Georgia Tech College of Engineering

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Steve W. Chaddick Endowed Chair Emeritus

October 1, 2024

To; IEEE Milestone Plaque for VCSEL

RE: Docket #:2022-11

Dear Milestone Evaluation Committee:

I am writing to give you my strongest support for the establishment of an IEEE Milestone Plaque at Tokyo Institute of Technology (TIT) for the invention and development of the "Vertical-Cavity Surface-Emitting Laser, 1977-1992". I have known Professor Iga and his work since before 1977 even when he was working as a graduate student under Suematsu-sensei at TIT and have followed his excellent work on the vertical-cavity surface-emitting laser since the original papers appeared.

It is clear from the milestone proposal and the now well-known history of VCSELs that Iga's team's work was a pioneering effort in this field and that they achieved many of the "firsts" in this area.

1) Is the suggested wording of the Plaque Citation accurate?
Response: Yes

2) Is the evidence presented in the proposal of sufficient substance and accuracy to support the Citation?
Response: Yes. While there are other contributions to this area of technology, e.g., the work by Burnham, Scifres, and Streifer at Xerox PARC, the work by Iga, et al., at TIT was continued over many years and this team created many of the early innovations and milestones in the improvement of the performance of such devices.

3) Does the proposed milestone represent a significant technical achievement?
Response: Yes certainly. VCSELs are major enabling components of some of the most important electronic products and systems in the world today with an immense value-added proportion of major applications, e.g. "face ID" in Apple iPhones, computer "mice", high-capacity data processing centers, etc. The IMARC Group market analysis company has recently projected: "The global vertical cavity surface emitting laser (VCSEL) market size reached US$ 2.0 Billion in 2023. Looking forward, IMARC Group expects the market to reach US$ 7.5 Billion by 2032, exhibiting a growth rate (CAGR) of 15.7% during 2024-2032. The widespread adoption of sustainable practices, and energy efficiency solutions, the ongoing shift towards Industry 4.0 requiring sensors, and the continuous advancements in the field of optoelectronics are some of the major factors propelling the market." [https://www.imarcgroup.com/vertical-cavity-surface-emitting-laser

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market#:~:text=Market%20Overview%3A,15.7%25%20during%202024%2D2032] accessed 10/01/2024.

4) Do you think the name of Kenichi Iga deserves to be included in the word-count constrained Citation?

Response: Yes. He has been a driving force in the development of this technology for many years.

In summary, I give my strongest support to the establishment of an IEEE Milestone Plaque at the Tokyo Institute of Technology to commemorate the development of the VCSEL by Kenichi Iga and his coworkers.

Sincerely,

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