High-Power Diode Laser Technology and Applications XIII

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# Contents

**vii** Authors  
**xi** Conference Committee  
**xiii** Introduction  

### SESSION 1 HIGH-POWER FIBER COUPLED LASER SOURCES I  

<table>
<thead>
<tr>
<th>Paper Number</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>9348 03</td>
<td>A 40kW fiber-coupled diode laser for material processing and pumping applications [9348-2]</td>
<td></td>
</tr>
<tr>
<td>9348 04</td>
<td>High-brightness diodes and fiber-coupled modules [9348-3]</td>
<td></td>
</tr>
<tr>
<td>9348 05</td>
<td>Narrow-line fiber-coupled modules for DPAL pumping [9348-4]</td>
<td></td>
</tr>
<tr>
<td>9348 06</td>
<td>Low-NA fiber laser pumps powered by high-brightness single emitters [9348-5]</td>
<td></td>
</tr>
</tbody>
</table>

### SESSION 2 HIGH-POWER FIBER COUPLED LASER SOURCES II  

<table>
<thead>
<tr>
<th>Paper Number</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>9348 07</td>
<td>Packaging of high-power bars for optical pumping and direct applications [9348-6]</td>
<td></td>
</tr>
<tr>
<td>9348 08</td>
<td>Power scaling of kW-diode lasers optimized for material processing applications [9348-7]</td>
<td></td>
</tr>
<tr>
<td>9348 09</td>
<td>Tailored bar concepts for 10mm-mrad fiber coupled modules scalable to kW-class direct diode lasers [9348-8]</td>
<td></td>
</tr>
<tr>
<td>9348 0A</td>
<td>Highly modular high-brightness diode laser system design for a wide application range [9348-9]</td>
<td></td>
</tr>
</tbody>
</table>

### SESSION 3 HIGH-POWER DEVICES I  

<table>
<thead>
<tr>
<th>Paper Number</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>9348 0B</td>
<td>Brightness and average power as driver for advancements in diode lasers and their applications (Invited Paper) [9348-10]</td>
<td></td>
</tr>
<tr>
<td>9348 0C</td>
<td>High reliability demonstrated on high-power and high-brightness diode lasers [9348-11]</td>
<td></td>
</tr>
<tr>
<td>9348 0D</td>
<td>Development of high-power diode lasers with beam parameter product below 2 mm×mrad within the BRIDLE project [9348-12]</td>
<td></td>
</tr>
<tr>
<td>9348 0E</td>
<td>Heading to 1 kW levels with laser bars of high-efficiency and emission wavelength around 880 nm and 940 nm [9348-13]</td>
<td></td>
</tr>
</tbody>
</table>
### SESSION 4  HIGH-POWER DEVICES II

<table>
<thead>
<tr>
<th>9348 0F</th>
<th>915nm high-power broad area laser diodes with ultra-small optical confinement based on Asymmetric Decoupled Confinement Heterostructure (ADCH) [9348-14]</th>
</tr>
</thead>
<tbody>
<tr>
<td>9348 0G</td>
<td>29.5W continuous wave output from 100um wide laser diode [9348-15]</td>
</tr>
<tr>
<td>9348 0H</td>
<td>High-power operation of AlGaInP red laser diode for display applications [9348-17]</td>
</tr>
<tr>
<td>9348 0I</td>
<td>Advancements in high-power high-brightness laser bars and single emitters for pumping and direct diode application [9348-18]</td>
</tr>
</tbody>
</table>

### SESSION 5  HIGH-POWER DEVICE RELIABILITY

<table>
<thead>
<tr>
<th>9348 0J</th>
<th>Reliability study of high-brightness multiple single emitter diode lasers [9348-19]</th>
</tr>
</thead>
<tbody>
<tr>
<td>9348 0K</td>
<td>Progress in reliable single emitters and laser bars for efficient CW-operation in the near-infrared emission range [9348-20]</td>
</tr>
<tr>
<td>9348 0L</td>
<td>Degradation mechanisms in high-power multi-mode InGaAs-AlGaAs strained quantum well lasers for high-reliability applications [9348-21]</td>
</tr>
<tr>
<td>9348 0M</td>
<td>High-power diode lasers under external optical feedback [9348-22]</td>
</tr>
<tr>
<td>9348 0N</td>
<td>Analysis of 980nm emitting single-spatial mode diode lasers at high power levels by complementary imaging techniques [9348-23]</td>
</tr>
<tr>
<td>9348 0O</td>
<td>Mechanisms driving the catastrophic optical damage in high-power laser diodes [9348-24]</td>
</tr>
</tbody>
</table>

### SESSION 6  EXTERNAL CAVITY DEVICES

<table>
<thead>
<tr>
<th>9348 0P</th>
<th>Separate phase-locking and coherent combining of two laser diodes in a Michelson cavity [9348-25]</th>
</tr>
</thead>
<tbody>
<tr>
<td>9348 0Q</td>
<td>Wavelength stabilized multi-kW diode laser systems [9348-26]</td>
</tr>
<tr>
<td>9348 0R</td>
<td>High-power external cavity CW red laser diode [9348-27]</td>
</tr>
<tr>
<td>9348 0S</td>
<td>High-power laser diodes using a large active core combined with mode control for high beam quality [9348-28]</td>
</tr>
</tbody>
</table>

### SESSION 7  HIGH-POWER DEVICES III

<table>
<thead>
<tr>
<th>9348 0U</th>
<th>Progress in high-energy-class diode laser pump sources [9348-30]</th>
</tr>
</thead>
<tbody>
<tr>
<td>9348 0V</td>
<td>High-brightness 9xxnm fiber coupled diode lasers [9348-31]</td>
</tr>
</tbody>
</table>
High-power VCSEL systems and applications [9348-32]

Watt-level continuous-wave diode lasers at 1180 nm with high spectral brightness [9348-33]

SESSION 8 LASER DIODE PACKAGING AND COMPONENTS: JOINT SESSION WITH CONFERENCES 9346 AND 9348

Copper-based micro-channel cooler reliably operated using solutions of distilled-water and ethanol as a coolant [9348-34]

Coupling of a high-power tapered diode laser beam into a single-mode-fiber within a compact module [9348-35]

Maximizing coupling-efficiency of high-power diode lasers utilizing hybrid assembly technology [9348-36]

POSTER SESSION

Assessment of high-power kW-class single-diode bars for use in highly efficient pulsed solid state laser systems [9348-16]

In-volume heating using high-power laser diodes [9348-37]

Tapered laser diode with linearly effective-refractive-index variation waveguide [9348-38]
Authors

Numbers in the index correspond to the last two digits of the six-digit citation identifier (CID) article numbering system used in Proceedings of SPIE. The first four digits reflect the volume number. Base 36 numbering is employed for the last two digits and indicates the order of articles within the volume. Numbers start with 00, 01, 02, 03, 04, 05, 06, 07, 08, 09, 0A, 0B...0Z, followed by 10-1Z, 20-2Z, etc.

Abe, S., 0H
An, Haiyan, 07, 0I
Anaya, J., 0O
Auch, Stefan, 0Q
Bao, L., 04, 0C
Barowski, Tobias, 07
Baskin, Ilya, 06
Beczkowiak, Anna, 0Q
Berk, Yuri, 06
Bertaska, R., 0Y
Biesenbach, Jens, 09, 0M, 0Q
Bluemel, V., 0E
Blume, G., 0X
Boucke, Konstantin, 07
Brand, Thomas, 09
Brecher, C., 10
Britten, Simon, 0B
Brodie, Miles, 0L
Brox, O., 0X
Bugge, F., 0U, 0X
Bull, S., 0P
Carstens, C., 0Z
Chen, Louisa, 0J, 0V
Chen, Z., 04, 0C
Chin, A. K., 0Y
Chin, R. H., 0Y
Choi, Young-Wook, 13
Conrads, Ralf, 0W
Crump, P., 0D, 0P, 0U, 11
Dahan, Nir, 06
Dawson, D., 04, 0C
Decker, J., 0D, 0P
Demir, Abdullah, 0G
Denisenkov, Valentin S., 12
Deppe, Carsten, 0W
Derra, Guenther, 0W
DeVito, M., 04, 0C
Divoky, Martin, 11
Dogan, M., 10
Dong, W., 04, 0C
Doyen, L., 0P
Drovs, Simon, 0Q
Duesterberg, Richard, 0G
Ehm, Einar, 0A
Eibl, Florian, 0B
Elsaesser, Thomas, 0N
Engelmann, Christoph, 0B
Eppich, B., 0Z
Erbert, Götz, 0D, 0P, 0U, 0X, 11
Ertel, K., 11
Fassbender, W., 0U
Feise, D., 0X
Felder, Jason, 0I
Ferrario, Fabio, 0A
Foran, Brendan, 0L
Frobert, C., 0U, 11
Fritche, J., 0D, 0X
Fritsche, Haro, 0A
Fulghum, S., 10
Gao, Yanyan, 0J, 0V
Georges, P., 0P
Gries, Wolfgang, 0A
Grimshaw, M., 04, 0C
Gruner, Andreas, 0A
Grönenborn, Stephan, 0W
Gu, Xi, 0W
Guan, X., 04, 0C
Guiney, Tina, 05
Guo, Weirong, 0J, 0V
Guo, Zhijie, 0V
Haag, S., 10
Hanna, M., 0P
He, Xiaoguang, 0V
Hein, J., 0U
Heinemann, Stefan, 07, 0I
Hemenway, M., 04, 0C
Hempel, Martin, 0M, 0N
Hengesbach, Stefan, 0B
Heo, Du Chang, 13
Heusler, Gero, 0W
Hirsekon, O., 0E
Hoffmann, Dieter, 0B
Hofmann, J., 0X
Holly, Carlo, 0B
Hubrich, Ralf, 0Q
Hülsewede, Ralf, 0E, 0K, 0U
Iriyama, Aloysius, 0I
Irvin, David, 05
Jacob, J. H., 0Y
Janicot, S., 0P
Jedrzejczak, D., 0Z
Jelinkova, Helena, 11
Jiang, Ching-Long (John), 07, 0I
Jiang, Xiaochen, 0J, 0V
Jiang, Yuhua, 0J
Jimenez, J., 0O
Kanskar, M., 04, 0C
Kardosh, Ihab, 08

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1. High Power Fiber Coupled Laser Sources I
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2. High Power Fiber Coupled Laser Sources II
   Volker Krause, Laserline GmbH (Germany)

3. High Power Devices I
   Stefan W. Heinemann, TRUMPF Photonics (United States)

4. High Power Devices II
   Robert Martinsen, nLIGHT Corporation (United States)
5  High Power Device Reliability
   Erik P. Zucker, JDSU Corporation (United States)

6  External Cavity Devices
   Robert Martinsen, nLIGHT Corporation (United States)

7  High Power Devices III
   Stefan W. Heinemann, TRUMPF Photonics (United States)

8  Laser Diode Packaging and Components: Joint Session with Conferences 9346 and 9348
   Paul O. Leisher, Rose-Hulman Institute of Technology (United States)
   Kurt J. Linden, N2 Biomedical (United States)
Introduction

This year the highlights of the conference included invited talks on the methods for coherent combination of laser diodes and the future of laser diode technology. The paper on coherent beam combination reviewed the progress on the numerous beam combination methods that have been tested, which include: spectral beam combining, dense wavelength beam combining, and coherent combination using both passive and active coherent combination techniques. However, after over 20 years of research, there are no coherent combined products in the marketplace today, despite demonstrating diffraction limited beam quality at power levels as high as 35 Watts. Nevertheless, laser diode systems using incoherent beam combination techniques have flourished in the industrial marketplace, with power output climbing yearly to a record level of 40 kW this year. The paper discussing this breakthrough in direct diode laser system design revealed a roadmap for scaling the power level to even higher levels, including up to 100 kW of fiber coupled output. The talk on the future of laser diode technology highlighted this power trend and discussed a number of technologies which are rapidly advancing, including the recent record laser diode bar levels of 300 Watt CW. The rapid advancement in laser diode technology includes: assembly methods, heatsink design, laser diode bar power levels, and laser diode bar reliability. The future looks bright, meaning we can expect higher brightness and higher power laser diode systems in the future.

Mark S. Zediker