New Report Gives Latest 6G Materials and Hardware Opportunities

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Questions answered include:

- Likely winners and losers
- Progress and intentions by region
- Unbiassed appraisal of pros and cons
- Gaps in the market that you can address
- Analysis of research pipeline and its trends
- Your potential partners, acquisitions, competitors
- What 6G frequencies are likely and in what sequence
- Types of materials and hardware needed, when and why
- 15 forecasting lines for the materials. devices, host equipment
- Technology, launches and standards roadmaps for 2024-2044
- The unsolved problems that are opportunities for materials, devices
- Preferred compounds, devices, frequencies and active regions emerging
- The 20-year roadmap of decision making, technical capability and adoption

The materials and devices needed for 6G Communications will be a large market but the situation is changing with new breakthroughs and setbacks. Necessarily up-to-date reports critically assessing the latest needs and market sizes are hard to find. The answer is the new, affordable Zhar Research report, “6G Communications: Materials and Hardware Markets, Technology 2024-2044” (298 pages) www.zharresearch.com. There is a Glossary at the start of the report but terms are also explained in the text with a minimum of jargon because this is a commercially oriented analysis, emphasising clarity, business opportunities and your best ways to participate, including possible business partners and acquisitions.

The Executive Summary and Conclusions (50 pages) are easy to absorb by those in a hurry. Here are the basics, targets, challenges, players, 13 key conclusions, a 6G SWOT appraisal and many infograms clearly showing your opportunities in materials and devices. The precise materials needed and their function gets particular attention from the latest data-based analysis. An additional 12 pages gives 15 forecast lines as data and graphs and the action geographically.

Chapter 2 Introduction (20 pages) is frank about impediments to 6G and possible delay in its implementation, not just the many benefits and possible business cases. It explains the serious problems that are your opportunities such as cost, power consumption, green credentials and reach of the massive infrastructure and frequency choices, including tackling the Terahertz Gap. Your required manufacturing technologies are covered.

Chapter 3 (23 pages) concerns burgeoning 6G thermal management including for closer packing of hotter client electronics, thermal interfaces and heat spreaders, cooling ubiquitous 6G photovoltaics and base stations. Understand why 6G thermal management opportunities are greater than those for 5G. See SWOT appraisal. Identify 5G thermal materials suppliers and their leading-edge products that are appropriate. Learn how they can enter 6G and who they should buy for what missing thermal management capability.

Chapter 4 (21 pages) does much the same for reconfigurable intelligent surfaces – a curiosity for 5G but essential for 6G. Understand passive vs semi-passive vs active RIS opportunities. SWOT appraisal. Chapter 5 (33 pages) is on 6G devices - optical, electronic and electrical. It scopes development status and potential including semiconductors, THz alternatives and THz waveguides. There are two SWOT appraisals.

Chapter 6 (21 pages) explores the considerable variety of opportunities for graphene and other 2D materials for 6G Communications. It finds graphene to be the most significant of these, spanning 6G plasmonics, transistor surrogates, RIS, modulators, splitters, routers, pseudocapacitors, supercapacitors. Chapter 7 takes a full 36 pages to cover the considerable scope for other emerging materials for 6G: optical, electronic, electrical and micro-mechanical. The big recent advances feature strongly and there is a forecast for indium phosphide.

The report closes with Chapter 8 (48 pages) on 6G Communications projects world-wide involving material and component research. This is very revealing about the nature of the 6G material and components development that is most-strongly funded and why.

In short, this report surfaces how billion-dollar businesses can emerge that make 6G added-value materials and components. That means from fine metal patterning, flexible and thin film electronics to the heavy end of facility energy harvesting, giant base-station thermal management and RIS facades across skyscrapers. The time to get involved is now.

Company Contact:

Zhar Research

E. anastasiams@zharresearch.com
W. https://www.zharresearch.com/

Additional Contact(s):
Dr Peter Harrop
peterharrop@zharresearch.com

View Online

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