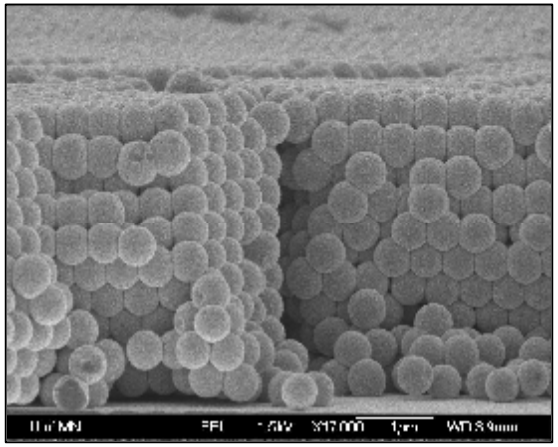
Growth of Tin Oxide Inverse Opals by Chemical Vapor Deposition

Sun Sook Lee, Gu-Cheol Kang, Kang Hyun Back, Anand Gopinath, Bethanie J. H. Stadler

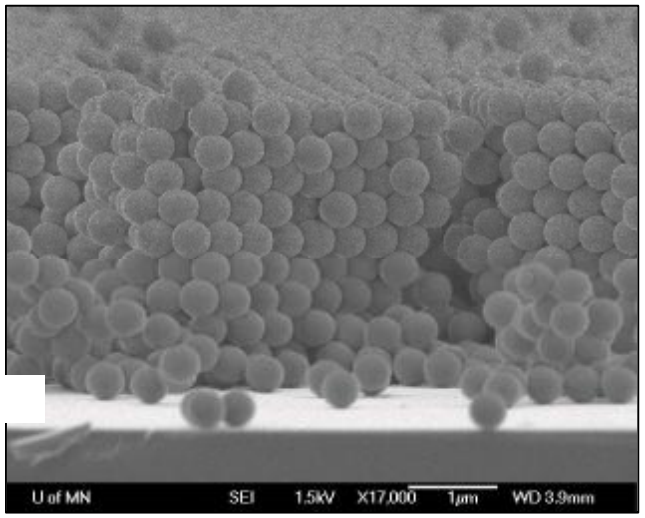
Electrical and Computer Engineering, University of Minnesota

- **Motivation:** Use inverse opal photonic crystals to increase selectivity and sensitivity of wide band-gap oxides for gas sensors
  - Fabricate and self-assemble glass sphere “opals”
  - Infill opals with tin oxide by CVD
  - Dissolve glass spheres leaving tin-oxide “nanoshells” for “optical noses”

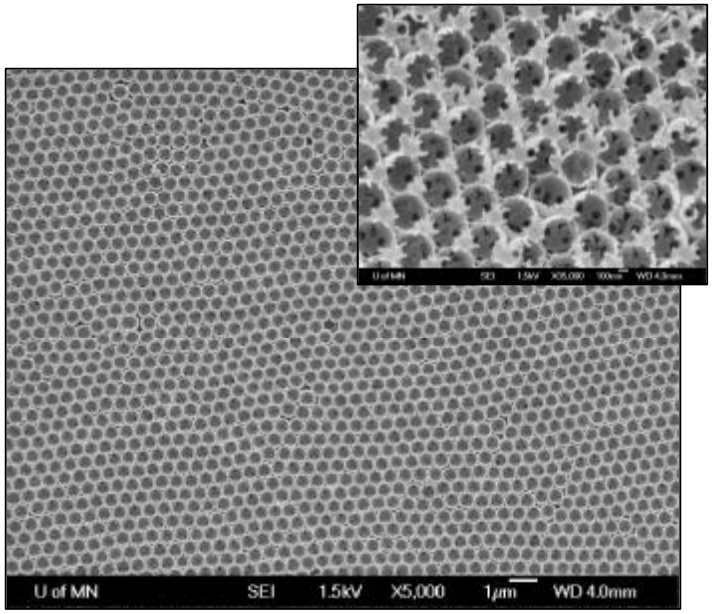
- **Results:**



Tin oxide infiltrated spheres



Self-assembled glass sphere “opals”



Inverse Opals composed of tin-oxide nanoshells, 10-30 nm thick

NNIN

MINNESOTA