

# Featured Material: Zn(Mg)O

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ZnO, when doped, is an important transparent and conductive material as well as an insulator and piezoelectric. Recently, ZnO has been shown to exhibit lasing or superluminescence properties as well as the ability to be p-type doped with elements such as Li and N. ZnO and its alloys show great promise as contact materials for displays, OLEDs and photovoltaics as well as wide bandgap devices and emitters.

We have developed ZnO and related oxide alloys using MOCVD. We now offer ZnO MOCVD systems and film deposition/process development services. Our ZnO MOCVD system has utilized sources of Zn, Mg, B, Al, Ga, Li, N, Mn, Si, Ge, In, Sn, Hf and provides compatibility with any other precursor that is volatile or may be flash evaporated.

FWHM on sapphire: 0.12° (un-annealed) (0002)

Transmission: > 90% visible  
IR to > 30 microns

Sheet Resistance: undoped > 10<sup>6</sup> MΩ/  
n-type <100 Ω/  
p-type TBD

Adherence: High

Etchability: Easy

Thermal Stability: High

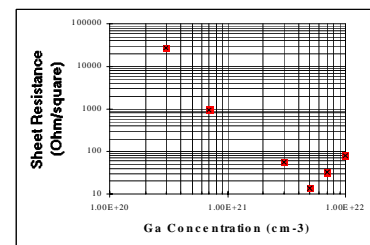
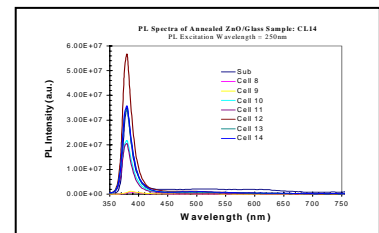
Thickness: 100-2000 nm (typically)

Area: Through 300 mm diameters

Direct Bandgap: 3.3 eV (380 nm)

Luminescence: CL, PL and EL

Other example conductive materials that can be produced ITO, Cu(Al)O, etc.



**STRUCTURED MATERIALS INDUSTRIES, INC.**

201 Circle Drive North, Unit 102 /103, Piscataway, NJ, 08854, USA  
e-mail: [sales@structuredmaterials.com](mailto:sales@structuredmaterials.com); [www.structuredmaterials.com](http://www.structuredmaterials.com)

Voice: 732-302-9274; Fax: 732-302-9275