

# Materials And Reliability Handbook For Semiconductor Optical And Electron Devices

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Materials and Reliability Handbook for Semiconductor Optical and Electron Devices provides comprehensive coverage of reliability procedures and approaches for electron and photonic devices. These include lasers and high speed electronics used in cell phones, satellites, data transmission systems and displays. Lifetime predictions for compound semiconductor devices are notoriously inaccurate due to the absence of standard protocols. Manufacturers have relied on extrapolation back to room temperature of accelerated testing at elevated temperature. This technique fails for scaled, high current density devices. Device failure is driven by electric field or current mechanisms or low activation energy processes that are masked by other mechanisms at high temperature. The Handbook addresses reliability engineering for III-V devices, including materials and electrical characterization, reliability testing, and electronic characterization. These are used to develop new simulation technologies for device operation and reliability, which allow accurate prediction of reliability as well as the design specifically for improved reliability. The Handbook emphasizes physical mechanisms rather than an electrical definition of reliability. Accelerated aging is useful only if the failure mechanism is known. The Handbook also focuses on voltage and current acceleration stress mechanisms. EAN/ISBN : 9781461443377 Publisher(s): Springer, Berlin, Springer, New York Format: ePub/PDF Author(s): Ueda, Osamu - Pearton, Stephen J.

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