A meeting update

Check for updates

Srabanti Chowdhury and Jungwoo Joh, publicity chairs of the 2022 IEEE International Electron Devices Meeting, tell *Nature Electronics* about this year's meeting, which takes place in San Francisco in December.

Tell us about this year's IEEE International Electron Devices Meeting (IEDM).
IEDM (https://www.ieee-iedm.org/), which is sponsored by the IEEE Electron Devices Society and is in its 68th year, is the world's largest — and perhaps most influential — forum for unveiling breakthroughs in transistors and related micro/nanoelectronic devices. The theme of this year's meeting is the 75th anniversary of the transistor and the next transformative devices to address global challenges. We chose this to highlight the history of the field and showcase today's semiconductor technologies.

What are you seeing as the key emerging technology trends at this year's meeting?
There has been a strong interest in two-dimensional material systems for advanced logic applications over the past few years, and the trend continues this year. While this type of research has been driven by academia, more industry work will be published on this topic at IEDM 2022 — highlighting its potential application in scaled devices. Memory technology continues to dominate the IEDM forum and this year will see ultrascaled, highly efficient memory solutions for emerging applications that rely on massive data collection and analysis, such as the Artificial Intelligence of Things (AIoT) and edge artificial intelligence computing applications. There is also a growing focus on thermal management in high-performance devices. Heat reduces the performance and reliability of electronic devices, and effective thermal management is becoming more important than ever as devices shrink.

IEDM 68th International Electron Devices Meeting

2022 IEDM Conference Theme
75th anniversary of Transistor and the Next Transformative Devices to Address Global Challenges

We're now coming out of the COVID-19 pandemic. How do you think it has impacted IEDM and the broader microelectronics industry?
IEDM had to go fully virtual in 2020 due to the COVID-19 pandemic. In 2021, IEDM adopted a primarily in-person format, following COVID protocols, and added an online component that was quite successful, particularly for the tutorials and the short courses. The online platform helped us reach a broader audience and has shaped our thinking since then. This year, IEDM will be held in-person. However, it will continue to offer online access to recorded content afterwards. While the impact of the COVID-19 pandemic is yet to be entirely realized, the microelectronics community is fortunate to be able to continue conferences and meetings using virtual and online platforms. Statistically speaking, we haven't seen any decrease in paper submissions this year compared to pre-pandemic times. In fact, we have seen an uptick in participation.

Is the issue of sustainability in microelectronics on the agenda for IEDM?
Sustainability in microelectronics has just started to become a part of our conversations. This year, we are anticipating the topic to show up during panel discussions.

Typically, we shine a light on new topics through our focus sessions. We are anticipating that there will be a growing interest in sustainability in microelectronics this year, and future IEDM agendas will embrace the topic more explicitly.

How do you think IEDM can help support diversity in microelectronics? What are the key challenges at present?
Although there has been some improvement, cultivating diversity in microelectronics needs more attention. IEDM has been at the forefront of such efforts. Our executive committee is highly diverse in terms of both gender and geography. Women are in leading positions in the executive committee. In our technical committee, we try our best to maintain a healthy gender and regional representation. We also try to achieve a balance among our plenary speakers, panellists and invited speakers. We have made progress, but there is still a long way to go.

Looking forward, what are you hoping to see in future IEDM meetings?
We will continue to see new breakthroughs in device technologies in the future IEDMs. While shrinking transistors may have hit a wall, performance improvements will continue through a combination of device scaling and design–technology co-optimization (DTCO), which synergizes the expertise from technology and design. DTCO is also now evolving into system–technology co-optimization (STCO), which is enabled by 3D integration technologies. Heterogenous integration will bring new and exciting results — increasing efficiency, functionality, and diversity in chips. We also hope to hear more discussion on sustainability in microelectronics in the future forums.

Interviewed by Stuart Thomas

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