

River Publishers Series in Communications and Networking

Key Enabling Technologies for Future Wireless, Wired, Optical and Satcom Applications

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Description:

This book presents the latest research roadmaps and achievements from the European ecosystem (industry, research, and academia) driving the development of future wireless, wired, optical and satcom applications utilizing the mm-wave and sub-THz bands. It covers the entire value chain, including technologies, devices, characterization, architectures, circuits, 3D heterogeneous integration and packaging.
As the interconnectedness of our world continues to expand, the importance of global innovation in communication systems and technologies grows significantly. The increasing reliance on digital communication necessitates systems that can manage higher data traffic, provide faster and more reliable connectivity, and sustainably support a diverse range of applications. Achieving these goals requires a shift towards higher frequency bands (mm-wave and sub-THz) and the adoption of disruptive technologies. Heterogeneous integration of (Bi)CMOS, SOI, and III/V components such as GaN or InP, along with advanced packaging techniques, is essential to realize ubiquitous, ultra-high bandwidth, and low latency networks. To ensure that future communication systems are not only technologically advanced but also sustainable and responsible, it is crucial to minimize their environmental impact by considering the materials used, manufacturing processes, operational efficiency, and recyclability.

The book captures the synergetic interactions between European Chips JU projects SHIFT and Move2THz, the European 3D heterogenous integration and packaging community and the MTT-TC9 society. These interactions were forged during the International Workshop on “Key Enabling Technologies for Future Wireless, Wired, Optical and Satcom Applications” at the European Microwave Week in Paris, France, on 22 September, 2024.

Whether you are a professional in the field or simply interested in the future of communication technologies, this book offers invaluable insights into the technological breakthroughs shaping our digital future.

Keywords: 6G, sub-THz, mm-wave, Circuits and Systems, Communications, Radios, Transceivers, Antennas, Devices, Packaging, Heterogeneous Integration, Process Technology