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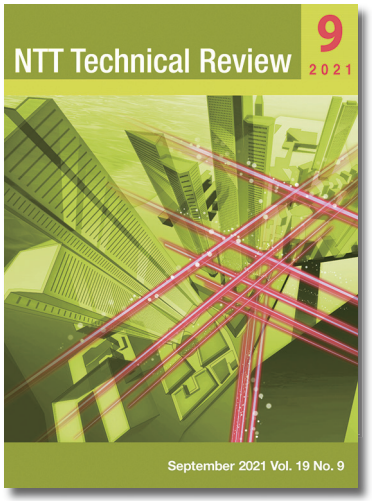
# NTT Technical Review 9 2021
https://www.ntt-review.jp/archive/2021/202109.html






## View from the Top

### Hidehiro Tsukano, Senior Vice President, Head of NTT IOWN Integrated Innovation Center

▼Overview

In addition to the three laboratory groups that have been the cornerstones of NTT's research and development (i.e., NTT Service Innovation Laboratory Group, NTT Information Network Laboratory Group, and NTT Science and Core Technology Laboratory Group), the NTT Innovative Optical and Wireless Network (IOWN) Integrated Innovation Center (IIC) was established on July 1, 2021 to extend technology development closer to the commercial implementation stage. IIC is striving to create and implement photonics-electronics convergence technology, which fuses optical and electrical signals and is key to enable IOWN. We interviewed Hidehiro Tsukano, head of IIC, about the purpose of the establishment and mission of IIC as well as the qualities required of top management.

## Front-line Researchers

### Shinji Matsuo, Senior Distinguished Researcher, NTT Device Technology Laboratories and NTT Basic Research Laboratories

▼Overview

The annual power consumption of datacenters in Japan accounted for 1% of Japan's total power consumption in 2015. As the speed and capacity of data processing and transmission increases, power consumption is steadily increasing, and reducing that consumption is becoming a serious issue. To address this issue, Dr. Shinji Matsuo, a senior distinguished researcher at NTT Device Technology Laboratories and NTT Basic Research Laboratories, is researching and developing innovative technologies for high-density integration of compound semiconductors on silicon substrates to enable photonics-electronics converged integrated circuits. We interviewed him about the progress of his research and his attitude as a researcher.

## Feature Articles
## Creativity and Technology—Designing for an Unknown Future

### Reach Out and Touch Someone's Heart: Exploring the Essence of Communication to Create a Spiritually Rich Society

▼Abstract

NTT Communication Science Laboratories has been exploring the essence of communication since its founding 30 years ago. With the aim of achieving communication that reaches the heart, its researchers have been creating innovative technologies that approach and exceed human abilities in fields such as media processing and data science. They have also been discovering basic principles that lead to a deeper understanding of humans in fields such as cognitive neuroscience and brain science. This article introduces key activities at NTT Communication Science Laboratories in pursuit of the essence of communication with a look back at past research.