Metal-Oxide Transport Layers for Si-NC Based LEDs
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NNIN Facilities utilized: Characterization Facility & Nanofabrication Center

● DESCRIPTION OF WORK
  ◆ Fabricated and characterized suitable inorganic metal-oxide thin films for use as a hole (NiO) or electron transport layer (TiO₂ or ZnO) in Si-NC based LEDs
  ◆ Utilize size-tunable Si-NC¹-² (from earlier work) as emissive layer in LED
  ◆ Potential low cost device for display and lighting applications

Current Device Architecture

[Diagram of device architecture]

● MAJOR OBSERVATIONS
  ◆ Stoichiometric, Smooth, and Transparent NiO (HTL), TiO₂ (ETL) and ZnO have been fabricated
  ◆ Metal-Oxides under investigation exhibit semiconductor-like properties

Auger Survey of RF Sputtered NiO performed in the Charfac. Nearly stiochiometric NiO is observed.

● Publications