

Satellite Solar Cell Materials Market by Material Type (Silicon, Copper Indium Gallium Selenide (CIGS), Gallium Arsenide (GaAs)), Application (Satellite, Rovers, Space Stations), Orbit (LEO, MEO, GEO, HEO, Polar Orbit), & Region - Global Forecast to 2030

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Abstracts

The satellite solar cells materials market is projected to reach USD 96 million by 2030, at a CAGR of 13.7% from USD 44 million in 2024. The Gallium Arsenide (GaAs) segment is the fastest-growing category in the satellite solar cell materials market, owing to its unique combination of features that make it ideal for space applications. GaAs solar cells have higher efficiency and better radiation resistance than typical silicon-based cells, making them excellent for powering satellites in hostile space settings. Their better performance enables satellites to generate more electricity using smaller and lighter solar arrays, which is crucial for missions with limited payload capacity. Furthermore, GaAs solar cells have shown exceptional performance in high-temperature environments, ensuring consistent operation even after extended exposure to sunshine. As satellite technology progresses and the desire for more efficiency and dependability grows, GaAs solar cells are increasingly being favoured for their superior performance features, driving significant growth in the segment. Moreover, ongoing research and development efforts aimed at further improving GaAs solar cell efficiency and reducing manufacturing costs are expected to sustain the segment's rapid growth in the satellite solar cells materials market.

“Space Station, by application, accounts for the second-largest market share in 2024.”

The market for satellite solar cell materials is expanding quickly in the space station application segment because of a number of important aspects. First off, there is a growing need for dependable and effective power production systems as a result of the

growing use of space stations, like the International Space Station (ISS), for scientific study, technological progress, and international cooperation. Space stations require power from solar cells in order to run their equipment and experiments continuously. Furthermore, the need for more advanced and competent solar cell materials to fulfil changing power requirements is being driven by developments in space station technology, including the growth of crewed missions and the construction of new orbital platforms. Moreover, the increasing commercialization of space operations, the development of private space stations, and habitats are further boosting demand for solar cells in this segment. As a result, the Space station application segment is experiencing significant growth in the satellite solar cells materials market, driven by the expanding scope and increasing importance of space station missions in scientific research, technology development, and space exploration endeavors.

“LEO is expected to be the fastest growing at CAGR 13.9% for satellite solar cell materials market during the forecast period, in terms of value.”

The market for materials for satellite solar cells is expanding at the quickest rate in the Low Earth Orbit (LEO) sector for a number of important reasons. To begin with, there is a significant need for solar cells due to the expansion of satellite constellations in low Earth orbit (LEO) for a range of purposes including communication, Earth observation, and remote sensing. Because multiple satellites must operate in close proximity to each other in these constellations, lightweight, dependable, and effective solar cells are needed to provide power requirements while minimizing the total mass of the spacecraft. Furthermore, LEO deployments have increased due to the development of small satellite platforms and improvements in satellite miniaturization, which has increased the need for solar cells that are tailored for small satellite designs. Solar power is also becoming more widely used in low earth orbit (LEO) missions due to the growing emphasis on sustainability and renewable energy sources in space research.

“Based on region, Asia Pacific was the fastest growing market for satellite solar cells materials market in 2024.”

The market for materials for satellite solar cells is expanding at the quickest rate in Asia Pacific because of a number of important considerations. First, there is a surge in investments in space research and satellite technology development as a result of the region's fast economic expansion and technological innovation. The ambitious space programs of nations like China, India, and Japan, which are centered on satellite deployments for communication, navigation, Earth observation, and scientific research, are creating a large demand for solar cell materials. In addition, there are numerous

businesses in Asia Pacific that specialize in the development and installation of satellites, which increases demand for solar cells. An atmosphere that is favorable for market expansion is also created by the region's favorable legislative framework and government programmes that assist satellite development and space research.

In the process of determining and verifying the market size for several segments and subsegments identified through secondary research, extensive primary interviews were conducted. A breakdown of the profiles of the primary interviewees is as follows:

By Company Type: Tier 1 - 40%, Tier 2 - 30%, and Tier 3 - 30%

By Designation: C-Level - 20%, Director Level - 10%, and Others - 70%

By Region: North America - 30%, Europe -30%, Asia Pacific - 20%, Middle East & Africa - 10%, and South America-10%

The key players in this market are SPECTROLAB (US), AZUR SPACE Solar Power GmbH(Germany), ROCKET LAB USA (US), Sharp Corporation (Japan), CESI S.p.A (Milan), Thales Alenia Space (France), AIRBUS (France), MicroLink Devices, Inc. (US), Mitsubishi Electric Corporation (Japan), Northrop Grumman (US),etc.

Research Coverage

This report segments the market for the satellite solar cell materials market on the basis of Material type, application, Orbit and region. It provides estimations for the overall value of the market across various regions. A detailed analysis of key industry players has been conducted to provide insights into their business overviews, products & services, key strategies, new product launches, expansions, and mergers & acquisitions associated with the market for the satellite solar cells materials market.

Key benefits of buying this report

This research report is focused on various levels of analysis — industry analysis (industry trends), market ranking analysis of top players, and company profiles, which together provide an overall view of the competitive landscape, emerging and high-growth segments of the satellite solar cell materials market; high-growth regions; and market drivers, restraints, opportunities, and challenges.

The report provides insights on the following pointers:

Analysis of key drivers: Rising Space Exploration and Satellite Deployment.

Market Penetration: Comprehensive information on the satellite solar cell materials market offered by top players in the global satellite solar cells materials market.

Product Development/Innovation: Detailed insights on upcoming technologies, research & development activities, and new product launches in the satellite solar cell materials market.

Market Development: Comprehensive information about lucrative emerging markets — the report analyzes the markets for the satellite solar cell materials market across regions.

Market Diversification: Exhaustive information about new products, untapped regions, and recent developments in the global satellite solar cell materials market.

Competitive Assessment: In-depth assessment of market shares, strategies, products, and manufacturing capabilities of leading players in the satellite solar cell materials market.

Contents

1 INTRODUCTION

1.1 STUDY OBJECTIVES

1.2 MARKET DEFINITION

1.3 INCLUSIONS & EXCLUSIONS

1.4 MARKET SCOPE

FIGURE 1 SATELLITE SOLAR CELL MATERIALS MARKET SEGMENTATION

1.4.1 REGIONS COVERED

1.4.2 YEARS CONSIDERED

1.5 CURRENCY CONSIDERED

1.6 UNITS CONSIDERED

1.7 LIMITATIONS

1.8 STAKEHOLDERS

2 RESEARCH METHODOLOGY

2.1 RESEARCH DATA

FIGURE 2 SATELLITE SOLAR CELL MATERIALS MARKET: RESEARCH DESIGN

2.1.1 SECONDARY DATA

2.1.1.1 Key data from secondary sources

2.1.2 PRIMARY DATA

2.1.2.1 Primary data sources

2.1.2.2 Key satellite solar cell material manufacturers

2.1.2.3 Breakdown of interviews with experts

2.1.2.4 Key industry insights

2.2 BASE NUMBER CALCULATION

2.2.1 APPROACH 1: SUPPLY-SIDE ANALYSIS

2.2.2 APPROACH 2: DEMAND-SIDE ANALYSIS

2.3 FORECAST NUMBER CALCULATION

2.3.1 SUPPLY SIDE

2.3.2 DEMAND SIDE

2.4 MARKET SIZE ESTIMATION

FIGURE 3 MARKET SIZE ESTIMATION METHODOLOGY: REVENUE OF MARKET PLAYERS

2.4.1 BOTTOM-UP APPROACH

2.4.2 TOP-DOWN APPROACH

2.5 DATA TRIANGULATION

FIGURE 4 SATELLITE SOLAR CELL MATERIALS MARKET: DATA TRIANGULATION

2.6 ASSUMPTIONS

2.7 RECESSION IMPACT

2.8 GROWTH FORECAST

2.9 RISK ASSESSMENT

3 EXECUTIVE SUMMARY

FIGURE 5 SILICON SEGMENT TO DOMINATE MARKET BETWEEN 2024 AND 2030

FIGURE 6 SATELLITE APPLICATION TO LEAD MARKET BETWEEN 2024 AND 2030

FIGURE 7 POLAR ORBIT SEGMENT TO LEAD MARKET BETWEEN 2024 AND 2030

FIGURE 8 NORTH AMERICA TO DOMINATE MARKET DURING FORECAST PERIOD

4 PREMIUM INSIGHTS

4.1 ATTRACTIVE OPPORTUNITIES FOR PLAYERS IN SATELLITE SOLAR CELL MATERIALS MARKET

FIGURE 9 RISING SPACE EXPLORATION AND SATELLITE DEPLOYMENTS TO DRIVE MARKET

4.2 SATELLITE SOLAR CELL MATERIALS MARKET, BY MATERIAL TYPE

FIGURE 10 GALLIUM ARSENIDE TO BE FASTEST-GROWING SEGMENT DURING FORECAST PERIOD

4.3 SATELLITE SOLAR CELL MATERIALS MARKET, BY APPLICATION

FIGURE 11 SATELLITE TO BE FASTEST-GROWING SEGMENT DURING FORECAST PERIOD

4.4 SATELLITE SOLAR CELL MATERIALS MARKET, BY ORBIT

FIGURE 12 LEO TO BE FASTEST-GROWING SEGMENT DURING FORECAST PERIOD

4.5 SATELLITE SOLAR CELL MATERIALS MARKET, BY COUNTRY

FIGURE 13 FRANCE TO BE FASTEST-GROWING MARKET DURING FORECAST PERIOD

5 MARKET OVERVIEW

5.1 INTRODUCTION

5.2 MARKET DYNAMICS

FIGURE 14 SATELLITE SOLAR CELL MATERIALS MARKET: DRIVERS, RESTRAINTS, OPPORTUNITIES, AND CHALLENGES

5.2.1 DRIVERS

- 5.2.1.1 Rising space exploration and satellite deployment
- 5.2.1.2 Technological advancements in solar cell efficiency
- 5.2.1.3 Support and investments by governments

5.2.2 RESTRAINTS

- 5.2.2.1 Restrictions on weight and size of solar cells
- 5.2.2.2 Stringent regulatory and compliance standards

5.2.3 OPPORTUNITIES

- 5.2.3.1 Increasing investment in space-based infrastructure
- 5.2.3.2 Growing demand for sustainable energy sources

5.2.4 CHALLENGES

- 5.2.4.1 Harsh space environment and limited supply of space-grade solar cells
- 5.2.4.2 High cost of satellite solar cell materials

6 INDUSTRY TRENDS

6.1 INTRODUCTION

6.2 TRENDS/DISRUPTIONS IMPACTING CUSTOMERS' BUSINESSES

6.2.1 REVENUE SHIFT AND NEW REVENUE POCKETS FOR SATELLITE SOLAR CELL MATERIAL MANUFACTURERS

FIGURE 15 REVENUE SHIFT IN SATELLITE SOLAR CELL MATERIALS MARKET

6.3 PRICING ANALYSIS

6.3.1 AVERAGE SELLING PRICE TREND, BY REGION

TABLE 1 AVERAGE SELLING PRICE, BY REGION, 2020–2030 (PRICE PER WATT)

FIGURE 16 SATELLITE SOLAR CELL MATERIALS MARKET: AVERAGE SELLING PRICE TREND, BY REGION

6.3.2 AVERAGE SELLING PRICE TREND, BY MATERIAL TYPE

TABLE 2 AVERAGE SELLING PRICE TREND, BY MATERIAL TYPE, 2020–2030 (PRICE PER WATT)

6.3.3 AVERAGE SELLING PRICE TREND OF KEY PLAYERS, BY TOP THREE MATERIAL TYPES

TABLE 3 AVERAGE SELLING PRICE, BY MATERIAL TYPE, 2023 (PRICE PER WATT)

FIGURE 17 AVERAGE SELLING PRICE TREND OF KEY PLAYERS, BY TOP THREE MATERIAL TYPES

6.4 SUPPLY CHAIN ANALYSIS

FIGURE 18 SATELLITE SOLAR CELL MATERIALS MARKET: SUPPLY CHAIN ANALYSIS

6.4.1 RAW MATERIAL SUPPLIERS

6.4.2 MANUFACTURERS

6.4.3 DISTRIBUTORS

6.4.4 END USERS

6.5 ECOSYSTEM MAPPING

TABLE 4 SATELLITE SOLAR CELL MATERIALS MARKET: ROLE IN ECOSYSTEM

6.6 INVESTMENT LANDSCAPE: SATELLITE SOLAR CELL MATERIALS MARKET

FIGURE 19 SIGNIFICANT INVESTOR DEALS AND FUNDING WITNESSED IN 2021

6.7 TECHNOLOGY ANALYSIS

TABLE 5 KEY TECHNOLOGIES IN SATELLITE SOLAR CELL MATERIALS MARKET

TABLE 6 COMPLEMENTARY TECHNOLOGIES IN SATELLITE SOLAR CELL MATERIALS MARKET

TABLE 7 ADJACENT TECHNOLOGIES IN SATELLITE SOLAR CELL MATERIALS MARKET

6.8 PATENT ANALYSIS

6.8.1 INTRODUCTION

6.8.2 METHODOLOGY

6.8.3 DOCUMENT TYPE

TABLE 8 GRANTED PATENTS ACCOUNT FOR 35.1% OF ALL PATENTS

FIGURE 20 PATENT PUBLICATION TRENDS, 2014?2023

6.8.4 INSIGHTS

6.8.5 LEGAL STATUS OF PATENTS

6.8.6 JURISDICTION ANALYSIS

FIGURE 21 US JURISDICTION REGISTERED HIGHEST NUMBER OF PATENTS

6.8.7 TOP COMPANIES/APPLICANTS

FIGURE 22 SAMSUNG REGISTERED HIGHEST NUMBER OF PATENTS

TABLE 9 LIST OF MAJOR PATENTS FOR SATELLITE SOLAR CELL MATERIALS MARKET

6.8.8 LIST OF MAJOR PATENTS

TABLE 10 MAJOR PATENTS IN SATELLITE SOLAR CELL MATERIALS MARKET

6.9 TRADE ANALYSIS

6.9.1 IMPORT SCENARIO

FIGURE 23 IMPORT OF SATELLITE SOLAR CELL MATERIALS, BY COUNTRY (2019?2022)

6.9.2 EXPORT SCENARIO

FIGURE 24 EXPORT OF SATELLITE SOLAR CELL MATERIALS, BY COUNTRY (2019?2022)

6.10 KEY CONFERENCES & EVENTS IN 2024?25

TABLE 11 SATELLITE SOLAR CELL MATERIALS MARKET: DETAILED LIST OF CONFERENCES AND EVENTS

6.10.1 REGULATORY BODIES, GOVERNMENT AGENCIES, AND OTHER ORGANIZATIONS

TABLE 12 NORTH AMERICA: LIST OF REGULATORY BODIES, GOVERNMENT AGENCIES, AND OTHER ORGANIZATIONS

TABLE 13 EUROPE: LIST OF REGULATORY BODIES, GOVERNMENT AGENCIES, AND OTHER ORGANIZATIONS

TABLE 14 ASIA PACIFIC: LIST OF REGULATORY BODIES, GOVERNMENT AGENCIES, AND OTHER ORGANIZATIONS

TABLE 15 REST OF THE WORLD: LIST OF REGULATORY BODIES, GOVERNMENT AGENCIES, AND OTHER ORGANIZATIONS

6.11 PORTER'S FIVE FORCES ANALYSIS

TABLE 16 SATELLITE SOLAR CELL MATERIALS MARKET: PORTER'S FIVE FORCES ANALYSIS

FIGURE 25 SATELLITE SOLAR CELL MATERIALS MARKET: PORTER'S FIVE FORCES ANALYSIS

6.11.1 THREAT OF NEW ENTRANTS

6.11.2 THREATS OF SUBSTITUTES

6.11.3 BARGAINING POWER OF SUPPLIERS

6.11.4 BARGAINING POWER OF BUYERS

6.11.5 MACROECONOMIC INDICATORS

TABLE 17 PROJECTED REAL GDP GROWTH (ANNUAL PERCENTAGE CHANGE) OF KEY COUNTRIES, 2018–2025

6.12 KEY STAKEHOLDERS AND BUYING CRITERIA

6.12.1 KEY STAKEHOLDERS IN BUYING PROCESS

FIGURE 26 INFLUENCE OF STAKEHOLDERS IN BUYING PROCESS FOR TOP 3 APPLICATIONS

TABLE 18 INFLUENCE OF STAKEHOLDERS ON BUYING PROCESS FOR TOP 3 APPLICATIONS

6.12.2 BUYING CRITERIA

FIGURE 27 KEY BUYING CRITERIA FOR TOP 3 APPLICATIONS

TABLE 19 KEY BUYING CRITERIA FOR TOP 3 APPLICATIONS

6.13 CASE STUDY

6.13.1 CASE STUDY ABOUT RADIATION-INDUCED DEGRADATION OF III–V PHOTOVOLTAIC CELLS FOR SPACE APPLICATIONS

6.13.2 CASE STUDY ABOUT PHOTOVOLTAICS-DRIVEN POWER PRODUCTION CAN SUPPORT HUMAN EXPLORATION ON MARS

6.13.3 CASE STUDY ABOUT SPACE-BASED SOLAR POWER

7 SATELLITE SOLAR CELL MATERIALS MARKET, BY MATERIAL TYPE

7.1 INTRODUCTION

FIGURE 28 SILICON TO DOMINATE MARKET DURING FORECAST PERIOD

TABLE 20 SATELLITE SOLAR CELL MATERIALS MARKET, BY MATERIAL TYPE, 2020–2023 (USD MILLION)

TABLE 21 SATELLITE SOLAR CELL MATERIALS MARKET, BY MATERIAL TYPE, 2024–2030 (USD MILLION)

TABLE 22 SATELLITE SOLAR CELL MATERIALS MARKET, BY MATERIAL TYPE, 2020–2023 (MW)

TABLE 23 SATELLITE SOLAR CELL MATERIALS MARKET, BY MATERIAL TYPE, 2024–2030 (MW)

7.2 SILICON

7.2.1 SILICON SEGMENT TO DOMINATE MARKET DURING FORECAST PERIOD

7.3 COPPER INDIUM GALLIUM SELENIDE (CIGS)

7.3.1 OFFERS HIGH EFFICIENCY LEVELS, EXCEPTIONAL PERFORMANCE IN LOW-LIGHT CONDITIONS

7.4 GALLIUM ARSENIDE (GAAS)

7.4.1 GAAS TO REGISTER HIGHEST GROWTH DURING FORECAST PERIOD

7.5 OTHER MATERIAL TYPES

7.5.1 INDIUM GALLIUM PHOSPHIDE (INGAP)

7.5.2 GERMANIUM (GE)

8 SATELLITE SOLAR CELL MATERIALS MARKET, BY ORBIT

8.1 INTRODUCTION

FIGURE 29 POLAR ORBIT TO ACCOUNT FOR LARGEST MARKET SHARE DURING FORECAST PERIOD

TABLE 24 SATELLITE SOLAR CELL MATERIALS MARKET, BY ORBIT, 2020–2023 (USD MILLION)

TABLE 25 SATELLITE SOLAR CELL MATERIALS MARKET, BY ORBIT, 2024–2030 (USD MILLION)

TABLE 26 SATELLITE SOLAR CELL MATERIALS MARKET, BY ORBIT, 2020–2023 (MW)

TABLE 27 SATELLITE SOLAR CELL MATERIALS MARKET, BY ORBIT, 2024–2030 (MW)

8.2 LOW EARTH ORBIT (LEO)

8.2.1 LEO SEGMENT TO REGISTER HIGHEST CAGR DURING FORECAST PERIOD

8.3 MEDIUM EARTH ORBIT (MEO)

8.3.1 MARKET CHARACTERIZED BY DEMAND FOR MATERIALS RESILIENT TO HARSH RADIATION ENVIRONMENT

8.4 GEOSTATIONARY ORBIT (GEO)

8.4.1 ROBUST MATERIALS REQUIRED FOR SOLAR ARRAYS FOR SATELLITES IN GEO

8.5 HIGHLY ELLIPTICAL ORBIT (HEO)

8.5.1 ADVANCED MATERIALS AND TECHNOLOGIES REQUIRED FOR HEO SATELLITES

8.6 POLAR ORBIT

8.6.1 POLAR ORBIT SEGMENT TO ACCOUNT FOR LARGEST MARKET SHARE DURING FORECAST PERIOD

9 SATELLITE SOLAR CELL MATERIALS MARKET, BY APPLICATION

9.1 INTRODUCTION

FIGURE 30 SATELLITES SEGMENT TO DOMINATE MARKET DURING FORECAST PERIOD

TABLE 28 SATELLITE SOLAR CELL MATERIALS MARKET, BY APPLICATION, 2020–2023 (USD MILLION)

TABLE 29 SATELLITE SOLAR CELL MATERIALS MARKET, BY APPLICATION, 2024–2030 (USD MILLION)

TABLE 30 SATELLITE SOLAR CELL MATERIALS MARKET, BY APPLICATION, 2020–2023 (MW)

TABLE 31 SATELLITE SOLAR CELL MATERIALS MARKET, BY APPLICATION, 2024–2030 (MW)

9.2 SATELLITES

9.2.1 SATELLITES SEGMENT TO ACCOUNT FOR LARGEST MARKET SHARE DURING FORECAST PERIOD

9.3 ROVERS

9.3.1 DEMAND FOR SATELLITE SOLAR CELL MATERIALS TO WITNESS SIGNIFICANT GROWTH IN ROVER APPLICATION

9.4 SPACE STATIONS

9.4.1 SATELLITE SOLAR ARRAYS CRITICAL IN OPERATION OF SPACE STATIONS

9.5 OTHER APPLICATIONS

10 SATELLITE SOLAR CELL MATERIALS MARKET, BY REGION

10.1 INTRODUCTION

FIGURE 31 ASIA PACIFIC TO BE FASTEST-GROWING MARKET DURING FORECAST PERIOD

TABLE 32 SATELLITE SOLAR CELL MATERIALS MARKET, BY REGION, 2020–2023 (USD MILLION)

TABLE 33 SATELLITE SOLAR CELL MATERIALS MARKET, BY REGION, 2024–2030 (USD MILLION)

TABLE 34 SATELLITE SOLAR CELL MATERIALS MARKET, BY REGION, 2020–2023 (MW)

TABLE 35 SATELLITE SOLAR CELL MATERIALS MARKET, BY REGION, 2024–2030 (MW)

10.2 ASIA PACIFIC

FIGURE 32 ASIA PACIFIC: SATELLITE SOLAR CELL MATERIALS MARKET SNAPSHOT

10.2.1 RECESSION IMPACT

TABLE 36 ASIA PACIFIC: SATELLITE SOLAR CELL MATERIALS MARKET, BY COUNTRY, 2020–2023 (USD MILLION)

TABLE 37 ASIA PACIFIC: SATELLITE SOLAR CELL MATERIALS MARKET, BY COUNTRY, 2024–2030 (USD MILLION)

TABLE 38 ASIA PACIFIC: SATELLITE SOLAR CELL MATERIALS MARKET, BY COUNTRY, 2020–2023 (MW)

TABLE 39 ASIA PACIFIC: SATELLITE SOLAR CELL MATERIALS MARKET, BY COUNTRY, 2024–2030 (MW)

TABLE 40 ASIA PACIFIC: SATELLITE SOLAR CELL MATERIALS MARKET, BY MATERIAL TYPE, 2020–2023 (USD MILLION)

TABLE 41 ASIA PACIFIC: SATELLITE SOLAR CELL MATERIALS MARKET, BY MATERIAL TYPE, 2024–2030 (USD MILLION)

TABLE 42 ASIA PACIFIC: SATELLITE SOLAR CELL MATERIALS MARKET, BY MATERIAL TYPE, 2020–2023 (MW)

TABLE 43 ASIA PACIFIC: SATELLITE SOLAR CELL MATERIALS MARKET, BY MATERIAL TYPE, 2024–2030 (MW)

TABLE 44 ASIA PACIFIC: SATELLITE SOLAR CELL MATERIALS MARKET, BY ORBIT, 2020–2023 (USD MILLION)

TABLE 45 ASIA PACIFIC: SATELLITE SOLAR CELL MATERIALS MARKET, BY ORBIT, 2024–2030 (USD MILLION)

TABLE 46 ASIA PACIFIC: SATELLITE SOLAR CELL MATERIALS MARKET, BY APPLICATION, 2020–2023 (USD MILLION)

TABLE 47 ASIA PACIFIC: SATELLITE SOLAR CELL MATERIALS MARKET, BY APPLICATION, 2024–2030 (USD MILLION)

10.2.2 CHINA

10.2.2.1 Upcoming investments in space exploration to drive growth of market

TABLE 48 CHINA: SATELLITE SOLAR CELL MATERIALS MARKET, BY APPLICATION, 2020–2023 (USD MILLION)

TABLE 49 CHINA: SATELLITE SOLAR CELL MATERIALS MARKET, BY APPLICATION, 2024–2030 (USD MILLION)

10.2.3 JAPAN

10.2.3.1 Increasing satellite launches to fuel demand for PV cells

TABLE 50 JAPAN: SATELLITE SOLAR CELL MATERIALS MARKET, BY APPLICATION, 2020–2023 (USD MILLION)

TABLE 51 JAPAN: SATELLITE SOLAR CELL MATERIALS MARKET, BY APPLICATION, 2024–2030 (USD MILLION)

10.2.4 INDIA

10.2.4.1 Investments in space exploration, including launch of rovers and satellites, to drive market

TABLE 52 INDIA: SATELLITE SOLAR CELL MATERIALS MARKET, BY APPLICATION, 2020–2023 (USD MILLION)

TABLE 53 INDIA: SATELLITE SOLAR CELL MATERIALS MARKET, BY APPLICATION, 2024–2030 (USD MILLION)

10.2.5 SOUTH KOREA

10.2.5.1 Increasing demand from defense sectors to drive satellite solar cell materials market

TABLE 54 SOUTH KOREA: SATELLITE SOLAR CELL MATERIALS MARKET, BY APPLICATION, 2020–2023 (USD MILLION)

TABLE 55 SOUTH KOREA: SATELLITE SOLAR CELL MATERIALS MARKET, BY APPLICATION, 2024–2030 (USD MILLION)

10.2.6 REST OF ASIA PACIFIC

TABLE 56 REST OF ASIA PACIFIC: SATELLITE SOLAR CELL MATERIALS MARKET, BY APPLICATION, 2020–2023 (USD MILLION)

TABLE 57 REST OF ASIA PACIFIC: SATELLITE SOLAR CELL MATERIALS MARKET, BY APPLICATION, 2024–2030 (USD MILLION)

10.3 EUROPE

FIGURE 33 EUROPE: SATELLITE SOLAR CELL MATERIALS MARKET SNAPSHOT

10.3.1 RECESSION IMPACT

TABLE 58 EUROPE: SATELLITE SOLAR CELL MATERIALS MARKET, BY COUNTRY, 2020–2023 (USD MILLION)

TABLE 59 EUROPE: SATELLITE SOLAR CELL MATERIALS MARKET, BY COUNTRY, 2024–2030 (USD MILLION)

TABLE 60 EUROPE: SATELLITE SOLAR CELL MATERIALS MARKET, BY COUNTRY, 2020–2023 (MW)

TABLE 61 EUROPE: SATELLITE SOLAR CELL MATERIALS MARKET, BY COUNTRY, 2024–2030 (MW)

TABLE 62 EUROPE: SATELLITE SOLAR CELL MATERIALS MARKET, BY MATERIAL TYPE, 2020–2023 (USD MILLION)

TABLE 63 EUROPE: SATELLITE SOLAR CELL MATERIALS MARKET, BY MATERIAL TYPE, 2024–2030 (USD MILLION)

TABLE 64 EUROPE: SATELLITE SOLAR CELL MATERIALS MARKET, BY MATERIAL TYPE, 2020–2023 (MW)

TABLE 65 EUROPE: SATELLITE SOLAR CELL MATERIALS MARKET, BY MATERIAL TYPE, 2024–2030 (MW)

TABLE 66 EUROPE: SATELLITE SOLAR CELL MATERIALS MARKET, BY ORBIT, 2020–2023 (USD MILLION)

TABLE 67 EUROPE: SATELLITE SOLAR CELL MATERIALS MARKET, BY ORBIT, 2024–2030 (USD MILLION)

TABLE 68 EUROPE: SATELLITE SOLAR CELL MATERIALS MARKET, BY APPLICATION, 2020–2023 (USD MILLION)

TABLE 69 EUROPE: SATELLITE SOLAR CELL MATERIALS MARKET, BY APPLICATION, 2024–2030 (USD MILLION)

10.3.2 GERMANY

10.3.2.1 Government investments in space sector, including establishment of spaceports, to drive market

TABLE 70 GERMANY: SATELLITE SOLAR CELL MATERIALS MARKET, BY APPLICATION, 2020–2023 (USD MILLION)

TABLE 71 GERMANY: SATELLITE SOLAR CELL MATERIALS MARKET, BY APPLICATION, 2024–2030 (USD MILLION)

10.3.3 UK

10.3.3.1 Increasing support from government for space-based activities to drive market

TABLE 72 UK: SATELLITE SOLAR CELL MATERIALS MARKET, BY APPLICATION, 2020–2023 (USD MILLION)

TABLE 73 UK: SATELLITE SOLAR CELL MATERIALS MARKET, BY APPLICATION, 2024–2030 (USD MILLION)

10.3.4 FRANCE

10.3.4.1 Rising investments in earth mapping and enhanced communication to propel market

TABLE 74 FRANCE: SATELLITE SOLAR CELL MATERIALS MARKET, BY APPLICATION, 2020–2023 (USD MILLION)

TABLE 75 FRANCE: SATELLITE SOLAR CELL MATERIALS MARKET, BY APPLICATION, 2024–2030 (USD MILLION)

10.3.5 ITALY

10.3.5.1 Projected satellite launches to drive market

TABLE 76 ITALY: SATELLITE SOLAR CELL MATERIALS MARKET, BY APPLICATION, 2020–2023 (USD MILLION)

TABLE 77 ITALY: SATELLITE SOLAR CELL MATERIALS MARKET, BY APPLICATION, 2024–2030 (USD MILLION)

10.3.6 SPAIN

10.3.6.1 Surge in satellite launches dedicated to research, defense, and communication to drive market

TABLE 78 SPAIN: SATELLITE SOLAR CELL MATERIALS MARKET, BY APPLICATION, 2020–2023 (USD MILLION)

TABLE 79 SPAIN: SATELLITE SOLAR CELL MATERIALS MARKET, BY APPLICATION, 2024–2030 (USD MILLION)

10.3.7 RUSSIA

10.3.7.1 Surge in launches of satellites for military to boost demand for satellite solar cell materials

TABLE 80 RUSSIA: SATELLITE SOLAR CELL MATERIALS MARKET, BY APPLICATION, 2020–2023 (USD MILLION)

TABLE 81 RUSSIA: SATELLITE SOLAR CELL MATERIALS MARKET, BY APPLICATION, 2024–2030 (USD MILLION)

10.3.8 REST OF EUROPE

TABLE 82 REST OF EUROPE: SATELLITE SOLAR CELL MATERIALS MARKET, BY APPLICATION, 2020–2023 (USD MILLION)

TABLE 83 REST OF EUROPE: SATELLITE SOLAR CELL MATERIALS MARKET, BY APPLICATION, 2024–2030 (USD MILLION)

10.4 NORTH AMERICA

FIGURE 34 NORTH AMERICA: SATELLITE SOLAR CELL MATERIALS MARKET SNAPSHOT

10.4.1 RECESSION IMPACT

TABLE 84 NORTH AMERICA: SATELLITE SOLAR CELL MATERIALS MARKET, BY COUNTRY, 2020–2023 (USD MILLION)

TABLE 85 NORTH AMERICA: SATELLITE SOLAR CELL MATERIALS MARKET, BY COUNTRY, 2024–2030 (USD MILLION)

TABLE 86 NORTH AMERICA: SATELLITE SOLAR CELL MATERIALS MARKET, BY COUNTRY, 2020–2023 (MW)

TABLE 87 NORTH AMERICA: SATELLITE SOLAR CELL MATERIALS MARKET, BY COUNTRY, 2024–2030 (MW)

TABLE 88 NORTH AMERICA: SATELLITE SOLAR CELL MATERIALS MARKET, BY MATERIAL TYPE, 2020–2023 (USD MILLION)

TABLE 89 NORTH AMERICA: SATELLITE SOLAR CELL MATERIALS MARKET, BY MATERIAL TYPE, 2024–2030 (USD MILLION)

TABLE 90 NORTH AMERICA: SATELLITE SOLAR CELL MATERIALS MARKET, BY MATERIAL TYPE, 2020–2023 (MW)

TABLE 91 NORTH AMERICA: SATELLITE SOLAR CELL MATERIALS MARKET, BY MATERIAL TYPE, 2024–2030 (MW)

TABLE 92 NORTH AMERICA: SATELLITE SOLAR CELL MATERIALS MARKET, BY ORBIT, 2020–2023 (USD MILLION)

TABLE 93 NORTH AMERICA: SATELLITE SOLAR CELL MATERIALS MARKET, BY ORBIT, 2024–2030 (USD MILLION)

TABLE 94 NORTH AMERICA: SATELLITE SOLAR CELL MATERIALS MARKET, BY APPLICATION, 2020–2023 (USD MILLION)

TABLE 95 NORTH AMERICA: SATELLITE SOLAR CELL MATERIALS MARKET, BY APPLICATION, 2024–2030 (USD MILLION)

10.4.2 US

10.4.2.1 Thriving space ecosystem to propel demand for space-grade solar cell materials

TABLE 96 US: SATELLITE SOLAR CELL MATERIALS MARKET, BY APPLICATION, 2020–2023 (USD MILLION)

TABLE 97 US: SATELLITE SOLAR CELL MATERIALS MARKET, BY APPLICATION, 2024–2030 (USD MILLION)

10.4.3 CANADA

10.4.3.1 Government investments in space industry to influence satellite solar cell materials market

TABLE 98 CANADA: SATELLITE SOLAR CELL MATERIALS MARKET, BY APPLICATION, 2020–2023 (USD MILLION)

TABLE 99 CANADA: SATELLITE SOLAR CELL MATERIALS MARKET, BY APPLICATION, 2024–2030 (USD MILLION)

10.4.4 MEXICO

10.4.4.1 Government initiatives to invest in satellite technologies to drive market in Mexico

TABLE 100 MEXICO: SATELLITE SOLAR CELL MATERIALS MARKET, BY APPLICATION, 2020–2023 (USD MILLION)

TABLE 101 MEXICO: SATELLITE SOLAR CELL MATERIALS MARKET, BY APPLICATION, 2024–2030 (USD MILLION)

10.5 REST OF WORLD

10.5.1 RECESSION IMPACT

TABLE 102 ROW: SATELLITE SOLAR CELL MATERIALS MARKET, BY COUNTRY, 2020–2023 (USD MILLION)

TABLE 103 ROW: SATELLITE SOLAR CELL MATERIALS MARKET, BY COUNTRY, 2024–2030 (USD MILLION)

TABLE 104 ROW: SATELLITE SOLAR CELL MATERIALS MARKET, BY COUNTRY, 2020–2023 (MW)

TABLE 105 ROW: SATELLITE SOLAR CELL MATERIALS MARKET, BY COUNTRY, 2024–2030 (MW)

TABLE 106 ROW: SATELLITE SOLAR CELL MATERIALS MARKET, BY MATERIAL TYPE, 2020–2023 (USD MILLION)

TABLE 107 ROW: SATELLITE SOLAR CELL MATERIALS MARKET, BY MATERIAL TYPE, 2024–2030 (USD MILLION)

TABLE 108 ROW: SATELLITE SOLAR CELL MATERIALS MARKET, BY MATERIAL TYPE, 2020–2023 (MW)

TABLE 109 ROW: SATELLITE SOLAR CELL MATERIALS MARKET, BY MATERIAL TYPE, 2024–2030 (MW)

TABLE 110 ROW: SATELLITE SOLAR CELL MATERIALS MARKET, BY ORBIT, 2020–2023 (USD MILLION)

TABLE 111 ROW: SATELLITE SOLAR CELL MATERIALS MARKET, BY ORBIT, 2024–2030 (USD MILLION)

TABLE 112 ROW: SATELLITE SOLAR CELL MATERIALS MARKET, BY APPLICATION, 2020–2023 (USD MILLION)

TABLE 113 ROW: SATELLITE SOLAR CELL MATERIALS MARKET, BY APPLICATION, 2024–2030 (USD MILLION)

10.5.2 BRAZIL

10.5.2.1 Increased demand for satellites for earth observation and military applications to drive demand

TABLE 114 BRAZIL: SATELLITE SOLAR CELL MATERIALS MARKET, BY APPLICATION, 2020–2023 (USD MILLION)

TABLE 115 BRAZIL: SATELLITE SOLAR CELL MATERIALS MARKET, BY APPLICATION, 2024–2030 (USD MILLION)

10.5.3 SOUTH AFRICA

10.5.3.1 Growing investments in satellite technologies to drive market in South Africa

TABLE 116 SOUTH AFRICA: SATELLITE SOLAR CELL MATERIALS MARKET, BY APPLICATION, 2020–2023 (USD MILLION)

TABLE 117 SOUTH AFRICA: SATELLITE SOLAR CELL MATERIALS MARKET, BY APPLICATION, 2024–2030 (USD MILLION)

10.5.4 OTHERS IN REST OF WORLD

TABLE 118 OTHERS IN REST OF WORLD: SATELLITE SOLAR CELL MATERIALS MARKET, BY APPLICATION, 2020–2023 (USD MILLION)

TABLE 119 OTHERS IN REST OF WORLD: SATELLITE SOLAR CELL MATERIALS

MARKET, BY APPLICATION, 2024–2030 (USD MILLION)

11 COMPETITIVE LANDSCAPE

11.1 INTRODUCTION

11.2 STRATEGIES ADOPTED BY KEY PLAYERS

11.2.1 OVERVIEW OF STRATEGIES ADOPTED BY KEY SATELLITE SOLAR CELL MATERIAL MANUFACTURERS

11.3 MARKET SHARE ANALYSIS

11.3.1 RANKING OF KEY MARKET PLAYERS, 2023

FIGURE 35 RANKING OF TOP FIVE PLAYERS IN SATELLITE SOLAR CELL MATERIALS MARKET, 2023

11.3.2 MARKET SHARE OF KEY PLAYERS

TABLE 120 SATELLITE SOLAR CELL MATERIALS MARKET: DEGREE OF COMPETITION

FIGURE 36 SHARE OF KEY PLAYERS IN SATELLITE SOLAR CELL MATERIALS MARKET, 2023

11.3.2.1 SPECTROLAB (US)

11.3.2.2 AZUR SPACE SOLAR POWER GMBH (GERMANY)

11.3.2.3 ROCKET LAB USA (US)

11.3.2.4 SHARP CORPORATION (JAPAN)

11.3.2.5 CESI S.P.A (ITALY)

11.4 REVENUE ANALYSIS

FIGURE 37 REVENUE ANALYSIS OF KEY PLAYERS, 2020–2024

11.5 COMPANY EVALUATION MATRIX

11.5.1 STARS

11.5.2 EMERGING LEADERS

11.5.3 PERVASIVE PLAYERS

11.5.4 PARTICIPANTS

FIGURE 38 SATELLITE SOLAR CELL MATERIALS MARKET: COMPANY EVALUATION MATRIX, 2023

11.5.5 COMPANY FOOTPRINT

FIGURE 39 SATELLITE SOLAR CELL MATERIALS MARKET: COMPANY FOOTPRINT

TABLE 121 COMPANY APPLICATION FOOTPRINT (10 COMPANIES)

TABLE 122 COMPANY COMPONENT FOOTPRINT (10 COMPANIES)

TABLE 123 COMPANY MATERIAL TYPE FOOTPRINT (10 COMPANIES)

TABLE 124 COMPANY REGION FOOTPRINT (10 COMPANIES)

11.6 STARTUP/SME EVALUATION MATRIX

11.6.1 PROGRESSIVE COMPANIES

11.6.2 RESPONSIVE COMPANIES

11.6.3 DYNAMIC COMPANIES

11.6.4 STARTING BLOCKS

FIGURE 40 SATELLITE SOLAR CELL MATERIALS MARKET: STARTUPS/SMES EVALUATION MATRIX, 2022

11.6.5 COMPETITIVE BENCHMARKING

TABLE 125 SATELLITE SOLAR CELL MATERIALS MARKET: DETAILED LIST OF KEY STARTUPS/SMES

11.6.5.1 Satellite solar cell materials market: Competitive benchmarking of key startups/SMEs

TABLE 126 STARTUPS/SMES APPLICATION FOOTPRINT (14 COMPANIES)

TABLE 127 STARTUPS/SMES COMPONENT FOOTPRINT (14 COMPANIES)

TABLE 128 STARTUPS/SMES MATERIAL FOOTPRINT (14 COMPANIES)

TABLE 129 STARTUPS/SMES REGION FOOTPRINT (14 COMPANIES)

11.7 VALUATION AND FINANCIAL METRICS OF KEY SATELLITE SOLAR CELL MATERIAL VENDORS

FIGURE 41 EV/EBITDA OF KEY VENDORS

FIGURE 42 YEAR-TO-DATE (YTD) PRICE TOTAL RETURN AND 5-YEAR STOCK BETA OF KEY VENDORS

11.8 COMPETITIVE SCENARIO AND TRENDS

11.8.1 PRODUCT LAUNCHES

TABLE 130 SATELLITE SOLAR CELL MATERIALS MARKET: PRODUCT LAUNCHES (2021-2024)

11.8.2 DEALS

TABLE 131 SATELLITE SOLAR CELL MATERIALS MARKET: DEALS (2020-2023)

11.8.3 EXPANSIONS

TABLE 132 SATELLITE SOLAR CELL MATERIALS MARKET: EXPANSIONS (2022-2023)

12 COMPANY PROFILES

(Business Overview, Products/Solutions/Services Offered, Recent Developments, MnM view (Key strengths/Right to win, Strategic choices made, Weakness/competitive threats)*

12.1 KEY PLAYERS

12.1.1 SPECTROLAB

TABLE 133 SPECTROLAB: COMPANY OVERVIEW

FIGURE 43 SPECTROLAB: COMPANY SNAPSHOT

TABLE 134 SPECTROLAB: PRODUCTS/SERVICES/SOLUTIONS OFFERED

TABLE 135 SPECTROLAB: DEALS (2020–2023)

12.1.2 MITSUBISHI ELECTRIC CORPORATION

TABLE 136 MITSUBISHI ELECTRIC CORPORATION: COMPANY OVERVIEW

FIGURE 44 MITSUBISHI ELECTRIC CORPORATION: COMPANY SNAPSHOT

TABLE 137 MITSUBISHI ELECTRIC CORPORATION:

PRODUCTS/SOLUTIONS/SERVICES OFFERED

TABLE 138 MITSUBISHI ELECTRIC CORPORATION: DEALS (2020–2023)

TABLE 139 MITSUBISHI ELECTRIC CORPORATION: OTHER DEVELOPMENTS

12.1.3 NORTHROP GRUMMAN

TABLE 140 NORTHROP GRUMMAN: COMPANY OVERVIEW

FIGURE 45 NORTHROP GRUMMAN: COMPANY SNAPSHOT

TABLE 141 NORTHROP GRUMMAN: PRODUCTS/SERVICES/SOLUTIONS OFFERED

TABLE 142 NORTHROP GRUMMAN: DEALS (2020–2023)

TABLE 143 NORTHROP GRUMMAN: OTHER DEVELOPMENTS

12.1.4 SHARP CORPORATION

TABLE 144 SHARP CORPORATION: COMPANY OVERVIEW

FIGURE 46 SHARP CORPORATION: COMPANY SNAPSHOT

TABLE 145 SHARP CORPORATION: PRODUCTS/SERVICES/SOLUTIONS OFFERED

TABLE 146 SHARP CORPORATION: PRODUCT LAUNCHES

12.1.5 AZUR SPACE SOLAR POWER GMBH

TABLE 147 AZUR SPACE SOLAR POWER GMBH: COMPANY OVERVIEW

FIGURE 47 AZUR SPACE SOLAR POWER GMBH: COMPANY SNAPSHOT

TABLE 148 AZUR SPACE SOLAR POWER GMBH:

PRODUCTS/SERVICES/SOLUTIONS OFFERED

TABLE 149 AZUR SPACE SOLAR POWER GMBH: DEALS (2020–2023)

12.1.6 THALES ALENIA SPACE

TABLE 150 THALES ALENIA SPACE: COMPANY OVERVIEW

FIGURE 48 THALES ALENIA SPACE: COMPANY SNAPSHOT

TABLE 151 THALES ALENIA SPACE: PRODUCTS/SERVICES/SOLUTIONS OFFERED

TABLE 152 THALES ALENIA SPACE: PRODUCT LAUNCHES

TABLE 153 THALES ALENIA SPACE: DEALS (2020–2023)

TABLE 154 THALES ALENIA SPACE: OTHER DEVELOPMENTS

12.1.7 ROCKET LAB USA

TABLE 155 ROCKET LAB USA: COMPANY OVERVIEW

FIGURE 49 ROCKET LAB USA: COMPANY SNAPSHOT

TABLE 156 ROCKET LAB USA: PRODUCTS/SERVICES/SOLUTIONS OFFERED

TABLE 157 ROCKET LAB USA: PRODUCT LAUNCHES

TABLE 158 ROCKET LAB USA: DEALS (2020–2023)

12.1.8 CESI S.P.A

TABLE 159 CESI S.P.A.: COMPANY OVERVIEW

TABLE 160 CESI S.P.A.: PRODUCTS/SERVICES/SOLUTIONS OFFERED

TABLE 161 CESI S.P.A.: DEALS (2020–2023)

12.1.9 AIRBUS

TABLE 162 AIRBUS: COMPANY OVERVIEW

FIGURE 50 AIRBUS: COMPANY SNAPSHOT

TABLE 163 AIRBUS: PRODUCTS/SERVICES/SOLUTIONS OFFERED

TABLE 164 AIRBUS: DEALS

12.1.10 MICROLINK DEVICES, INC.

TABLE 165 MICROLINK DEVICES, INC.: COMPANY OVERVIEW

TABLE 166 MICROLINK DEVICES, INC.: PRODUCTS/SERVICES/SOLUTIONS OFFERED

TABLE 167 MICROLINK DEVICES, INC.: OTHER DEVELOPMENTS

12.2 OTHER PLAYERS

12.2.1 REDWIRE CORPORATION

TABLE 168 REDWIRE CORPORATION: COMPANY OVERVIEW

12.2.2 ASCENT SOLAR TECHNOLOGIES, INC.

TABLE 169 ASCENT SOLAR TECHNOLOGIES, INC.: COMPANY OVERVIEW

12.2.3 N.P.C. NEW PRODUCTION CONCEPT S.R.L. (SPACEMIND)

TABLE 170 N.P.C. NEW PRODUCTION CONCEPT S.R.L.(SPACEMIND): COMPANY OVERVIEW

12.2.4 GOMSPACE

TABLE 171 GOMSPACE: COMPANY OVERVIEW

12.2.5 AAC CLYDE SPACE

TABLE 172 AAC CLYDE SPACE: COMPANY OVERVIEW

12.2.6 SPACETECH

TABLE 173 SPACETECH: COMPANY OVERVIEW

12.2.7 MMA DESIGN LLC

TABLE 174 MMA DESIGN LLC: COMPANY OVERVIEW

12.2.8 DHV TECHNOLOGY

TABLE 175 DHV TECHNOLOGY: COMPANY OVERVIEW

12.2.9 KONGSBERG NANOAVIONICS

TABLE 176 KONGSBERG NANOAVIONICS: COMPANY OVERVIEW

12.2.10 PUMPKIN, INC.

TABLE 177 PUMPKIN, INC.: COMPANY OVERVIEW

12.2.11 ENDUROSAT

TABLE 178 ENDUROSAT: COMPANY OVERVIEW

12.2.12 SIERRA SPACE CORPORATION

TABLE 179 SIERRA SPACE CORPORATION: COMPANY OVERVIEW

12.2.13 MPOWER TECHNOLOGY

TABLE 180 MPOWER TECHNOLOGY: COMPANY OVERVIEW

12.2.14 SHANGHAI FULLSUNS ENERGY TECHNOLOGY CO., LTD.

TABLE 181 SHANGHAI FULLSUNS ENERGY TECHNOLOGY CO., LTD.: COMPANY OVERVIEW

Details on Business Overview, Products/Solutions/Services Offered, Recent Developments, MnM view (Key strengths/Right to win, Strategic choices made, Weakness/competitive threats) might not be captured in case of unlisted companies.

13 APPENDIX

13.1 DISCUSSION GUIDE

13.2 KNOWLEDGESTORE: MARKETSDANDMARKETS' SUBSCRIPTION PORTAL

13.3 CUSTOMIZATION OPTIONS

13.4 RELATED REPORTS

13.5 AUTHOR DETAILS

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