

# 1-D & 2-D Photonic Band Gaps in PMN-PT for Optical Communication

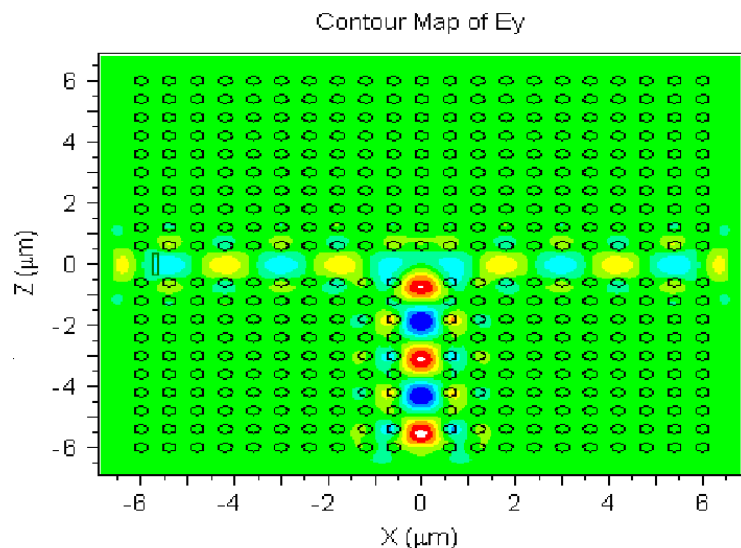
Bethanie J. H. Stadler (PI) & Ratnanjali Khandwal

Electrical & Computer Engineering, University of Minnesota

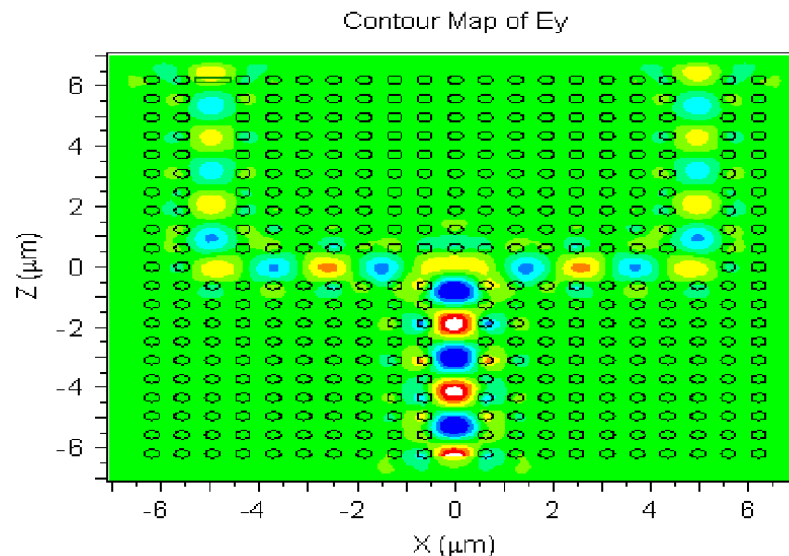
NNIN Facilities utilized: Characterization Facility & Nanofabrication Center

- **Motivation:** Designing efficient waveguide bends with photonic band gap structure  
**Applications:** Splitters with T and Y-shape bends and polarizers

Rectangular arranged rods of PMNT in air back ground: By removing central row in T-shape and Y-shape splitters were designed with almost 95-100% efficiency.



T-Splitters with Period= $0.60\mu\text{m}$  & radius= $0.144\mu\text{m}$  gives almost 50% transmission in each arm



T-Splitters with Period= $0.62\mu\text{m}$  & radius= $0.148\mu\text{m}$  gives almost 45% transmission in each arm

**Publication:** "Opening of complete 2-D photonic band gap in photonic crystals of a hexagonally arranged lattice having very low refractive index contrast", accepted to *IEEE Photonics Technology Letters*, 2008.