



# WHITE PAPERS

## & APPLICATION NOTES



**DOWNLOAD FREE WHITE PAPERS & APPLICATION NOTES**



A Coherent White Paper

### Diode Lasers Enable Diverse Therapeutic Applications

Lasers are widely used throughout medicine, from diagnostic imaging and clinical testing to surgical treatments and the latest aesthetic procedures. For therapeutic medical procedures, in particular, diode lasers have now become the dominant laser type in use. This is because these workhorse devices provide lower cost of ownership, a wider choice of output wavelength and power, compact, rugged packaging, and superior (semiconductor) reliability as compared to other laser types. In this article, we briefly examine the main features and advantages of typical diode laser types and then survey some of the leading therapeutic applications that currently rely on them.

#### Diode Laser Advantages

The diode laser is a monolithic semiconductor device that directly converts electrical energy into laser light. By using different semiconductor compositions, the output wavelength can be set to be in the blue, green, red, or near and mid infrared, with near-infrared devices generally offering the highest power levels. This wide choice of output wavelengths enables the laser system to be tailored to best match the needs of each specific application, e.g., to maximize blood coagulation, to tighten collagen, to maximize tissue ablation, to maximize penetration depth in soft tissue or to limit it to surface treatment, to burst target cells, to kill dental pathogens, and so on. For every application, there is one or more optimum wavelength bands which delivers the best selectivity, i.e., where the laser produces a maximum effect while minimizing any unwanted collateral effects.

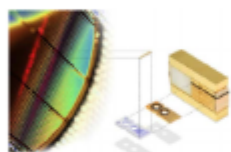


Figure 1: Power scaling in diode lasers. A water-cooled diode laser bar typically contains a section of wafer with up to 40 emitting facets. Integrating multiple bars into a two-dimensional stack provides a simple modular route to even higher power.

© 2018 Coherent, Inc. All Rights Reserved. WCP1808  
www.coherent.com | web.sales@coherent.com | 950-927-0700 | 408-754-4000



## Diode Lasers Enable Diverse Therapeutic Applications

Diode lasers have become the dominant laser type used in therapeutic applications. This is because these workhorse devices provide lower cost of ownership, a wider choice of output wavelength and power, compact, rugged packaging, and superior (semiconductor) reliability as compared to other laser types. In this white paper, we briefly examine the main features and advantages of typical diode laser types and then survey some of the leading therapeutic applications that currently rely on them.

**DOWNLOAD NOW**

Sponsored by



## More White Papers from this Sponsor

- Advantages of Optically Pumped Semiconductor Lasers – Invariant Beam Properties
- White Dwarf and Monaco: A Simple Turnkey Source of <10 fs Pulses
- Cladding with High Power Diode Lasers

# PHOTONICS MEDIA

Visit Photonics Media to download other white papers and learn more about the latest developments in lasers, imaging, optics, biophotonics, machine vision, spectroscopy, microscopy, photovoltaics and more.

[www.photonics.com/WhitePapers.aspx](http://www.photonics.com/WhitePapers.aspx)

We respect your time and privacy. You are receiving this email because you are a Photonics Media subscriber, and/or a member of our website, Photonics.com. You may use the links below to manage your subscriptions or contact us.

Questions: [info@photonics.com](mailto:info@photonics.com)

[Unsubscribe](#) | [Subscribe](#) | [Subscriptions](#) | [Privacy Policy](#) | [Terms and Conditions of Use](#)

Photonics Media, 100 West St., PO Box 4949, Pittsfield, MA 01202-4949

© 1996 - 2018 Laurin Publishing. All rights reserved. Photonics.com is Registered with the U.S. Patent & Trademark Office. Reproduction in whole or in part without permission is prohibited.