Metamaterials - Market Share Analysis, Industry Trends & Statistics, Growth Forecasts (2025 - 2030)

Market Report | 2025-04-28 | 150 pages | Mordor Intelligence

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Report description:

The Metamaterials Market is expected to register a CAGR of greater than 24% during the forecast period.

COVID-19 had a negative impact on the market. The Metamaterials Market was negatively affected due to the suspension of several ongoing projects and low investments in the automotive, defense, aerospace, and electronics industries. However, the market gained momentum in 2021 and was expected to grow at a healthy rate.

Key Highlights
- One of the major factors driving the use of metamaterials is increasing R&D activities for various applications in the aerospace and defense, telecommunication, and consumer electronics end-user industries, among others.
- On the contrary, the inadequate infrastructure for large quantities of metamaterials and a lack of awareness of the benefits of metamaterials are likely to hamper the market growth.
- The use of metamaterials in solar systems and metamaterial-based radars for drones will likely act as opportunities for the market studied.
- North America dominated the market globally. However, the Asia-Pacific region is expected to register the highest CAGR during the forecast period.

Metamaterials Market Trends

Aerospace and Defense Industry to Dominate the Market

Metamaterials are employed in various industries, including electronics, healthcare, and telecommunications. Nonetheless, the aerospace and defense industries are the primary users and dominant industries for metamaterials, owing to the widespread use of metamaterial devices such as antennas, shields, windscreens, EMC shields, and cloaking devices.

Because antennas may be set to certain frequencies, they can be used for secure defense communications. The increased need for bandwidth and the requirement for secure communications are driving the expansion of the aerospace and vertical defense metamaterials market.

In its annual publication, the Stockholm International Peace Research Institute (SIPRI) stated that the global military expenditure crossed the mark of USD 2 trillion for the first time in the year 2021, reaching about USD 2,113 billion.

Furthermore, the US Congressional Budget Office predicts that defense spending will have climbed from 596 billion dollars in 2014 to 915 billion dollars by 2031. Aside from that, the US Department of Defense noted in a statement that the Biden-Harris Administration presented to Congress a planned Fiscal Year (FY) 2023 Budget proposal of USD 813.3 billion for national defense, of which USD 773.0 billion is for the Department of Defense (DoD). This budget request grew by 4%, or roughly USD 30 million, compared to the FY 2022 budget.

In its annual budget for 2022, the Government of Canada also stated that a total of USD 8 billion would be used to bolster the capacity of the Canadian Armed Forces with new aged technology and equipment.

According to the Boeing Commercial Outlook 2022-2041, the global forecast for commercial aviation services (including flight operations, maintenance and engineering, ground, station, and cargo operations, and others) by 2041 is expected to be USD 3,615 billion, indicating that demand for the studied market will likely increase in the coming years.

The Boeing Commercial Outlook 2022-2041 also stated that the total global deliveries of new airplanes are estimated to be 41,170 by 2041. The global airplane fleet amounted to around 25,900 units as of 2019, and the fleet number is likely to reach 47,080 units by 2041.

With the increasing need for increased safety in military equipment worldwide, the metamaterials market plays an important role in meeting the needs and standards of every country. As a result, the market demand is expected to rise during the forecast period.

Asia-Pacific to be the Fastest-growing Market

Owing to the rising investments in several projects and the support of the national governments in the countries, Asia-Pacific is expected to be the fastest-growing region in the metamaterials market.

Governments have regularly increased the national defense budget in countries like China, India, South Korea, Japan, etc. China's recent increase in defense spending sends a clear signal that the country remains committed to completing the modernization of the People's Liberation Army (PLA) by 2035 and transforming the PLA into a 'world-class' military by 2049, thus creating opportunities in the military technology sector.

Moreover, according to the India Brand Equity Foundation, the defense production in FY 2022-23 (until August 1, 2022) stood at INR 17,885 crore (~USD 2.2 billion). The country also plans to spend USD 130 billion on military modernization in the next five years and is also considering achieving self-reliance in defense production.

The South Korean Defense Acquisition Program Administration (DAPA) also plans to work on light aircraft with an investment of

EUR 1.8 billion (~USD 2 billion), which is expected to be operable in 2033. Hyundai Heavy Industries is involved in this manufacturing process with annual maintenance of EUR 180 million (~USD 210 million).

Furthermore, in the Asia-Pacific region, China, Southeast Asia, and South Asia aerospace market are expected to rise significantly, further supporting the demand for the studied market. In China, according to the Boeing Commercial Outlook 2022-2041, around 8,485 new fleet deliveries will be made by 2041 with a market service value of USD 545 billion.

As the electronics industry is continuously making remarkable progress and development, the demand for the market studied is growing rapidly. The production of cellular phones, portable computing devices, gaming systems, and other personal electronic devices will continue to spark the demand for electronic components. As per the India Brand Equity Foundation (IBEF), the Indian electronics manufacturing industry is expected to reach USD 520 billion by 2025.

The overall production value of the electronics sector in Japan was estimated by the Japan Electronics and Information Technology Industries Association (JEITA) to be around JPY 10.1 trillion (~USD 85 billion) as of November 2022, which is roughly 100.7% of the value from the previous year.

Thus, the growing aerospace and defense industry, the increasing telecommunication sector, and the rising electronics sector are instrumental in the growth of metamaterials and other applications, which would boost the market during the forecast period.

Metamaterials Industry Overview

The Metamaterials Market is partially fragmented, with no player having a significant enough share to influence the market. Kymeta Corporation, Meta Materials Inc., NKT Photonics A/S, Echodyne Corp., and TeraView Limited, among others, are some of the prominent players in the market (not in any particular order).

Additional Benefits:

- The market estimate (ME) sheet in Excel format
- 3 months of analyst support

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