



InGaAsP laser diodes outperform AlGaAs

High-power semiconductor lasers based on InGaAsP alloys offer a superior alternative to conventional AlGaAs diodes. That's the view of Manijeh Razeghi at Northwestern University, Illinois, US, who has fabricated devices with threshold current densities as low as 80 A/cm^2 , differential efficiencies as high as 1.2 W/A , and projected lifetimes between 10^5 and 10^7 hours (compared with 10^4 to 10^5 hours for AlGaAs).

Commercial, high-power solid-state

lasers based on dielectrics – ruby or Nd:YAG, for example – have applications in areas such as military range-finding and target designation, materials working (drilling, welding and marking), medicine and research. The active media in these lasers are insulating and must therefore be pumped optically, by AlGaAs laser diodes emitting at $0.8 \mu\text{m}$ for example. However, device lifetime is limited by aluminium oxidation at the mirror facet > > >

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