

# Edge emitting lasers: a 15% market growth<sup>1</sup>, driven by historical applications<sup>2</sup>

*The edge emitting laser market will reach \$6.6B in 2026, driven by optical communications, with emerging applications outpacing traditional material processing.*

## OUTLINE:

- Market forecasts:  
The EEL<sup>3</sup> market is projected to grow from US\$2.9 billion in 2020 to US\$6.6 billion by 2026 at a CAGR<sup>4</sup> of 15%.  
Emerging applications such as display, sensing, medical and lighting are likely to grow strongly too, with a CAGR<sub>2020-2026</sub> of 15%.  
New applications are still emerging for sensing, material processing or life sciences.
- Technology trends:  
Understanding application requirements and evaluating laser parameters is therefore key to making the right decision in terms of investments.  
EELs are complex photonic devices, and a variety of device designs have been developed.
- Supply chain:  
The EEL industry is highly fragmented and diversified.  
Most of the edge-emitting laser manufacturers are vertically integrated. This means doing epitaxy in-house, the FEOL<sup>5</sup>...

*“Since the development of lasers in the 1960s, they have been increasingly used in a large number of applications.” asserts **Martin Vallo, PhD, Technology & Market Analyst, solid-state lighting technologies, within the Photonics, Sensing & Display division at Yole Développement (Yole)**. “The unique properties of coherent light have helped replace conventional manufacturing methods and have advanced fiber-optic communication. This has propelled the laser market to a trillion-dollar business since the 1990s. Semiconductor laser-based technology placement in different market segments continues to grow moderately”.*

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<sup>1</sup> CAGR<sub>2020-2026</sub>

<sup>2</sup> Extracted from: [Edge Emitting Lasers - Technology and Market Trends 2021 report](#), Yole Développement

<sup>3</sup> EEL: Edge Emitting Lasers

<sup>4</sup> CAGR: Compound Annual Growth Rate

<sup>5</sup> FEOL: Front-End-Of-Line

Nowadays, material processing and optical communication applications continue to be the main driver of the laser market’s US\$2.2 billion revenues in 2020, comprising more than 75%. Laser technologies are also ubiquitous in many emerging applications. These span mostly semiconductor manufacturing, 3D sensing, spectroscopy, medical, display and lighting applications.

In this context, Yole investigates disruptive technologies and related markets in depth, to point out the latest innovations and underline the business opportunities.

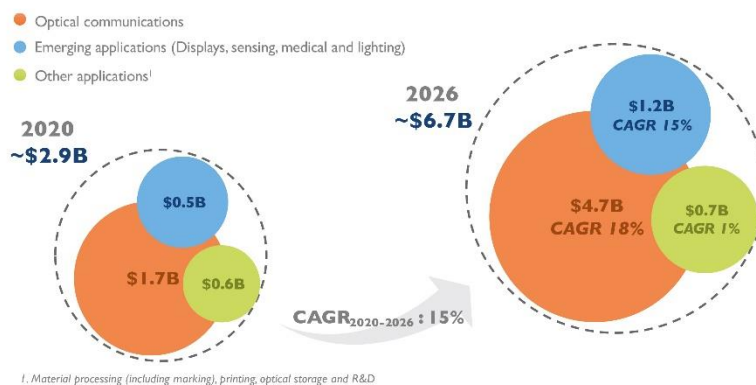
Released today, the Edge Emitting Lasers - Technology and Market Trends 2021 report contributes to the understanding of the global landscape in terms of laser technology for different applications. Including market trends and forecasts, supply chain, technology trends, technical insights and analysis, take away and outlook, this study also delivers an in-depth understanding of the ecosystem and main players’ strategies.

What are the different types of EEL? What are the economic and technological challenges of the EEL industry? What are the key drivers? Who are the suppliers to watch, and what innovative technologies are they working on?

Yole presents today its vision of the EEL industry.

### 2020-2026 Edge-emitting lasers market revenue forecast by segment (\$B)

(Source: Edge Emitting Lasers - Technology and Market Trends 2021 report, Yole Développement, 2021)



As analyzed by Yole’s team in the new Edge Emitting Lasers - Technology and Market Trends 2021 report, the laser technology landscape is highly fragmented, with a wide variety of laser types, including semiconductor lasers, fiber lasers, DPSSLs<sup>6</sup>, and gas lasers. The right choice of laser technology depends on multiple parameters such as operation wavelength, operation mode, beam quality, output power and efficiency. Studies of light and matter interaction have enabled different types of lasers even in various small applications in which traditional methods dominated.

<sup>6</sup> DPSSL: Diode-Pumped Solid-State Lasers

In this report, analysts focus on semiconductor lasers, especially EELs.

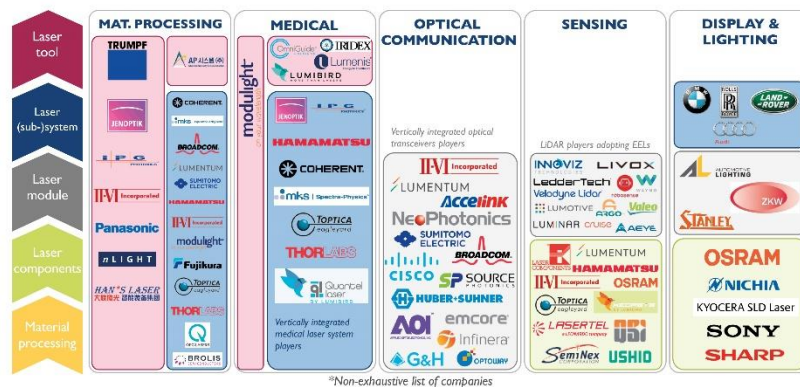
**For Pars Mukish, Business Unit Manager, Solid-State Lighting & Display at Yole:**

*“This laser light source has revolutionized the concept of laser systems that lead to new specific attributes including miniaturized devices, stabilized coherent light and narrow emission wavelengths. In practice, EELs can be used as “direct” lasers but also coupled with optical fibers or crystals to make fiber-lasers or DPSSLs. The advanced laser technologies then provide advantages such as better beam quality, improved stability in terms of laser noise and increased power output”.*

Optical sensing, mainly LiDAR, will play an increasingly important role in the evolving automotive landscape. Material processing, which is currently the second largest market for EELs, will remain an attractive business in terms of value but the growth will be limited, particularly due to the US-China trade war and COVID-19 pandemic. Yole’s analysts expect CAGR<sub>2020-2026</sub> for this application to be only 3%. On the other hand, some traditional applications such as printing and optical storage will continue declining rapidly with digitization and cloud storage trends.

## Laser players’ positioning by market segments\*

(Source: Edge Emitting Lasers - Technology and Market Trends 2021 report, Yole Développement, 2021)



Each market segment addresses its own value chain due to highly specific demands on laser technology. Such diversified laser technologies, coupled with the wide spectrum of laser applications, create different leaders for each market segment. Hereafter, key semiconductor laser players in the material processing, medical, optical communication, sensing, and display and lighting market segments have been identified:

- Material processing: Trumpf, IPG Photonics, Coherent, Han’s Laser, Raycus...
- Medical: Modulight, Coherent, Jenoptik, MKS, Hamamatsu...
- Optical communication: II-VI, Lumentum, Broadcom, Neophotonics, Cisco...
- Sensing (LiDAR): Lumentum, II-VI, OSRAM, Hamamatsu, Laser Components...
- Display and Lighting: OSRAM, Nichia, Sony, Sharp, Kyocera SLD Laser...

There is no overall leader in the laser industry. The vast majority of laser suppliers come from the U.S., Japan, Germany and Canada. Chinese laser suppliers focus on assembly laser machines such as automated cutting/welding tools, optical transceivers, LiDAR and others. However, the Chinese government invests significantly in core laser technologies. As tension between the U.S. and China escalates, China wants to maintain its economic growth by ensuring a secure and controllable technology supply chain as well as building domestic technology sectors to be independent of U.S. parts impacted by tariffs.

The market research has revealed more than 100 EEL manufacturers. They focus on device manufacturing for one or more application fields.

*All year long, Yole Développement publishes numerous reports and monitors. In addition, experts realize various key presentations and organize key conferences.*



*In this regard, do not miss the Optical Transceivers & Silicon Photonics Forum 2021 on September 2<sup>nd</sup> in Shenzhen, China & online, presented by **Alexis Debray, Senior Analyst, Emerging Technologies, Martin Vallo, Technology & Market Analyst, Solid-State Lighting**, both from Yole, **Sylvain Hallereau, Principal Technology & Cost Analyst** at System Plus Consulting and **Sven Otte, CEO of Sicoya**. Register on i-Micronews.*

*In addition, discover the “key global technology trends impacting the optical transceiver market” webcast’s presentation here.*

*Make sure to be aware of the latest news coming from the industry and get an overview of our activities, including interviews with leading companies and more on i-Micronews. Stay tuned!*

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### About our analysts

**Martin Vallo, PhD** serves as a Technology & Market Analyst specialized in solid-state lighting technologies, within the Photonics, Sensing & Display division at Yole Développement (Yole). With 9 years' experience within semiconductor technology, Martin is involved today in the development of technology & market reports as well as the production of custom consulting projects at Yole. Prior his mission at Yole, he worked at CEA (Grenoble, France), with a mission focused on the epitaxial growth of InGaN/GaN core-shell nanowire LEDs by MOCVD and their characterization for highly flexible photonic devices. Martin graduated from Academy of Sciences, Institute of Electrical Engineering (Slovakia) with an engineering degree in III-nitride semiconductors.

**Pars Mukish** serves as a Business Unit Manager, Solid-State Lighting (SSL) & Display at Yole Développement (Yole). Pars' mission is dedicated to the development of SSL and Display activities (ie laser diode, LED and OLED). Pars actively assists and supports the development of strategic projects, working with leading customers of the company. He manages the on-going expansion of technical and market expertise of the SSL & Display team. This team interacts daily with leading companies of the industry, allowing analysts to collect a large amount of data and integrate their understanding of the evolution of the market with technology breakthroughs. Pars is also regularly involved in international conferences, giving presentations and delivering keynotes. Prior to Yole, Pars has worked as Marketing Analyst and Techno-Economic Analyst for several years at the CEA (French Research Center). Pars holds a master's in Materials Science & Polymers (ITECH - France) and a master's in Innovation & Technology Management (EM Lyon - France).

### About the report

#### **Edge Emitting Lasers - Technology and Market Trends 2021**

*The Edge Emitting Laser market will reach \$6.6B in 2026, driven by historical and emerging applications. – Performed by Yole Développement*

#### **Companies cited:**

3SPTechnologies, Access Pacific, Accelink, Adtech Optics, Advanced Laser Diode Systems, Akela Laser Corp., Allwave Lasers, Alpes Lasers, Amonics, Applied Optoelectronics, Arima Lasers, Bright Solutions, Broadcom, Brolis Semiconductors, BWT, Canadian Photonics Fabrication Centre - Unit of National Research Council of Canada, CNI Optoelectronics Technology, Cisco, Coherent, DenseLight Semiconductors, Diode Laser Concepts, Eblana Photonics, Egismos Technology, Emcore, Ferdinand-Braun-Institut (FBH), Fiibercom, FITEL - Furukawa, Focuslight, Gooch & Housego, Hamamatsu, HJ Optronics, II-VI Inc., Infinera, Innolume, Innovative Photonic Solutions, InPhenix, Intense Photonics, IPG Photonics, Jenoptik, Kyocera SLD Laser, Laserline, LaserMaxDefense, LasersCom, Lasers components, Lasertel, LDX Optronics, Lumentum, Lumibird, Lumics, Macom, Masimo Semiconductor, Mitsubishi Electric, MKS Instruments, Modulight, Monocrom, and more...

#### **Related reports:**

- [Optical Transceivers for Datacom & Telecom 2020](#)
- [VCSELs – Market and Technology Trends 2020](#)
- [LiDAR for Automotive and Industrial Applications 2020](#)
- [II-VI/Finisar 100Gb CWDM4 Optical Transceiver](#)
- [Intel Silicon Photonic 100G CWDM4 QFSP28 Transceiver](#)

### About Yole Développement

Founded in 1998, Yole Développement (Yole) has grown to become a group of companies providing marketing, technology and strategy consulting, media and corporate finance services, reverse engineering and reverse costing services and well as IP and patent analysis. With a strong focus on emerging applications using silicon and/or micro manufacturing, the Yole group of companies has expanded to include more than 80 collaborators worldwide... [More](#)

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