

When Will Hydrogen Bring Down Your Components?

Robert Lowry

Electronic Materials Consultant

rlowry98@aol.com

- Deleterious effects of hydrogen
 - Device parametric failure: molecular H₂ diffuses into GaAs or other devices, upon catalysis by metal to monatomic H₂ compensates donor dopants or modifies gate/semiconductor interfaces.
 - Moisture-related failures: H₂ generates H₂O by reducing surface metal oxides
 - Explosion hazard: H₂ accumulates to >LEL in air-sealed enclosures
- Sources of hydrogen
 - Kovar alloy
 - Metal plating
 - Battery volatility
- Hydrogen determinations by mass spectrometry
- Controlling hydrogen in sealed enclosures
 - Pre-seal baking
 - Gettering