Newsletter

Issued on December 25, 2025 No. 45

IEEE Tokyo Section Life Member Affinity Group

This issue includes reports on the 2025 4th Tokyo Section Sponsored Lecture Meeting (co-hosted by LMAG), the Luncheon Seminar "Optimized Nutritional Meal," the Special Session at HTC2025, the 2025 5th Tokyo Section Sponsored Lecture Meeting (co-hosted by LMAG), the 22nd IEEE Transdisciplinary-Oriented Workshop for Emerging Researchers (IEEE TOWERS) and the 1st Tokyo Section LMAG Tour in 2025 (co-hosted by TPC).

1. Lecture Meeting hosted by Tokyo Section (co-hosted by LMAG)

The lecture, organized by the IEEE Tokyo Section Technical Program Committee (TPC) and co-sponsored by LMAG-Tokyo, was held online on Thursday, September 18, 2025. The speaker was Dr. Shunpei Kameyama (General Manager, Sensor Information Processing Systems Department, Advanced Technology R&D Center, Mitsubishi Electric Corporation / IEEE Fellow 2024). His lecture was titled: “Innovation in atmospheric wind sensing - The process from pioneering to spreading of fiber-based lidar technology -.” A total of 77 participants attended the event, including 43 IEEE members.

With increasing concerns about climate change and growing expectations for renewable energy, the demand for atmospheric remote sensing technologies remains strong. Over the past century, numerous researchers have accumulated achievements in this field driven both by societal needs and scientific curiosity. Among these technologies, wind-measurement lidar (Light Detection and Ranging) has been under study since around 1970. While it has long been regarded as a technology with potential applications across diverse fields—such as environmental observation, urban meteorological monitoring, aviation safety, wind power generation, and even leisure activities—it is only within the past decade that a genuine global market has emerged. This indicates that certain barriers to commercialization persisted for many years and were resolved only about ten years ago. In this lecture, the speaker shared insights into the innovation process in wind measurement—from technological development to widespread adoption and market formation—through his firsthand experience in developing fiber-optic lidar technology, in which he played a key role.

The presentation was highly engaging, and it was followed by an active and stimulating Q&A session.

Fig.1 Dr. Kameyama is giving his talk

2. Luncheon seminar "Optimized Nutritional Meal"

A luncheon seminar hosted by the IEEE Tokyo Section SIGHT and co-hosted by LMAG-Tokyo was held at Chiba University of Commerce on Sunday, 28 September 2025. The event was one of the workshops of the IEEE R10 HTC2025, which was held at the same venue from 29 September to 1 October. A total of 108 participants attended, including 29 participants from 13 countries.
Participants first prepared and tasted an optimized nutritional meal, “Kanzen-Meshi,” and then received an overview of SIGHT activities from Ms. Mayumi Suzuki, Chair of Tokyo Section SIGHT. This was followed by a lecture by Mr. Hideki Maejima, Secretary-General of the Japan Optimized Nutri-Dense Meals Association, entitled “Overview of Optimized Nutritional Meals and Nutritional Challenges in Disaster Situations.”
Mr. Maejima introduced that the Association was established in 2023 with the objective of promoting optimized nutritional meals, in which major nutrients are appropriately balanced, to contribute to human well-being. Its main activities include standardization, registration of nutritional design criteria and product certification, and dissemination. The Association aims to help address current social issues related to diet, such as obesity among middle-aged people,

undernutrition among young women, and frailty among the elderly.
The lecture also highlighted that maintaining nutritional balance becomes even more difficult during disasters. Examples were presented from support activities during the Noto Peninsula Earthquake, including the provision of certified products. In particular, the results of a food survey conducted in cooperation with Anamizu Town, Ishikawa Prefecture, during evacuation were reported.
During the Q&A session, active discussions took place regarding the ingredients of “Kanzen-Meshi” and approaches to individualized nutrition optimization. Thanks to the generosity of the Association, 50 servings each of Curry-Meshi and Hayashi-Meshi were provided to participants.

Fig.2 Mr. Hideki Maejima giving his Talk

3. Special Session at HTC2025

A special session titled “Redefining Tomorrow: Beyond SDGs Challenges” was organized by LMAG-Tokyo at the IEEE international conference HTC2025 (held in Chiba, Sept. 29–31).

This session focused on large-scale research projects aiming for social implementation by the year 2050, discussing their objectives and feasibility.
In particular, five Program Directors from the Cabinet Office’s Moonshot Research and Development Program were invited to give presentations on their respective projects:

- Norihiro Hagita – Realization of a society where people are freed from limitations of body, brain, space, and time
- Toshio Fukuda – Realization of robots that autonomously learn and coexist with humans through the co-evolution of AI and robotics
- Kenji Yamaji – Realization of sustainable resource circulation for the restoration of the global environment
- Katsuhiro Kitagawa – Realization of a fault-tolerant universal quantum computer that will dramatically advance economy, industry, and security
- Yoshinori Yoshida – Realization of a vibrant society harmonized with the global environment, liberated from resource constraints through multifaceted utilization of fusion energy

The session generated active discussions and proved to be highly meaningful and fruitful.

Fig.3 "Redefining Tomorrow: Beyond SDGs Challenges" Speakers

4. Lecture Meeting hosted by Tokyo TPC(co-hosted byLMAG)

A lecture sponsored by the IEEE Tokyo Section TPC and co-sponsored by LMAG Tokyo was held online on Friday, November 28, 2025. The lecturer was Hiroyuki Mizuno (Research and Development Group, Hitachi, Ltd. / 2022 IEEE Fellow), and the title of the lecture was "Challenging the Limits of Miniaturization: From CMOS Integrated Circuits to Quantum Bits." 146 people (including 100 IEEE members) attended.
Since its inception, semiconductor integrated circuit technology has achieved improved performance and higher integration, driven by miniaturization. However, with the advancement of miniaturization, issues such as short channel effects and increases in subthreshold leakage current, as well as transistor gate insulation, have arisen. Physical limitations, such as increased gate leakage current due to thinner insulating films, have also been repeatedly pointed out. These challenges have been overcome through innovative technologies, such as the introduction of high-dielectric-constant (High-K) materials and FinFET and Gate-All-Around (GAA) structures. Furthermore, in recent years, research on quantum bits using semiconductor quantum dots to control the quantum state of single electrons has progressed, applying the same microfabrication techniques. Quantum dots on silicon substrates, in particular, have a high affinity with existing CMOS technology, and are expected to be applied to large-

scale quantum integration.
This lecture provided an overview of the history of semiconductor miniaturization technology's overcoming of physical limitations, as well as the forefront of quantum information device development, which is an extension of that.
It was a very interesting lecture, and there was a lively Q&A session afterwards.

Fig.4　Dr. Mizuno giving his talk

5. IEEE Transdisciplinary-Oriented Workshop for Emerging Researchers (IEEE TOWERS)

A LMAG member participated as an observer in IEEE TOWERS, an annual student-run event serving as a platform for young researchers to network. Many students from Japan and abroad gathered in the Kanto region, where lively discussions were held between young researchers, companies, and researchers through poster presentations and other activities.
A total of 91 poster presentations were given, and there were lively question and answer sessions.

Fig.5　Group photo of presenters

6. Tour hosted by the Tokyo Branch LMAG (co-hosted by TPC/YP)

The tour to National Defense Academy of Japan, hosted by the IEEE Tokyo Section LMAG and co-hosted by the IEEE Tokyo Section TPC and YP, was held on Thursday, December 10, 2025. The morning included a tour of the National Defense Academy of Japan, followed by a tour of four laboratories working on "the latest sensing and processing technologies using radio waves" in the afternoon.

・Scatterer information estimation technology using numerical data from backward transient scattered waves: Goto/Kono Laboratory
・Drone detection and identification technology using millimeter-wave radar: Nakamura Laboratory
・ Non-destructive inspection technology using terahertz waves: Okano Laboratory
・Observation of Tokyo Bay using marine S-band and X-band radar: Sayama Laboratory

A total of 26 people (22 of whom were IEEE members) attended the tour. This was a valuable opportunity, and there was lively discussion and discussion.

Fig.6　Group photo of participants

7.　Future Events

LMAG-Tokyo is planning to hold the evening salons, lectures, and tours.　Details will be announced at a later date.

IEEE Tokyo Section LMAG Newsletter, No.45, issued on January 10, 2026

Issued by IEEE Tokyo Section Life Members Affinity Group

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