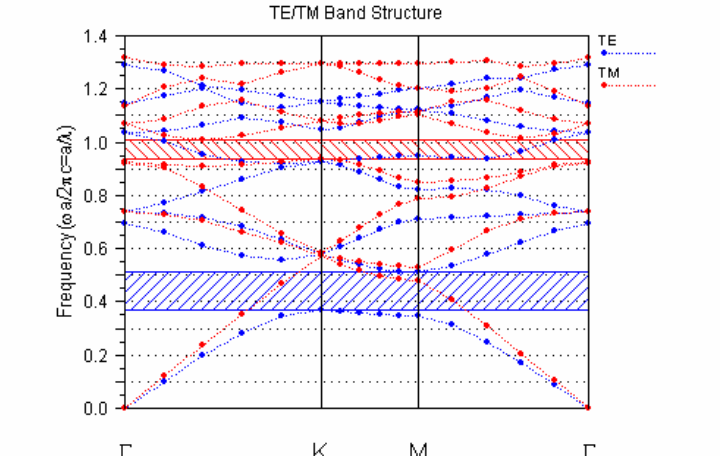
Ratnanjali Khandwal and Bethanie J. H. Stadler

Electrical and Computer Engineering, University of Minnesota

- **Motivation:** Analysis and modulation of photonic band gap in 1-D and 2-D electro-optic materials
- **Applications:** Spectral filters, Tunable wave-length filters, Polarizers, Waveguides in Optical communication

- Nanostructures of PMN-PT do not have complete band-gaps in isotropic case (i.e. refractive index of material is same along xx, yy, zz direction.
- They can have complete band gaps, that can be shifted, when the refractive index changes along the yy direction.

Band gap in hexagonally arranged rods of PMN-PT (EO material with isotropic n) in air background



Hybrid band gap in hexagonally arranged rods of PMN-PT (EO material with $n_{xx}=n_{zz}\neq n_{yy}$) in air background