

The Global Market for Metamaterials and Metasurfaces to 2033

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Abstracts

Metamaterials is a fast-developing area and will become a multi-billion dollar market within the next decade with product advances in radar and lidar for autonomous vehicles, telecommunications antenna, 6G networks, coatings, vibration damping, wireless charging, noise prevention and more.

Metamaterials are artificially engineered structures with exceptional material properties (acoustic, electrical, magnetic, optical, etc.). They comprise arrays of resonators that manipulate electromagnetic waves or sound in ways not normally found in nature. Possessing customized dielectric properties and tunable responses they allow for excellent flexibility in a range of applications, their use enabling the manipulation of fields and waves at a subwavelength scale.

Initial R&D in metamaterials has focused on cloaking and light manipulation, but the last few years has seen applications development in:

telecommunications.

acoustics.

sound insulation.

sensors.

radar imaging.

optics (terahertz and infrared).

coatings & films.

lidar systems for self-driving cars.

imaging and sensing.

power transmission.

energy harvesting.

wireless charging.

thermal management.

superlenses for medical devices

AR displays.

They are key materials for improving the performance and coverage of high-speed, 5G and future 6G networks. Reconfigurable intelligent surfaces (RIS) based on metamaterials for coating objects in the environment, such as walls, ceilings, mirrors and appliances, will operate as reconfigurable reflectors or transceivers for massive access when equipped with active radio-frequency (RF) elements. The reconfigurable surfaces would be able to provide more capacity to a user than they need it, with controlled energy consumption and circumscribed EMF to avoid interference from unconnected devices and to minimize their impact on the people around them.

There are now over 50 metamaterials product developers worldwide, who have received >\$100 million in recent investment as the metamaterials market picks up again after a sluggish few years. Nissan is incorporating acoustic metamaterials in the 2022 launched ARIYA SUV for lightweight sound absorption.

Report contents include:

Description of the global metamaterials and metasurfaces market in 2022.

Industry developments 2020-2022.

Global revenue estimates to 2033, by markets.

Stage of commercialization for metamaterials applications, from basic research to market entry.,

Market drivers, trends and challenges, by end user markets.

Metamaterials and metasurfaces roadmap.

Competitive landscape.

In-depth market assessment of opportunities for metamaterials in sound insulation, vibration damping, antennas, thermal management, wireless charging, transport communications, radar, sensors, autonomous vehicles, anti-reflective plastics, security screening, EMI, anti-reflection coatings, solar coatings, displays, soft materials and medical imaging.

In-depth profiles of 57 companies, including products, investments, partnerships and commercial activities. Companies profiled include Anywaves, Breyton, Echodyne, Inc., Evolv Technologies, Inc., Fractal Antenna Systems, Inc, Kymeta Corporation, Lumotive, OPT Industries, Phononic Vibes srl, Metamaterial, Inc. and Metawave Corporation.

Detailed forecasts for key growth areas, opportunities and user demand.

Revenues and activities by region.

Markets targeted, by product developers and end users.

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