



# Conference Report

## ***The 2019 IEEE International Conference on Microwaves, Communications, Antennas, and Electronic Systems***

■ Shmuel Auster, Amir Boag, and Itai Dabran

The seventh biennial IEEE International Conference on Microwaves, Communications, Antennas, and Electronic Systems (IEEE COMCAS 2019) was held 4–6 November 2019 at the David Intercontinental Hotel in Tel Aviv, Israel. The first two days of the conference included the plenary sessions together with nine parallel sessions, while the third day was reserved for short courses and workshop tracks in five parallel sessions, as well as an additional two plenary sessions. The conference was attended by more than 1,900 engineers, academics, and technical developers.

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*Shmuel Auster, IEEE COMCAS 2019 general chair, is with IAI Elta and is the IEEE Israel Section chair and the IEEE Antennas and Propagation Society/IEEE Microwave Theory and Techniques Society Chapter chair. Amir Boag, IEEE COMCAS 2019 technical program committee chair, is a professor at Tel Aviv University, Israel. Itai Dabran, IEEE COMCAS 2019 executive committee member, is a lecturer at Technion, Israel Institute of Technology, Haifa, and the IEEE Communications Society Chapter chair.*

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IEEE COMCAS is organized as a multidisciplinary international conference where scientists, engineers, and students can meet and discuss their common interests. In addition, it includes an industry-focused exhibition that features leading companies in the fields of antennas, microwave, solid-state, and systems engineering where colleagues researching and developing the products and systems of tomorrow can interact with their industry contemporaries (Figure 1).

This conference was sponsored by the IEEE Israel Section, the IEEE

Antennas and Propagation Society (APS)/IEEE Microwave Theory and Techniques Society Israel Chapter (Antennas and Microwaves), and the Association of Engineers in Israel. It was technically cosponsored by IEEE Region 8, the APS, the IEEE Aerospace and Electronic Systems Society, the IEEE Electronic Packaging Society (EPS), the Israel Chapter of the IEEE Communications Society (ComSoc), and the European Microwave Association.

This year, we significantly increased the number of tutorials and industry-oriented invited sessions, making

the conference more relevant than ever (Figure 2). This was the largest COMCAS, with more than 240 technical presentations, 50 posters,

10 courses and special sessions, 52 invited speakers, 88 sessions, nine parallel halls, and 100 exhibition booths that spanned over more than 5,700 square

feet. Emphasis continued to be on applications-oriented research and development, from antennas and devices to systems and software, including gallium nitride technology and applications, biomedical systems and applications, phased array radars, software-defined radio, and 5G cellular mobile, with strong industry patronage and participation.

Our plenary session opened with welcome addresses by Shmuel Auster,

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**Figure 1.** Participants enjoying refreshments at the large conference exhibition (100 booths).



**Figure 2.** A slide shown at the conference indicating the growth of IEEE COMCAS over 15 years.



**Figure 3.** The welcome address by Shmuel Auster (right), IEEE COMCAS 2019 general chair. From left: Prof. Robert Graglia (APS past president), Dr. Doug Zuckerman (ComSoc past president), Prof. Avram Bar-Cohen (Raytheon, EPS president 2019), and Prof. Amir Boag (technical program committee chair).

IEEE COMCAS general chair (Figure 3); Amir Boag, IEEE COMCAS technical program committee chair; Avram Bar-Cohen, EPS president 2018–2019; Douglas N. Zuckerman, ComSoc past president; and Roberto Graglia, APS president 2015. It was followed by keynote lectures by Prof. Theodore (Ted) S. Rappaport from New York University, Tandon, who presented “Wireless Beyond 100 GHz: Opportunities and Challenges for 6G and Beyond” (Figure 4); Ben Epstein (on behalf of Hava T. Siegelmann from the U.S. Defense Advanced Research Projects Agency), who offered the talk “Lifelong Learning in Nature and Machines”; Yoram Palti, NovoCure founder and chief technology officer, who presented “Tumor Treating Fields (TTFields) from Theory to Clinical Practice”; and Avram Bar-Cohen from Raytheon Space and Airborne Systems, who delivered the lecture “Wireless Power Beaming.”

Session topics at IEEE COMCAS 2019 included radar and microwave



**Figure 4.** Prof. Ted Rappaport [New York University (NYU) and NYU Wireless] gives the keynote lecture “Wireless Beyond 100 GHz: Opportunities and Challenges for 6G and Beyond” at the opening plenary session. More than 1,900 attendees from 39 countries participated in IEEE COMCAS 2019 in Tel Aviv.

technologies, defense challenges and green communication, power amplifiers and device modeling, antennas, radar signal processing, networking technologies, defense and unmanned aerial system applications, passive circuits and components, computational methods, nonintrusive monitoring, communication measurements, implementations and resource allocation, embedded electronic systems and sensors, and advanced frequency synthesizers (Figure 5).

Our Women in Microwaves/Women in Engineering panel was organized by Amelie Hagelauer and moderated by Sherry Hess. This panel hosted an invited talk by Yonina Eldar, inspired by the recent book *Alpha Girls*: The

*Women Upstarts Who Took on Silicon Valley’s Male Culture and Made the Deals of a Lifetime* by Julian Guthrie. The panel discussed what it takes to move up the management chain and eventually into the “C suite” (officers who have the word “chief” in their titles) in a male-dominated tech world. *Alpha Girls* is the story of four women who succeeded in Silicon Valley’s venture capital environment. The following five tips were extracted from the book, discussed, and debated: your family doesn’t need you every second, humor works wonders, don’t sit on the sidelines, find out about the locker room talk, and don’t enable underachievement. The panel session presented the wisdom shared by leading

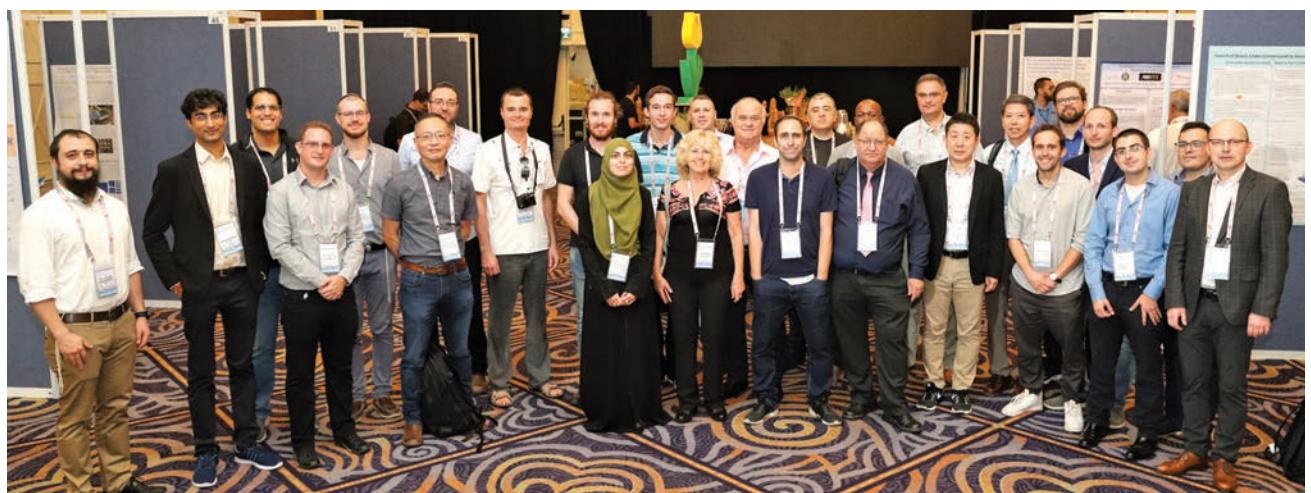
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high-tech women based on individual experience.

A special session of IEEE Young Professionals, chaired by Aleksey Dyskin, covered the fascinating field of industry and research with automotive industry leaders. This session hosted Omer Keilaf, CEO of Innoviz Technologies; Kobi Morenko, CEO of Arbe; Avi Bakal, CEO of TriEye; and Orr Davon, CEO of Hailo.

Many dedicated members of the IEEE COMCAS team, both industrial supporters and conference organizers, saw their contributions recognized at the conference’s social events. Conference Chair Shmuel Auster

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**Figure 5.** The poster presenters at IEEE COMCAS 2019 in Tel Aviv.

14 to 7 dB; the filter is a Pasternack PE8701 [7].

The value of this exercise is that one can put the unitary characteristics of the scattering parameters for a lossless (or almost lossless) two-port network into a useful rule when measuring a filter. What we were doing is actually presenting students in a classroom with a real-life network analyzer measurement scenario.

We have practiced this game in our institution for seven years and received positive feedback. The game helps students develop some intuition on microwave engineering and motivates them to understand various common microwave components' parameters. Under the careful guidance of the in-

structor, the game is educational and fun. Students get the opportunity to experience their own mini-innovation and are rewarded by developing their own interest in learning microwaves.

Readers are encouraged to create their own exercises in their own classrooms. When we try to answer the question of how to achieve more successful science, technology, engineering, and mathematics education, we can try starting with solving a puzzle by identifying a real-world problem.

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**Figure 6.** Attendees in front of the Shrine of the Book, Israel Museum. The chair's tour and dinner reception in Jerusalem were in honor of Harvey Kaylie of Mini-Circuits.

presented honorary member certificates to long-time members Ben Epstein, Harvey Kaylie, and Steve Weinstein (Figure 6).

Hosting regional conferences in various locations around the world is an excellent way to encourage IEEE Members and Societies, and the

technical community at large, to participate. They help to improve recognition and generate growth for the IEEE and its sister Societies. The seventh IEEE COMCAS was highly successful, with participants from 39 countries who expressed positive feedback and comments during and after the

conference. IEEE COMCAS continues to be a great accomplishment and will likely be well attended in the future by many technologists who lead innovation and have an impact on microwave, communications, antennas, and electronic systems technologies.

