

Laser Diode Market by Wavelength (Infrared, Green, Blue, Ultraviolet), Doping Material, Technology (Distributed Feedback, Quantum Cascade, VCSEL), Application (Industrial, Medical, Consumer Electronics, Telecommunication), Region -Global Forecast to 2027

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Report description:

The global laser diode market is projected to grow from USD 5.9 billion in 2022, to USD 10.9 billion in 2027, at a CAGR of 13.1% between 2022 and 2027. One of the factors driving the growth of the laser diode market include surge in demand for high-power laser diodes for industrial applications and increasing investments in military & defense leading to high demand for laser technology.

Developments in laser diode technologies are revolutionizing the biomedical field. Recently, laser manufacturing companies are developing red laser diodes in the 640 nm band, which is close to the He-Ne laser wavelength. These are used for fluorescence bio-imaging, for example, confocal microscopy and scattering measurements, such as flow cytometry and particle size measurement.

"Red laser diode is the second fastest growing segment of laser diode market during the forecast period"

New Red laser diodes are based on doping material such as GaInP or AlGaInP and are available with different output power levels ranging from 625 nm to 680 nm. The features of red laser diodes include high stability, high efficiency, ease of use, high reliability, low noise, and excellent laser beam quality. Optically pumped semiconductor lasers either directly emit red light or generate red light via second-harmonic generation. Red laser diodes are used in various applications such as laser pointers for optical data recording or retrieval, laser projection displays, interferometers, military, industry, pumping of certain solid-state lasers, and in medical therapies among others.

"Gallium nitride (GaN) segment is the fastest growing segment of laser diode market by 2027"

Gallium nitride (GaN) segment is expected to grow at the highest CAGR during forecasted period. The use of GaN-based laser

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diodes in LiDAR applications is projected to create growth opportunities in the long term for the players operating in the ecosystem. Technological innovation in consumer electronics besides smartphones, such as augmented reality and virtual reality (AR/VR) devices, are projected to further increase the demand for GaN-based laser diodes in 3D sensing applications.

"VCSEL Diodes segment is the fastest growing segment of laser diode market by 2027"

The VCSEL laser diodes is the fastest growing segment in the laser diode market. The driving factors responsible for the growth of the VCSEL market include the growing adoption of VCSEL technology in LiDAR application and increasing usage of VCSEL in data communications. VCSELs are highly efficient and economical for use in various applications such as data communication and 3D sensing. Increase in application of 3D sensing in smartphones is projected to be the major factor driving the growth of the VCSEL market.

"North America is the second fastest growing market for laser diode during the forecast period"

Advanced medical facilities in the US employ various medical devices that are manufactured using laser diodes. The usage of laser diodes in surgical operations is increasing steadily. Moreover, the presence of prominent telecommunication, aerospace & defense, and automotive companies, such as AT&T, Verizon Wireless, Boeing, and General Motors, is also expected to boost the growth of the laser diode market in North America.

Breakdown of the profiles of primary participants:

- By Company Type: Tier 1 -40%, Tier 2 -30%, and Tier 3 -30%
- By Designation: C-level Executives -40%, Directors-40%, and Others -20%
- By Region: North America -40%, Europe -30%, Asia Pacific-20%, and RoW-10%

The laser diode market is dominated by a few globally established players such as II-VI Incorporated (US), IPG Photonics Inc. (US), Jenoptik AG (Germany), Lumentum Holding Inc. (US), MKS Instruments (US), amsOSRAM AG (Austria), ROHM Co., Ltd. (Japan), Sharp Corp. (Japan), Ushio, Inc. (US), and Hamamatsu Photonics K.K. (Japan).

Research Coverage

The report segments the laser diode market and forecasts its size, by value and volume, based on wavelength (infrared, red, blue, green, blue-violet, ultra-violet), doping material (InGaN, GaN, AlGaInP, GaAlAs, GaInAsSb, GaAs), technology (Double hetero structure laser diodes, quantum well laser diodes, quantum cascade, distributed feedback, SCH, VCSEL, and VECSEL), application (telecommunication, industrial, medical & healthcare, military & defense, consumer electronics, automotive, and others), and region (Asia Pacific, Europe, North America, and RoW).

The report also provides a comprehensive review of market drivers, restraints, opportunities, and challenges in the laser diode market. The report also covers qualitative aspects in addition to the quantitative aspects of these markets.

Key Benefits of Buying the Report:

The report will help the leaders/new entrants in this market with information on the closest approximations of the revenue numbers for the overall market and the sub-segments. This report will help stakeholders understand the competitive landscape and gain more insights to better position their businesses and plan suitable go-to-market strategies. The report also helps stakeholders understand the pulse of the laser diode market and provides them information on key market drivers, restraints, challenges, and opportunities.

Table of Contents:

1	INTRODUCTION	32
1.1	STUDY OBJECTIVES	32
1.2	MARKET DEFINITION	32
1.2.1	INCLUSIONS AND EXCLUSIONS	33
1.3	STUDY SCOPE	34
FIGURE 1	LASER DIODE MARKET SEGMENTATION	34
1.3.1	YEARS CONSIDERED	35
1.4	CURRENCY CONSIDERED	35

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1.5	UNIT CONSIDERED	35
1.6	STAKEHOLDERS	35
1.7	SUMMARY OF CHANGES	36
2	RESEARCH METHODOLOGY	37
2.1	RESEARCH DATA	37
	FIGURE 2 LASER DIODE MARKET: RESEARCH DESIGN	37
2.1.1	SECONDARY DATA	38
2.1.1.1	Key data from secondary sources	38
2.1.2	PRIMARY DATA	39
2.1.2.1	Key data from primary sources	39
2.1.2.2	Breakdown of primary interviews	40
2.1.3	SECONDARY AND PRIMARY RESEARCH	41
2.1.3.1	Key industry insights	42
2.2	MARKET SIZE ESTIMATION	42
2.2.1	BOTTOM-UP APPROACH	42
	FIGURE 3 LASER DIODE MARKET: BOTTOM-UP APPROACH	43
2.2.2	TOP-DOWN APPROACH	43
	FIGURE 4 LASER DIODE MARKET: TOP-DOWN APPROACH	43
2.2.3	MARKET PROJECTIONS	43
2.3	MARKET BREAKDOWN AND DATA TRIANGULATION	44
	FIGURE 5 LASER DIODE MARKET: DATA TRIANGULATION	44
2.4	RESEARCH ASSUMPTIONS AND LIMITATIONS	45
2.4.1	ASSUMPTIONS	45
2.4.2	LIMITATIONS	45
3	EXECUTIVE SUMMARY	46
	FIGURE 6 INFRARED LASER DIODES TO ACCOUNT FOR LARGEST MARKET SHARE DURING FORECAST PERIOD	46
	FIGURE 7 AUTOMOTIVE SEGMENT EXPECTED TO WITNESS HIGHEST GROWTH IN LASER DIODE MARKET DURING FORECAST PERIOD	47
	FIGURE 8 GALLIUM ARSENIDE (GAAS) TO CONTINUE TO HOLD LARGEST SHARE OF LASER DIODE MARKET DURING FORECAST PERIOD	48
	FIGURE 9 VCSEL TECHNOLOGY SEGMENT EXPECTED TO GROW AT HIGHEST CAGR DURING FORECAST PERIOD	48
	FIGURE 10 ASIA PACIFIC TO REGISTER HIGHEST CAGR IN LASER DIODE MARKET DURING FORECAST PERIOD	49
4	PREMIUM INSIGHTS	50
4.1	ATTRACTIVE OPPORTUNITIES FOR PLAYERS IN LASER DIODE MARKET	50
	FIGURE 11 SIGNIFICANT INCREASE IN MILITARY R&D EXPENDITURE TO BOOST ADOPTION OF LASER DIODES	50
4.2	LASER DIODE MARKET, BY WAVELENGTH	50
	FIGURE 12 RED LASER DIODES SEGMENT EXPECTED TO GROW AT HIGHEST CAGR DURING FORECAST PERIOD	50
4.3	LASER DIODE MARKET, BY DOPING MATERIAL	51
	FIGURE 13 GALLIUM NITRIDE (GAN) SEGMENT TO GROW AT HIGHEST RATE DURING FORECAST PERIOD	51
4.4	LASER DIODE MARKET, BY TECHNOLOGY	51
	FIGURE 14 DISTRIBUTED FEEDBACK LASER DIODE TO HOLD LARGEST SHARE OF MARKET IN ASIA PACIFIC DURING FORECAST PERIOD	51
4.5	LASER DIODE MARKET, BY APPLICATION	52
	FIGURE 15 CONSUMER ELECTRONICS APPLICATION TO HOLD LARGEST SHARE OF LASER DIODE MARKET DURING FORECAST PERIOD	52
4.6	LASER DIODE MARKET, BY REGION	52
	FIGURE 16 ASIA PACIFIC TO GROW AT FASTEST RATE IN LASER DIODE MARKET DURING FORECAST PERIOD	52

5 MARKET OVERVIEW 53

5.1 MARKET DYNAMICS 53

FIGURE 17 GROWING APPLICATION AREAS OF LASER DIODES EXPECTED TO BOOST MARKET 53

5.1.1 DRIVERS 53

5.1.1.1 Growing application areas of laser diodes in various industries 53

5.1.1.2 Expanding fiber laser market 54

5.1.1.3 Surge in demand for high-power laser diodes for industrial applications 54

5.1.1.4 Increasing investments in military & defense leading to high demand for laser technology 55

TABLE 1 MILITARY EXPENDITURE BY MAJOR COUNTRIES, 2021 55

FIGURE 18 DRIVERS AND THEIR IMPACT ON LASER DIODE MARKET 56

5.1.2 RESTRAINTS 56

5.1.2.1 High initial investment required for industrial applications 56

FIGURE 19 RESTRAINTS AND THEIR IMPACT ON LASER DIODE MARKET 56

5.1.3 OPPORTUNITIES 57

5.1.3.1 Increasing applications of laser diodes in biomedical field 57

5.1.3.2 Development of vertical cavity surface-emitting laser (VCSEL) technology 57

FIGURE 20 OPPORTUNITIES AND THEIR IMPACT ON LASER DIODE MARKET 58

5.1.4 CHALLENGES 58

5.1.4.1 Environmental concerns over use of rare earth elements 58

FIGURE 21 CHALLENGES AND THEIR IMPACT ON LASER DIODE MARKET 58

5.2 VALUE CHAIN ANALYSIS 59

FIGURE 22 VALUE CHAIN ANALYSIS: MAJOR VALUE IS ADDED DURING MANUFACTURING PHASE 59

5.3 ECOSYSTEM ANALYSIS 60

FIGURE 23 GLOBAL LASER DIODE MARKET: ECOSYSTEM 60

TABLE 2 LASER DIODE MARKET: ECOSYSTEM 60

5.4 PRICING ANALYSIS 61

5.4.1 AVERAGE SELLING PRICE OF LASER SYSTEMS OFFERED BY TOP THREE MARKET PLAYERS, BY WAVELENGTH 62

FIGURE 24 AVERAGE SELLING PRICE OF LASER DIODE OFFERED BY TOP THREE MARKET PLAYERS, BY WAVELENGTH 62

TABLE 3 AVERAGE SELLING PRICE OF LASER DIODES OFFERED BY TOP THREE MARKET PLAYERS, BY WAVELENGTH 62

5.5 TRENDS/DISRUPTIONS IMPACTING CUSTOMERS 63

FIGURE 25 REVENUE SHIFT FOR LASER DIODE MARKET 63

5.6 TECHNOLOGY ANALYSIS 63

5.6.1 LIDAR 63

5.6.2 3D SENSING 64

5.7 PORTER'S FIVE FORCES ANALYSIS 64

TABLE 4 LASER DIODE MARKET: PORTER'S FIVE FORCES ANALYSIS 64

5.7.1 THREAT OF NEW ENTRANTS 65

5.7.2 THREAT OF SUBSTITUTES 65

5.7.3 BARGAINING POWER OF SUPPLIERS 65

5.7.4 BARGAINING POWER OF BUYERS 65

5.7.5 INTENSITY OF COMPETITIVE RIVALRY 66

5.8 KEY STAKEHOLDERS AND BUYING CRITERIA 66

5.8.1 KEY STAKEHOLDERS IN BUYING PROCESS 66

FIGURE 26 INFLUENCE OF STAKEHOLDERS IN BUYING PROCESS, BY TOP 3 APPLICATION 66

TABLE 5 INFLUENCE OF STAKEHOLDERS IN BUYING PROCESS, BY TOP 3 APPLICATION (%) 66

5.8.2 BUYING CRITERIA 67

FIGURE 27 KEY BUYING CRITERIA FOR TOP 3 APPLICATIONS 67

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TABLE 6	KEY BUYING CRITERIA FOR TOP 3 APPLICATIONS	67
5.9	CASE STUDIES	68
5.9.1	3D PRINTING FOR MANUFACTURING	68
5.9.2	MEDICAL LASERS	68
5.10	TRADE ANALYSIS	68
FIGURE 28	IMPORT DATA FOR HS CODE 854110, BY COUNTRY, 2017-2021 (USD MILLION)	68
FIGURE 29	EXPORT DATA FOR HS CODE 854110, BY COUNTRY, 2017-2021 (USD MILLION)	69
5.11	PATENT ANALYSIS	70
FIGURE 30	ANALYSIS OF PATENTS GRANTED IN LASER DIODE MARKET	70
TABLE 7	PATENTS RELATED TO LASER DIODE, 2022	71
5.12	KEY CONFERENCES AND EVENTS, 2022-2023	72
TABLE 8	LASER DIODE MARKET: DETAILED LIST OF CONFERENCES AND EVENTS	72
5.13	TARIFF AND REGULATORY LANDSCAPE	73
5.13.1	STANDARDS AND REGULATIONS RELATED TO LASER DIODE MARKET	73
5.13.1.1	International Electrotechnical Commission (IEC)	73
TABLE 9	IEC LASER CLASSIFICATIONS	73
5.13.1.2	Center for Devices and Radiological Health (CDRH)	74
5.13.2	REGIONAL STANDARDS	74
5.13.2.1	US	74
TABLE 10	ANSI LASER STANDARDS	74
5.13.2.2	Europe	75
6	LASER DIODE, BY MODE OF OPERATION	76
6.1	INTRODUCTION	77
FIGURE 31	LASER DIODE MARKET, BY MODE OF OPERATION	77
6.2	SINGLE-MODE LASER DIODES	77
6.2.1	PREFERRED IN LOW-POWER APPLICATIONS	77
6.3	MULTIMODE LASER DIODES	78
6.3.1	USED FOR HIGH-POWER APPLICATIONS	78
7	LASER DIODE MARKET, BY WAVELENGTH	79
7.1	INTRODUCTION	80
FIGURE 32	LASER DIODE MARKET SEGMENTATION: BY WAVELENGTH	80
TABLE 11	LASER DIODE MARKET, BY WAVELENGTH, 2018-2021 (USD MILLION)	80
TABLE 12	LASER DIODE MARKET, BY WAVELENGTH, 2022-2027 (USD MILLION)	81
7.2	INFRARED LASER DIODES	81
7.2.1	USED FOR LONG-DISTANCE TIME-OF-FLIGHT OR PHASE-SHIFT RANGE-FINDING SYSTEMS	81
TABLE 13	INFRARED LASER DIODE MARKET, BY APPLICATION, 2018-2021 (USD MILLION)	82
TABLE 14	INFRARED LASER DIODE MARKET, BY APPLICATION, 2022-2027 (USD MILLION)	82
7.3	RED LASER DIODES	82
7.3.1	OFFER HIGH STABILITY, EFFICIENCY, AND RELIABILITY	82
TABLE 15	RED LASER DIODE MARKET, BY APPLICATION, 2018-2021 (USD MILLION)	83
TABLE 16	RED LASER DIODE MARKET, BY APPLICATION, 2022-2027 (USD MILLION)	83
7.4	BLUE LASER DIODES	84
7.4.1	USED IN AUTOMOTIVE HEAD LAMPS, AND PROJECTION, TELECOMMUNICATION, AND MEDICAL APPLICATIONS	84
TABLE 17	BLUE LASER DIODE MARKET, BY APPLICATION, 2018-2021 (USD MILLION)	84
TABLE 18	BLUE LASER DIODE MARKET, BY APPLICATION, 2022-2027 (USD MILLION)	84
7.5	GREEN LASER DIODES	85

7.5.1	USED BY ASTRONOMERS TO IDENTIFY STARS AND PATTERNS	85
TABLE 19	GREEN LASER DIODE MARKET, BY APPLICATION, 2018-2021 (USD MILLION)	85
TABLE 20	GREEN LASER DIODE MARKET, BY APPLICATION, 2022-2027 (USD MILLION)	86
7.6	BLUE VIOLET LASER DIODES	86
7.6.1	USED IN 3D PRINTING, BIOMEDICAL, AND INDUSTRIAL APPLICATIONS	86
TABLE 21	BLUE VIOLET LASER DIODE MARKET, BY APPLICATION, 2018-2021 (USD MILLION)	86
TABLE 22	BLUE VIOLET LASER DIODE MARKET, BY APPLICATION, 2022-2027 (USD MILLION)	87
7.7	UV LASER DIODES	87
7.7.1	PULSED HIGH-POWER UV LASER DIODES USED FOR EFFICIENT CUTTING AND DRILLING APPLICATIONS	87
TABLE 23	ULTRAVIOLET LASER DIODE MARKET, BY APPLICATION, 2018-2021 (USD MILLION)	87
TABLE 24	ULTRAVIOLET LASER DIODE MARKET, BY APPLICATION, 2022-2027 (USD MILLION)	88
8	LASER DIODE MARKET, BY DOPING MATERIAL	89
8.1	INTRODUCTION	90
FIGURE 33	LASER DIODE MARKET SEGMENTATION: BY DOPING MATERIAL	90
TABLE 25	LASER DIODE MARKET, BY DOPING MATERIAL, 2018-2021 (USD MILLION)	91
TABLE 26	LASER DIODE MARKET, BY DOPING MATERIAL, 2022-2027 (USD MILLION)	91
8.2	GALLIUM ALUMINUM ARSENIDE (GAALAS)	92
8.2.1	USED IN COMMUNICATION AND RESEARCH APPLICATIONS	92
TABLE 27	GALLIUM ALUMINUM ARSENIDE (GAALAS): LASER DIODE MARKET, BY APPLICATION, 2018-2021 (USD MILLION)	92
TABLE 28	GALLIUM ALUMINUM ARSENIDE (GAALAS): LASER DIODE MARKET, BY APPLICATION, 2022-2027 (USD MILLION)	92
8.3	GALLIUM ARSENIDE (GAAS)	93
8.3.1	OFFERS BETTER OPTICAL COMPETENCY THAN OTHER SEMICONDUCTOR MATERIALS	93
TABLE 29	GALLIUM ARSENIDE (GAAS): LASER DIODE MARKET, BY APPLICATION, 2018-2021 (USD MILLION)	93
TABLE 30	GALLIUM ARSENIDE (GAAS): LASER DIODE MARKET, BY APPLICATION, 2022-2027 (USD MILLION)	93
8.4	ALUMINUM GALLIUM INDIUM PHOSPHIDE (ALGAINP)	94
8.4.1	PRIMARILY USED IN OPTICAL DISC READERS, DVD PLAYERS, AND COMPACT DISC PLAYERS	94
TABLE 31	ALUMINUM GALLIUM INDIUM PHOSPHIDE (ALGAINP): LASER DIODE MARKET, BY APPLICATION, 2018-2021 (USD MILLION)	94
TABLE 32	ALUMINUM GALLIUM INDIUM PHOSPHIDE (ALGAINP): LASER DIODE MARKET, BY APPLICATION, 2022-2027 (USD MILLION)	94
8.5	INDIUM GALLIUM NITRIDE (INGAN)	95
8.5.1	USED TO DEVELOP GREEN, BLUE, AND WHITE LASERS	95
TABLE 33	INDIUM GALLIUM NITRIDE (INGAN): LASER DIODE MARKET, BY APPLICATION, 2018-2021 (USD MILLION)	95
TABLE 34	INDIUM GALLIUM NITRIDE (INGAN): LASER DIODE MARKET, BY APPLICATION, 2022-2027 (USD MILLION)	95
8.6	GALLIUM NITRIDE (GAN)	96
8.6.1	WIDELY USED FOR PRODUCTION OF SEMICONDUCTOR OPTOELECTRONIC DEVICES	96
TABLE 35	GALLIUM NITRIDE (GAN): LASER DIODE MARKET, BY APPLICATION, 2018-2021 (USD MILLION)	96
TABLE 36	GALLIUM NITRIDE (GAN): LASER DIODE MARKET, BY APPLICATION, 2022-2027 (USD MILLION)	97
8.7	GALLIUM INDIUM ARSENIC ANTIMONY (GAINASSB)	97
8.7.1	EMITS WAVELENGTH IN INFRARED REGION AND USED IN SPECTROSCOPY	97
TABLE 37	GALLIUM INDIUM ARSENIC ANTIMONY (GAINASSB): LASER DIODE MARKET, BY APPLICATION, 2018-2021 (USD MILLION)	97
TABLE 38	GALLIUM INDIUM ARSENIC ANTIMONY (GAINASSB): LASER DIODE MARKET, BY APPLICATION, 2022-2027 (USD MILLION)	98
8.8	OTHERS	98
TABLE 39	OTHERS: LASER DIODE MARKET, BY APPLICATION, 2018-2021 (USD MILLION)	98
TABLE 40	OTHERS: LASER DIODE MARKET, BY APPLICATION, 2022-2027 (USD MILLION)	99
9	LASER DIODE MARKET, BY TECHNOLOGY	100
9.1	INTRODUCTION	101

FIGURE 34	LASER DIODE MARKET SEGMENTATION: BY TECHNOLOGY	101
TABLE 41	LASER DIODE MARKET, BY TECHNOLOGY, 2018-2021 (USD MILLION)	102
TABLE 42	LASER DIODE MARKET, BY TECHNOLOGY, 2022-2027 (USD MILLION)	102
9.2	DISTRIBUTED FEEDBACK LASER DIODES	103
9.2.1	USED AS OPTICAL SIGNALS FOR HIGH-CAPACITY LONG-DISTANCE OPTICAL COMMUNICATION	103
TABLE 43	DISTRIBUTED FEEDBACK LASER DIODES: LASER DIODE MARKET, BY APPLICATION, 2018-2021 (USD MILLION)	103
TABLE 44	DISTRIBUTED FEEDBACK LASER DIODES: LASER DIODE MARKET, BY APPLICATION, 2022-2027 (USD MILLION)	104
9.3	DOUBLE HETEROSTRUCTURE LASER DIODES	104
9.3.1	USED FOR HIGH OPTICAL AMPLIFICATION IN TELECOMMUNICATION	104
TABLE 45	DOUBLE HETEROSTRUCTURE LASER DIODES: LASER DIODE MARKET, BY APPLICATION, 2018-2021 (USD MILLION)	104
TABLE 46	DOUBLE HETEROSTRUCTURE LASER DIODES: LASER DIODE MARKET, BY APPLICATION, 2022-2027 (USD MILLION)	105
9.4	QUANTUM CASCADE LASER DIODES	105
9.4.1	SUITABLE FOR APPLICATIONS IN SPECTROSCOPY, COMMUNICATION, AND MISSILE COUNTERMEASURE	105
TABLE 47	QUANTUM CASCADE LASER DIODES: LASER DIODE MARKET, BY APPLICATION, 2018-2021 (USD MILLION)	105
TABLE 48	QUANTUM CASCADE LASER DIODES: LASER DIODE MARKET, BY APPLICATION, 2022-2027 (USD MILLION)	106
9.5	QUANTUM WELL LASER DIODES	106
9.5.1	USED FOR MEDICAL THERAPY, MATERIAL PROCESSING, AND LASER PRINTING	106
TABLE 49	QUANTUM WELL LASER DIODES: LASER DIODE MARKET, BY APPLICATION, 2018-2021 (USD MILLION)	107
TABLE 50	QUANTUM WELL LASER DIODES: LASER DIODE MARKET, BY APPLICATION, 2022-2027 (USD MILLION)	107
9.6	SEPARATE CONFINEMENT HETEROSTRUCTURE (SCH) LASER DIODES	108
9.6.1	EFFECTIVELY CONFINE LIGHT AND OFFER HIGH LIGHT INTENSITY	108
TABLE 51	SCH: LASER DIODE MARKET, BY APPLICATION, 2018-2021 (USD MILLION)	108
TABLE 52	SCH: LASER DIODE MARKET, BY APPLICATION, 2022-2027 (USD MILLION)	108
9.7	VERTICAL CAVITY SURFACE-EMITTING LASER (VCSEL) DIODES	109
9.7.1	VCSEL HAS HIGH GROWTH OPPORTUNITY IN 3D SENSING APPLICATIONS	109
TABLE 53	VCSEL: LASER DIODE MARKET, BY APPLICATION, 2018-2021 (USD MILLION)	109
TABLE 54	VCSEL: LASER DIODE MARKET, BY APPLICATION, 2022-2027 (USD MILLION)	109
9.8	VERTICAL EXTERNAL CAVITY SURFACE EMITTING LASER (VECSEL) DIODES	110
9.8.1	HAVE HIGHER POWER AND EFFICIENCY AS COMPARED TO OTHER LASER DIODE TECHNOLOGIES	110
TABLE 55	VECSEL: LASER DIODE MARKET, BY APPLICATION, 2018-2021 (USD MILLION)	110
TABLE 56	VECSEL: LASER DIODE MARKET, BY APPLICATION, 2022-2027 (USD MILLION)	110
10	LASER DIODE MARKET, BY APPLICATION	111
10.1	INTRODUCTION	112
FIGURE 35	LASER DIODE MARKET, BY APPLICATION	112
TABLE 57	LASER DIODE MARKET, BY APPLICATION, 2018-2021 (USD MILLION)	113
TABLE 58	LASER DIODE MARKET, BY APPLICATION, 2022-2027 (USD MILLION)	113
TABLE 59	LASER DIODE MARKET SHIPMENTS, BY APPLICATION, 2018-2021 (MILLION UNITS)	113
TABLE 60	LASER DIODE MARKET SHIPMENTS, BY APPLICATION, 2022-2027 (MILLION UNITS)	114
TABLE 61	AVERAGE SELLING PRICE (ASP) OF LASER DIODE, BY APPLICATION, 2018-2021 (USD)	114
TABLE 62	AVERAGE SELLING PRICE (ASP) OF LASER DIODE, BY APPLICATION, 2022-2027 (USD)	114
10.2	AUTOMOTIVE	115
TABLE 63	AUTOMOTIVE: LASER DIODE MARKET, BY WAVELENGTH, 2018-2021 (USD MILLION)	115
TABLE 64	AUTOMOTIVE: LASER DIODE MARKET, BY WAVELENGTH, 2022-2027 (USD MILLION)	116
TABLE 65	AUTOMOTIVE: LASER DIODE MARKET, BY DOPING MATERIAL, 2018-2021 (USD MILLION)	116
TABLE 66	AUTOMOTIVE: LASER DIODE MARKET, BY DOPING MATERIAL, 2022-2027 (USD MILLION)	116
TABLE 67	AUTOMOTIVE: LASER DIODE MARKET, BY TECHNOLOGY, 2018-2021 (USD MILLION)	117

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TABLE 68	AUTOMOTIVE: LASER DIODE MARKET, BY TECHNOLOGY, 2022-2027 (USD MILLION)	117
TABLE 69	AUTOMOTIVE: LASER DIODE MARKET, BY REGION, 2018-2021 (USD MILLION)	117
TABLE 70	AUTOMOTIVE: LASER DIODE MARKET, BY REGION, 2022-2027 (USD MILLION)	118
10.2.1	IN-CABIN APPLICATIONS	118
10.2.1.1	Used in vehicle interior monitoring systems, Time of Flight (ToF) 3D sensing, driver assistance systems, and gesture recognition	118
10.2.2	AUTOMOTIVE HEADLIGHTS	118
10.2.2.1	Laser diodes offer higher luminance for automotive headlights as compared with LEDs	118
10.2.3	AUTOMOTIVE LIDAR	119
10.2.3.1	Edge emitting diodes and VCSEL diodes used for automotive LiDAR applications	119
10.2.4	HEAD-UP DISPLAYS	119
10.2.4.1	Visible laser diodes preferred for head-up displays in automobiles	119
10.3	CONSUMER ELECTRONICS	119
TABLE 71	CONSUMER ELECTRONICS: LASER DIODE MARKET, BY WAVELENGTH, 2018-2021 (USD MILLION)	119
TABLE 72	CONSUMER ELECTRONICS: LASER DIODE MARKET, BY WAVELENGTH, 2022-2027 (USD MILLION)	120
TABLE 73	CONSUMER ELECTRONICS: LASER DIODE MARKET, BY DOPING MATERIAL, 2018-2021 (USD MILLION)	120
TABLE 74	CONSUMER ELECTRONICS: LASER DIODE MARKET, BY DOPING MATERIAL, 2022-2027 (USD MILLION)	120
TABLE 75	CONSUMER ELECTRONICS: LASER DIODE MARKET, BY TECHNOLOGY, 2018-2021 (USD MILLION)	121
TABLE 76	CONSUMER ELECTRONICS: LASER DIODE MARKET, BY TECHNOLOGY, 2022-2027 (USD MILLION)	121
TABLE 77	CONSUMER ELECTRONICS: LASER DIODE MARKET, BY REGION, 2018-2021 (USD MILLION)	121
TABLE 78	CONSUMER ELECTRONICS: LASER DIODE MARKET, BY REGION, 2022-2027 (USD MILLION)	122
10.3.1	SMART DISPLAYS	122
10.3.1.1	Laser diodes can be used to provide 3D effects in display devices	122
10.3.2	SMARTPHONES	122
10.3.2.1	Smartphones use VCSELs for facial recognition	122
?		
10.3.3	SMART GLASSES	123
10.3.3.1	Laser diodes can be used in AR/VR applications such as smart glasses	123
10.3.4	3D PRINTING & SCANNING	123
10.3.4.1	Laser diodes have become preferred technology in 3D scanning and printing applications	123
10.4	HEALTHCARE & MEDICAL	123
TABLE 79	HEALTHCARE & MEDICAL: LASER DIODE MARKET, BY WAVELENGTH, 2018-2021 (USD MILLION)	124
TABLE 80	HEALTHCARE & MEDICAL: LASER DIODE MARKET, BY WAVELENGTH, 2022-2027 (USD MILLION)	124
TABLE 81	HEALTHCARE & MEDICAL: LASER DIODE MARKET, BY DOPING MATERIAL, 2018-2021 (USD MILLION)	124
TABLE 82	HEALTHCARE & MEDICAL: LASER DIODE MARKET, BY DOPING MATERIAL, 2022-2027 (USD MILLION)	125
TABLE 83	HEALTHCARE & MEDICAL: LASER DIODE MARKET, BY TECHNOLOGY, 2018-2021 (USD MILLION)	125
TABLE 84	HEALTHCARE & MEDICAL: LASER DIODE MARKET, BY TECHNOLOGY, 2022-2027 (USD MILLION)	126
TABLE 85	HEALTHCARE & MEDICAL: LASER DIODE MARKET, BY REGION, 2018-2021 (USD MILLION)	126
TABLE 86	HEALTHCARE & MEDICAL: LASER DIODE MARKET, BY REGION, 2022-2027 (USD MILLION)	126
10.4.1	WOUND HEALING	127
10.4.1.1	Use of laser diodes with multiple wavelengths most reliable in wound healing	127
10.4.2	PATIENT ALIGNMENT	127
10.4.2.1	Red and green laser diodes used in patient alignment systems	127
10.4.3	CLINICAL TREATMENTS	127
10.4.3.1	Wide range of laser diodes used in hair removal treatment	127
10.5	INDUSTRIAL	128
TABLE 87	INDUSTRIAL: LASER DIODE MARKET, BY WAVELENGTH, 2018-2021 (USD MILLION)	128

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TABLE 88	INDUSTRIAL: LASER DIODE MARKET, BY WAVELENGTH, 2022-2027 (USD MILLION)	128
TABLE 89	INDUSTRIAL: LASER DIODE MARKET, BY DOPING MATERIAL, 2018-2021 (USD MILLION)	129
TABLE 90	INDUSTRIAL: LASER DIODE MARKET, BY DOPING MATERIAL, 2022-2027 (USD MILLION)	129
TABLE 91	INDUSTRIAL: LASER DIODE MARKET, BY TECHNOLOGY, 2018-2021 (USD MILLION)	129
TABLE 92	INDUSTRIAL: LASER DIODE MARKET, BY TECHNOLOGY, 2022-2027 (USD MILLION)	130
TABLE 93	INDUSTRIAL: LASER DIODE MARKET, BY REGION, 2018-2021 (USD MILLION)	130
TABLE 94	INDUSTRIAL: LASER DIODE MARKET, BY REGION, 2022-2027 (USD MILLION)	130
?		
10.5.1	INDUSTRIAL INSPECTION & METROLOGY	131
10.5.1.1	Laser diodes used in measurement of length, velocity, and roughness	131
10.5.2	INDUSTRIAL PROCESSING	131
10.5.2.1	Near-infrared laser diodes preferred	131
10.5.3	LIGHTING	131
10.5.3.1	Factory production lines, parking areas, outer premises major lighting applications of laser diodes	131
10.5.3.2	Indoor lighting	131
10.5.3.3	Outdoor lighting	132
TABLE 95	LASER DIODE MARKET, BY INDUSTRIAL APPLICATION, 2018-2021 (USD MILLION)	132
TABLE 96	LASER DIODE MARKET, BY INDUSTRIAL APPLICATION, 2022-2027 (USD MILLION)	132
TABLE 97	LASER DIODE MARKET, BY LIGHTING APPLICATION, 2018-2021 (USD MILLION)	132
TABLE 98	LASER DIODE MARKET, BY LIGHTING APPLICATION, 2022-2027 (USD MILLION)	132
TABLE 99	INDOOR LIGHTING: LASER DIODE MARKET, BY WAVELENGTH, 2018-2021 (USD MILLION)	133
TABLE 100	INDOOR LIGHTING: LASER DIODE MARKET, BY WAVELENGTH, 2022-2027 (USD MILLION)	133
TABLE 101	INDOOR LIGHTING: LASER DIODE MARKET, BY DOPING MATERIAL, 2018-2021 (USD MILLION)	133
TABLE 102	INDOOR LIGHTING: LASER DIODE MARKET, BY DOPING MATERIAL, 2022-2027 (USD MILLION)	134
TABLE 103	INDOOR LIGHTING: LASER DIODE MARKET, BY TECHNOLOGY, 2018-2021 (USD MILLION)	134
TABLE 104	INDOOR LIGHTING: LASER DIODE MARKET, BY TECHNOLOGY, 2022-2027 (USD MILLION)	134
TABLE 105	INDOOR LIGHTING: LASER DIODE MARKET, BY REGION, 2018-2021 (USD MILLION)	135
TABLE 106	INDOOR LIGHTING: LASER DIODE MARKET, BY REGION, 2022-2027 (USD MILLION)	135
TABLE 107	OUTDOOR LIGHTING: LASER DIODE MARKET, BY WAVELENGTH, 2018-2021 (USD MILLION)	135
TABLE 108	OUTDOOR LIGHTING: LASER DIODE MARKET, BY WAVELENGTH, 2022-2027 (USD MILLION)	136
TABLE 109	OUTDOOR LIGHTING: LASER DIODE MARKET, BY DOPING MATERIAL, 2018-2021 (USD MILLION)	136
TABLE 110	OUTDOOR LIGHTING: LASER DIODE MARKET, BY DOPING MATERIAL, 2022-2027 (USD MILLION)	136
TABLE 111	OUTDOOR LIGHTING: LASER DIODE MARKET, BY TECHNOLOGY, 2018-2021 (USD MILLION)	137
TABLE 112	OUTDOOR LIGHTING: LASER DIODE MARKET, BY TECHNOLOGY, 2022-2027 (USD MILLION)	137
TABLE 113	OUTDOOR LIGHTING: LASER DIODE MARKET, BY REGION, 2018-2021 (USD MILLION)	137
TABLE 114	OUTDOOR LIGHTING: LASER DIODE MARKET, BY REGION, 2022-2027 (USD MILLION)	138
10.6	MILITARY AND DEFENSE	138
TABLE 115	MILITARY & DEFENSE: LASER DIODE MARKET, BY WAVELENGTH, 2018-2021 (USD MILLION)	138
TABLE 116	MILITARY & DEFENSE: LASER DIODE MARKET, BY WAVELENGTH, 2022-2027 (USD MILLION)	139
TABLE 117	MILITARY & DEFENSE: LASER DIODE MARKET, BY DOPING MATERIAL, 2018-2021 (USD MILLION)	139
TABLE 118	MILITARY & DEFENSE: LASER DIODE MARKET, BY DOPING MATERIAL, 2022-2027 (USD MILLION)	139
TABLE 119	MILITARY & DEFENSE: LASER DIODE MARKET, BY TECHNOLOGY, 2018-2021 (USD MILLION)	140
TABLE 120	MILITARY & DEFENSE: LASER DIODE MARKET, BY TECHNOLOGY, 2022-2027 (USD MILLION)	140
TABLE 121	MILITARY & DEFENSE: LASER DIODE MARKET, BY REGION, 2018-2021 (USD MILLION)	140
TABLE 122	MILITARY & DEFENSE: LASER DIODE MARKET, BY REGION, 2022-2027 (USD MILLION)	141
10.6.1	RANGE FINDER	141
10.6.1.1	High-power laser diodes used in defense range finding applications	141

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10.6.2	LIVE COMBAT SIMULATION AND TRAINING	141
10.6.2.1	Laser diodes used as pump sources for solid-state systems for live training and battlefield simulation	141
10.6.3	HOMELAND SECURITY	141
10.6.3.1	Mid-infrared laser diodes can be used in early warning systems for detecting chemical weapons	141
10.7	TELECOMMUNICATION	142
TABLE 123	TELECOMMUNICATION: LASER DIODE MARKET, BY WAVELENGTH, 2018-2021 (USD MILLION)	142
TABLE 124	TELECOMMUNICATION: LASER DIODE MARKET, BY WAVELENGTH, 2022-2027 (USD MILLION)	142
TABLE 125	TELECOMMUNICATION: LASER DIODE MARKET, BY DOPING MATERIAL, 2018-2021 (USD MILLION)	143
TABLE 126	TELECOMMUNICATION: LASER DIODE MARKET, BY DOPING MATERIAL, 2022-2027 (USD MILLION)	143
TABLE 127	TELECOMMUNICATION: LASER DIODE MARKET, BY TECHNOLOGY, 2018-2021 (USD MILLION)	143
TABLE 128	TELECOMMUNICATION: LASER DIODE MARKET, BY TECHNOLOGY, 2022-2027 (USD MILLION)	144
TABLE 129	TELECOMMUNICATION: LASER DIODE MARKET, BY REGION, 2018-2021 (USD MILLION)	144
TABLE 130	TELECOMMUNICATION: LASER DIODE MARKET, BY REGION, 2022-2027 (USD MILLION)	144
10.7.1	TELECOM OPERATIONS	145
10.7.1.1	Laser diodes used in tower placement applications	145
?		
10.8	OTHERS	145
TABLE 131	OTHERS: DIODE MARKET, BY WAVELENGTH, 2018-2021 (USD MILLION)	145
TABLE 132	OTHERS: LASER DIODE MARKET, BY WAVELENGTH, 2022-2027 (USD MILLION)	145
TABLE 133	OTHERS: LASER DIODE MARKET, BY DOPING MATERIAL, 2018-2021 (USD MILLION)	146
TABLE 134	OTHERS: LASER DIODE MARKET, BY DOPING MATERIAL, 2022-2027 (USD MILLION)	146
TABLE 135	OTHERS: LASER DIODE MARKET, BY TECHNOLOGY, 2018-2021 (USD MILLION)	146
TABLE 136	OTHERS: LASER DIODE MARKET, BY TECHNOLOGY, 2022-2027 (USD MILLION)	147
TABLE 137	OTHERS: LASER DIODE MARKET, BY REGION, 2018-2021 (USD MILLION)	147
TABLE 138	OTHERS: LASER DIODE MARKET, BY REGION, 2022-2027 (USD MILLION)	147
10.8.1	MEDIA & ENTERTAINMENT	148
10.8.2	EDUCATION & RESEARCH	148
10.8.3	AGRICULTURE	148
11	LASER DIODE MARKET, BY REGION	149
11.1	INTRODUCTION	150
FIGURE 36	ASIA PACIFIC IS EXPECTED TO REGISTER HIGHEST GROWTH RATE DURING FORECAST PERIOD	150
TABLE 139	LASER DIODE MARKET, BY REGION, 2018-2021 (USD MILLION)	150
TABLE 140	LASER DIODE MARKET, BY REGION, 2022-2027 (USD MILLION)	150
11.2	NORTH AMERICA	151
FIGURE 37	NORTH AMERICA: LASER DIODE MARKET SNAPSHOT	152
TABLE 141	NORTH AMERICA: LASER DIODE MARKET, BY COUNTRY, 2018-2021 (USD MILLION)	152
TABLE 142	NORTH AMERICA: LASER DIODE MARKET, BY COUNTRY, 2022-2027 (USD MILLION)	153
TABLE 143	NORTH AMERICA: LASER DIODE MARKET, BY APPLICATION, 2018-2021 (USD MILLION)	153
TABLE 144	NORTH AMERICA: LASER DIODE MARKET, BY APPLICATION, 2022-2027 (USD MILLION)	153
11.2.1	US	154
11.2.1.1	Military applications to underpin market growth	154
11.2.2	CANADA	154
11.2.2.1	Presence of small and medium-sized medical firms to create opportunities for market	154
11.2.3	MEXICO	154
11.2.3.1	Demand from telecommunication industry to spur market growth	154
11.3	EUROPE	155
FIGURE 38	EUROPE: LASER DIODE MARKET SNAPSHOT	155

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TABLE 145	EUROPE: LASER DIODE MARKET, BY COUNTRY, 2018-2021 (USD MILLION)	156
TABLE 146	EUROPE: LASER DIODE MARKET, BY COUNTRY, 2022-2027 (USD MILLION)	156
TABLE 147	EUROPE: LASER DIODE MARKET, BY APPLICATION, 2018-2021 (USD MILLION)	156
TABLE 148	EUROPE: LASER DIODE MARKET, BY APPLICATION, 2022-2027 (USD MILLION)	157
11.3.1	GERMANY	157
11.3.1.1	Technological advancements to drive demand for laser diodes	157
11.3.2	UK	157
11.3.2.1	Rising demand for high-power industrial laser systems to drive market	157
11.3.3	FRANCE	158
11.3.3.1	Advanced processing applications such as imaging and printing to fuel demand for laser diodes	158
11.3.4	ITALY	158
11.3.4.1	Medical research applications to boost laser diode market	158
11.3.5	REST OF EUROPE	158
11.4	ASIA PACIFIC	159
FIGURE 39	ASIA PACIFIC: LASER DIODE MARKET SNAPSHOT	159
TABLE 149	ASIA PACIFIC: LASER DIODE MARKET, BY COUNTRY, 2018-2021 (USD MILLION)	160
TABLE 150	ASIA PACIFIC: LASER DIODE MARKET, BY COUNTRY, 2022-2027 (USD MILLION)	160
TABLE 151	ASIA PACIFIC: LASER DIODE MARKET, BY APPLICATION, 2018-2021 (USD MILLION)	160
TABLE 152	ASIA PACIFIC: LASER DIODE MARKET, BY APPLICATION, 2022-2027 (USD MILLION)	161
11.4.1	CHINA	161
11.4.1.1	Extensive R&D in laser technology to favor market growth	161
11.4.2	JAPAN	162
11.4.2.1	High demand for laser diodes for development and fabrication of semiconductor devices and medical applications	162
11.4.3	INDIA	162
11.4.3.1	Government initiatives to boost manufacturing to generate demand for laser diodes	162
11.4.4	SOUTH KOREA	162
11.4.4.1	Extensive use of laser diodes in medical applications to boost market	162
11.4.5	REST OF ASIA PACIFIC	163
11.5	REST OF THE WORLD	163
TABLE 153	REST OF THE WORLD: LASER DIODE MARKET, BY REGION, 2018-2021 (USD MILLION)	163
TABLE 154	REST OF THE WORLD: LASER DIODE MARKET, BY REGION, 2022-2027 (USD MILLION)	163
TABLE 155	REST OF THE WORLD: LASER DIODE MARKET, BY APPLICATION, 2018-2021 (USD MILLION)	164
TABLE 156	REST OF THE WORLD: LASER DIODE MARKET, BY APPLICATION, 2022-2027 (USD MILLION)	164
?		
11.5.1	SOUTH AMERICA	164
11.5.1.1	Medical, industrial, and consumer electronics applications to encourage market growth	164
11.5.2	MIDDLE EAST & AFRICA	165
11.5.2.1	Extensive R&D activities to substantiate market growth	165
12	COMPETITIVE LANDSCAPE	166
12.1	OVERVIEW	166
12.2	MARKET EVALUATION FRAMEWORK	166
TABLE 157	OVERVIEW OF STRATEGIES DEPLOYED BY LASER DIODE COMPANIES	166
12.3	FIVE-YEAR COMPANY REVENUE ANALYSIS OF KEY PLAYERS	167
FIGURE 40	FIVE-YEAR REVENUE ANALYSIS OF TOP 5 PLAYERS IN LASER DIODE MARKET	167
12.4	MARKET SHARE ANALYSIS: LASER DIODE MARKET, 2021	168
TABLE 158	SHARE OF LEADING COMPANIES IN LASER DIODE MARKET, 2021	168
TABLE 159	NORTH AMERICA: SHARE OF LEADING COMPANIES IN LASER DIODE MARKET, 2021	169

TABLE 160	EUROPE: SHARE OF LEADING COMPANIES IN LASER DIODE MARKET, 2021	169
TABLE 161	ASIA PACIFIC: SHARE OF LEADING COMPANIES IN LASER DIODE MARKET, 2021	169
12.5	COMPANY EVALUATION QUADRANT	170
12.5.1	STARS	170
12.5.2	EMERGING LEADERS	170
12.5.3	PERVASIVE PLAYERS	170
12.5.4	PARTICIPANTS	170
FIGURE 41	LASER DIODE COMPANY EVALUATION QUADRANT, 2021	171
12.6	SME EVALUATION QUADRANT	172
12.6.1	PROGRESSIVE COMPANIES	172
12.6.2	RESPONSIVE COMPANIES	172
12.6.3	DYNAMIC COMPANIES	172
12.6.4	STARTING BLOCKS	172
FIGURE 42	LASER DIODE MARKET, SME EVALUATION MATRIX, 2021	173
12.7	LASER DIODE MARKET: COMPANY FOOTPRINT	174
TABLE 162	WAVELENGTH: COMPANY FOOTPRINT	174
TABLE 163	APPLICATION: COMPANY FOOTPRINT	175
TABLE 164	REGION: COMPANY FOOTPRINT	176
TABLE 165	COMPANY FOOTPRINT	177
12.8	COMPETITIVE BENCHMARKING	178
12.8.1	SME EVALUATION MATRIX: LASER DIODE MARKET	178
TABLE 166	LASER DIODE MARKET: LIST OF KEY SMES	178
TABLE 167	LASER DIODE MARKET: COMPETITIVE BENCHMARKING OF KEY SMES	179
12.9	COMPETITIVE SCENARIOS AND TRENDS	180
12.9.1	PRODUCT LAUNCHES	180
TABLE 168	PRODUCT LAUNCHES, 2020-2022	180
12.9.2	DEALS	182
TABLE 169	DEALS, 2022	182
12.9.3	OTHERS	183
TABLE 170	OTHERS	183
13	COMPANY PROFILES	184
13.1	KEY PLAYERS	184
	(Business Overview, Products Offered, Recent Developments, and MnM View)*	
13.1.1	II-VI INCORPORATED	184
TABLE 171	II-VI: BUSINESS OVERVIEW	184
FIGURE 43	II-VI: COMPANY SNAPSHOT	185
13.1.2	AMS-OSRAM AG	188
TABLE 172	AMS-OSRAM: BUSINESS OVERVIEW	188
FIGURE 44	AMS-OSRAM: COMPANY SNAPSHOT	189
13.1.3	HAMAMATSU PHOTONICS	192
TABLE 173	HAMAMATSU PHOTONICS: BUSINESS OVERVIEW	192
FIGURE 45	HAMAMATSU PHOTONICS: COMPANY SNAPSHOT	193
13.1.4	IPG PHOTONICS	197
TABLE 174	IPG PHOTONICS: BUSINESS OVERVIEW	197
FIGURE 46	IPG PHOTONICS: COMPANY SNAPSHOT	198
13.1.5	LUMENTUM	200
TABLE 175	LUMENTUM: BUSINESS OVERVIEW	200

FIGURE 47 LUMENTUM: COMPANY SNAPSHOT 201

13.1.6 ENOPTIK 204

TABLE 176 ENOPTIK: BUSINESS OVERVIEW 204

FIGURE 48 ENOPTIK: COMPANY SNAPSHOT 205

13.1.7 MKS INSTRUMENTS 207

TABLE 177 MKS INSTRUMENTS: BUSINESS OVERVIEW 207

FIGURE 49 MKS INSTRUMENTS: COMPANY SNAPSHOT 208

13.1.8 ROHM CO., LTD. 210

TABLE 178 ROHM: BUSINESS OVERVIEW 210

FIGURE 50 ROHM: COMPANY SNAPSHOT 211

13.1.9 SHARP CORPORATION 213

TABLE 179 SHARP: BUSINESS OVERVIEW 213

FIGURE 51 SHARP: COMPANY SNAPSHOT 214

13.1.10 USHIO INC. 216

TABLE 180 USHIO: BUSINESS OVERVIEW 216

FIGURE 52 USHIO: COMPANY SNAPSHOT 217

* Business Overview, Products Offered, Recent Developments, and MnM View might not be captured in case of unlisted companies.

?

13.2 OTHER PLAYERS 220

13.2.1 BLUGLASS LIMITED 220

13.2.2 TRUMPF 221

13.2.3 THORLABS INC. 222

13.2.4 PANASONIC INDUSTRY CO., LTD. 223

13.2.5 POWER TECHNOLOGIES INC. 224

13.2.6 NICHIA CORPORATION 225

13.2.7 SHEAUMANN LASER, INC. 226

13.2.8 KYOCERA SLD LASER, INC. 226

13.2.9 FRANKFURT LASER CO. 227

13.2.10 RPMC LASERS 228

13.2.11 ARIMA LASERS CORP. 229

13.2.12 TOPTICA PHOTONICS 229

13.2.13 LUMIBIRD 230

13.2.14 LUMICS GMBH 230

13.2.15 ALPES LASERS S.A. 231

14 ADJACENT & RELATED MARKETS 232

14.1 INTRODUCTION 232

14.2 LIMITATIONS 232

14.3 LASER CLADDING MARKET, BY REVENUE 232

TABLE 181 LASER CLADDING MARKET, BY REVENUE, 2017-2020 (USD MILLION) 232

TABLE 182 LASER CLADDING MARKET, BY REVENUE, 2021-2026 (USD MILLION) 233

14.3.1 LASER REVENUE 233

14.3.1.1 Laser revenue covers revenue generated from sales of different types of lasers 233

TABLE 183 LASER CLADDING MARKET FOR LASER REVENUE, BY REGION, 2017-2020 (USD MILLION) 233

TABLE 184 LASER CLADDING MARKET FOR LASER REVENUE, BY REGION, 2021-2026 (USD MILLION) 234

14.3.2 SYSTEM REVENUE 234

14.3.2.1 Extensive applicability of laser cladding systems expands their utility across various end-use industries 234

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TABLE 185	LASER CLADDING MARKET FOR SYSTEM REVENUE, BY REGION, 2017-2020 (USD MILLION)	234
TABLE 186	LASER CLADDING MARKET FOR SYSTEM REVENUE, BY REGION, 2021-2026 (USD MILLION)	235
14.4	LASER CLADDING MARKET, BY END-USE INDUSTRY	235
TABLE 187	LASER CLADDING MARKET, BY END-USE INDUSTRY, 2017-2020 (USD MILLION)	235
TABLE 188	LASER CLADDING MARKET, BY END-USE INDUSTRY, 2021-2026 (USD MILLION)	236
14.4.1	OIL & GAS	237
14.4.1.1	Laser cladding used for corrosion resistance in oil & gas industry	237
TABLE 189	LASER CLADDING MARKET FOR OIL & GAS, BY REGION, 2017-2020 (USD MILLION)	237
TABLE 190	LASER CLADDING MARKET FOR OIL & GAS, BY REGION, 2021-2026 (USD MILLION)	237
14.4.2	MINING	238
14.4.2.1	Laser cladding improves durability of tools and devices used in mining industry	238
TABLE 191	LASER CLADDING MARKET FOR MINING, BY REGION, 2017-2020 (USD MILLION)	238
TABLE 192	LASER CLADDING MARKET FOR MINING, BY REGION, 2021-2026 (USD MILLION)	238
14.4.3	AEROSPACE & DEFENSE	239
14.4.3.1	Laser cladding is used for improving aircraft structures	239
TABLE 193	LASER CLADDING MARKET FOR AEROSPACE & DEFENSE, BY REGION, 2017-2020 (USD MILLION)	239
TABLE 194	LASER CLADDING MARKET FOR AEROSPACE & DEFENSE, BY REGION, 2021-2026 (USD MILLION)	239
14.4.4	AUTOMOTIVE	240
14.4.4.1	Laser cladding helps boost operating efficiency of vehicles and reduce environmental impact	240
TABLE 195	LASER CLADDING MARKET FOR AUTOMOTIVE, BY REGION, 2017-2020 (USD MILLION)	240
TABLE 196	LASER CLADDING MARKET FOR AUTOMOTIVE, BY REGION, 2021-2026 (USD MILLION)	240
14.4.5	POWER GENERATION	241
14.4.5.1	Laser cladding is ideal for numerous problems in power generation industry	241
TABLE 197	LASER CLADDING MARKET FOR POWER GENERATION, BY REGION, 2017-2020 (USD MILLION)	241
TABLE 198	LASER CLADDING MARKET FOR POWER GENERATION, BY REGION, 2021-2026 (USD MILLION)	241
14.4.6	OTHERS	242
TABLE 199	LASER CLADDING MARKET FOR OTHER END-USE INDUSTRIES, BY REGION, 2017-2020 (USD MILLION)	242
TABLE 200	LASER CLADDING MARKET FOR OTHER END-USE INDUSTRIES, BY REGION, 2021-2026 (USD MILLION)	242
15	APPENDIX	243
15.1	DISCUSSION GUIDE	243
15.2	KNOWLEDGESTORE: MARKETSANDMARKETS' SUBSCRIPTION PORTAL	247
15.3	CUSTOMIZATION OPTIONS	249
15.4	RELATED REPORTS	249
15.5	AUTHOR DETAILS	250

Laser Diode Market by Wavelength (Infrared, Green, Blue, Ultraviolet), Doping Material, Technology (Distributed Feedback, Quantum Cascade, VCSEL), Application (Industrial, Medical, Consumer Electronics, Telecommunication), Region -Global Forecast to 2027

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