

## **Ultrafast Lasers: Technologies and Global Markets**

Market Research Report | 2022-12-23 | 146 pages | BCC Research

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### **Report description:**

Description

Report Scope:

The scope of this report includes an overview of the global ultrafast lasers market as well as the analysis of global market trends, with data from 2020 and 2021, the latter considered the base year, as well as estimates for 2022 through 2027, with projections of CAGR in the forecast period. Revenue forecasts for this period are segmented based on laser type, pulse duration, application, industry, and geography.

In addition to industry and competitive analyses of the ultrafast lasers market, this report includes patent analyses as well as company profiles of key market players.

Report Includes:

- 51 data tables and 19 additional tables
- An overview and up-to-date analysis of the global markets for ultrafast lasers and technologies
- Analyses of the global market trends, with historic market revenue (sales figures) for 2021, estimates for 2022, forecasts for 2023 and 2025, and projections of compound annual growth rates (CAGRs) through 2027
- Estimation of the actual market size and revenue forecast for global ultrafast lasers market in USD million values, and corresponding market share analysis based on type of laser, pulse duration, application, end-user industry, and region
- Understanding of the upcoming market opportunities for ultrafast lasers and innovation-driven applications market highlights, and the major regions and countries involved in such developments
- Information on the industry value chain analysis providing a systematic study of key intermediaries involved that could further assist stakeholders in formulating appropriate strategies

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- Review of the published ultrafast lasers related patents and patent applications across various regions and key countries
- Insight into the recent industry structure for ultrafast lasers, ongoing research activities, and analysis of the competitive landscape based on recent developments and segmental revenues
- Company profiles of the major global players, including Coherent Inc., DPSS Laser Inc., Epilog Laser, IMRA America Inc., Jenoptik Laser GmbH, Laser Quantum Ltd. (Novanta), Menlo Systems, and Trumpf GmbH + Co. KG

## Executive Summary

### Summary:

Lasers produce high-intensity light beams that are coherent, monochromatic and highly collimated. Laser beams are extremely pure in comparison to other sources of light, with all of their photons (energy) having a fixed phase relationship with respect to each other. Ultrafast lasers are defined by time durations ranging from 1 picosecond to 100 femtoseconds. Lasers have evolved over time to provide optical pulses arranged for a specific operation at high bit rates.

Ultrafast or ultrashort pulse lasers have become essential manufacturing tools across industries, such as automotive, medical device and consumer electronics, due to advantages such as enhanced dimensional accuracy, tighter tolerances and elimination of post-processing steps. Industries have moved from laser cut technology to ultrafast laser technology for machining accuracy, thereby enabling early time to the market. Although these lasers' equipment (typically in the form of oscillators and amplifiers) tend to have high initial costs, the improvement in process precision reduces the overall time and operating cost for the production line, which is the primary reason for the high adoption of this equipment in material processing applications.

This report classifies ultrafast lasers based on their usage and practical applications. Fiber lasers are widely used in materials processing, telecommunications, spectroscopy, healthcare, and directed energy weapons operations. These lasers have largely replaced other traditional ultrafast lasers in recent years due to features such as high optical quality, high output power and high vibration reliability. Ultrafast lasers have not only enabled automobile manufacturers to meet various regulations but have also helped them achieve small-sized, high-precision products made out of diverse materials, including ceramic, glass, etc.

Factors that support the growth of ultrafast lasers include their unmatched high-range intensity due to their low divergence angles as well as minimal energy loss during use. Although there are both large and small competitors in various regions, there are currently no substitutions for ultrafast lasers, and this is expected to remain the case in the near future.

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