

Foreword

We are thrilled to announce the publication of the 2022 Microsystems Annual Research Report, a joint publication between the Microsystems Technology Laboratories (MTL) and MIT.nano.

The MTL was established in 1984 to promote advanced research in semiconductor materials, technology, devices, circuits, and systems. A state-of-the-art semiconductor fabrication facility that was critical to research in these fields was built on site, in Building 39. Over the years, MTL has been a model for interdisciplinary and collaborative research, education, and industrial outreach. MTL has grown to a community of 58 'core' faculty members from 7 departments at MIT, who are engaged in a much wider scope of research including the semiconductor topics the MTL was originally conceived for, but now encompasses much broader areas including biomedical systems, integrated photonics, robotics, quantum and superconducting electronics, and AI, just to name a few.

After more than 30 years of service, the MTL fabrication facility was due for major renovation, and MIT.nano was born. The ultramodern MIT.nano facility was completed in 2018 in Building 12, which was named the Lisa T. Su Building this year. Dr. Su is the current president and CEO of AMD, and her Ph.D. research was carried out in MTL under the guidance of Prof. Dimitri Antoniadis, the first director of MTL. Although MIT.nano is now serving the entire MIT community as an institute facility, and not as a part of MTL, its facilities are still central to many of MTL faculty's research. For this reason, MTL and MIT.nano co-organize and co-host select events and publications. As an example, the Microsystems Annual Research Conference (MARC), the popular student-organized technical conference, was administered and sponsored jointly by MTL and MIT.nano for the first time in 2020, then again in 2021 and 2022. Also, since 2020, the Microsystems Annual Research Report has become a joint publication between MTL and MIT.nano.

As usual, this year's MTL/MIT.nano joint Microsystems Annual Research Report represents a broad cross-section of the MIT community, with 37+ faculty, 118 students, postdoctoral associates, and research staff participating. I hope you will appreciate from this report the tremendous amount of innovations the MTL community and users of MIT.nano's shared facilities bring to the world. It is a true privilege of ours to serve these two remarkable communities as well as to publish their works. On behalf of MTL and MIT.nano, we would like to thank every contributor to this year's Microsystems Annual Research Report, as well as the staff of both organizations who worked tirelessly to produce such an outstanding volume. We hope you are as excited with the 2022 Microsystems Annual Research Report as we are.

Hae-Seung Lee
Director, Microsystems Technology Laboratories

Vladimir Bulović
Director, MIT.nano

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