VCSLs are an innovative technology invented by Dr. Kenichi Iga in Japan, Professor Emeritus at the Tokyo Institute of Technology. Various applications for VCSLs and lasers are now being developed in optical interconnects in data centers, face recognition systems in smartphones, LDAR systems used to provide advanced driving assistance systems in vehicles, laser mouse devices, and more. They have grown to become a key component in IoT (Internet of Things) technologies worldwide.

Dr. Koyama achieved the first room temperature cw operation of VCSLs. He also developed an All-electronic array of VCSLs. The all-electronic array of VCSLs could be used to increase the capacity of optical communications. He has laid the foundation for research and development of these lasers, which is progressing on a global scale. In particular, by managing to operate these lasers at room temperature, thereby verifying their potential, he made a leading role in the development and research of VCSLs and has contributed greatly to the development of advanced optical technologies. Dr. Koyama is praised for his more than 30 years of contributions to VCSL photonic technologies worldwide.

Koyama has actively worked in industry and has pursued the creation of high-performance single-mode VCSLs with selective lasing characteristics. At the same time, he has made improvements to the single-mode power of VCSLs by pioneering new control techniques. By completing a complete control technology through polarization control that makes use of high-index plate substrates, he made contributions to create a high-performance single-mode VCSL for the first time. The results of this research have partially been put into practical use by research collaboration with industry. This has led to industrialization of VCSLs, which are currently being used in devices such as high-definition color laser printers, a world first, and has contributed to the application of VCSLs in Japanese industry.

Koyama has also worked to realize new functional VCSLs such as optical coherence processing devices and high-performance single-mode VCSLs with ultrafast data communications and nonmechanical high-resolution beam scanners. He has also made progress in cutting-edge research related to VCSL photonic, and he has contributed greatly to the development of optical technologies. Specifically, his creation of a new wavelength-tunable VCSLs that use unique methods to achieve success in creating semiconductor lasers that, for the first time, do not rely on temperature control, has resulted in a wide range of applications. In addition, he proposed a platform that integrates temperature and operational functionalities, which has led to the creation of the world's fastest high-speed VCSL that can achieve speeds of up to 200 Gbps, and a high-speed beam steering function that makes use of VCSLs. These results have been presented in more than 600 international journals, presented at more than 300 international conferences, and is the basis of more than 100 published lectures and papers.

Dr. Kenichi Iga, Professor Emeritus at the Tokyo Institute of Technology, at the age of 30 years, has contributed to the educational opportunities for undergraduates and graduate students. Since then he has been working as a project leader for the Ministry of Education, Culture, Sports, Science and Technology's "Science Program "Photons Integration Core" and has contributed to the advanced education for PhD students. Since becoming Director of the Laboratory for Future Interdisciplinary Research of Science and Technology at 30 years of age, he has worked on new directions in different fields as well as research that involves collaboration with industries. Dr. Kenichi Iga has been lionized as the first director of the Institute of Innovative Research, leading a research organization that includes approximately 360 faculty members.