



Conference Report

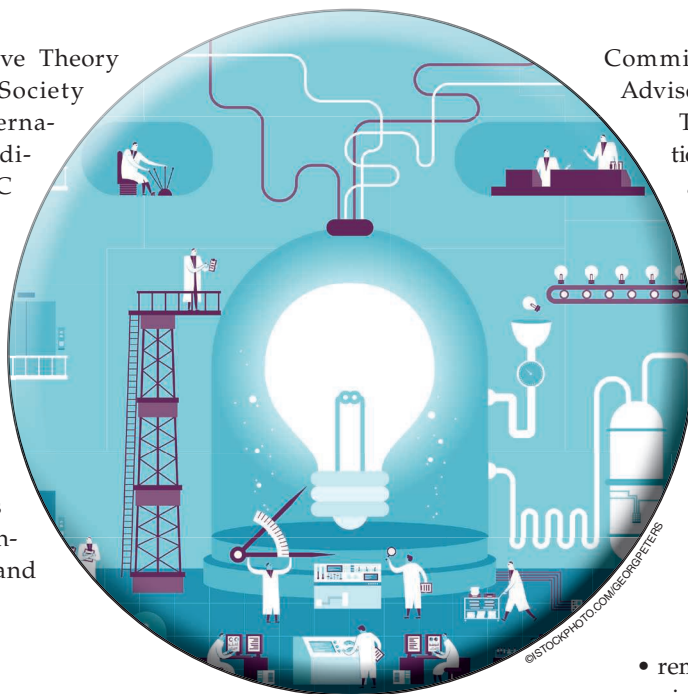
The IEEE MTT-S 2019 International Microwave Biomedical Conference

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The IEEE Microwave Theory and Techniques Society (MTT-S) 2019 International Microwave Biomedical Conference (IMBioC 2019) was held 6–8 May in Nanjing, Jiangsu, China. IMBioC was created by the merger of the IEEE MTT-S BioWireless Conference, which was held annually during Radio Wireless Week, and the IEEE MTT-S International Microwave Workshop Series on RF and Wireless Technologies for Biomedical and Healthcare Applications.

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Committee, and the International Advisory Committee.

The conference is an international forum to exchange ideas and information on state-of-the-art research in microwave and RF theory and techniques for biomedical applications, including

- biological and medical applications of microwave and RF systems
- radar, imaging, sensor applications, and pathological, physiological, and biochemical studies with electromagnetic waves
- remote monitoring and communications
- wearable and implantable wireless devices and body-centric communications
- biological tissue interaction modeling
- personal area network and other network (of any data rate) communications
- RF and millimeter-wave techniques for physiotherapy

This year's meeting, held at Nanjing's International Conference Hotel, was cosponsored by the Nanjing University of Science and Technology, the MTT-S, and the IEEE Antennas and Propagation Society (APS). The event was preceded by meetings of the Technical Program Committee (TPC), the Organizing



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Figure 1. Professional discussions and new collaborations were among the highlights of IMBioC 2019.

- the Internet of Things for biomedical applications
- electromagnetic compatibility and electromagnetic interference in biomedical applications.

The topics aimed to bridge the science and engineering gap as applied to biomedical systems. A full-day workshop, International Workshop on Microwave/Millimeter-Wave Technologies and Their Applications, capped off two-and-a-half days of technical sessions. The conference also provided an opportunity to get to know new faces and refresh ongoing

friendships (Figure 1). In addition, the conference furthered the technological development of participating countries because attendees, among whom were many well-known scientists and engineers from all over the world, had opportunities to form new international cooperative efforts and strengthen established collaborations (Figure 2).

All of the papers submitted to the conference were thoroughly reviewed by the IMBioC 2019 TPC for their technical merit and interest. The TPC, consisting of 66 reviewers from 10 countries and regions, worked closely with the cochairs to generate a diverse and well-organized technical program that covered the most important topics for the microwave biomedical applications community.

Continuing last year's momentum, 152 papers were submitted to IMBioC 2019: 113 from mainland China and 39 from 17 other countries and regions. Ultimately, 119 papers were accepted, including six invited papers. The conference included 14 oral sessions and two poster sessions, held on Tuesday

and Wednesday, with refreshments made available to provide a welcoming atmosphere for discussion among presenters and attendees (Figure 3).

More than 10 industrial exhibitors were set up in the area surrounding the posters.

Following the Monday morning opening ceremony (Figure 4), two outstanding keynote presentations were delivered. The first was by Prof. Dagan (David) Feng, Fellow of the IEEE, the Australian Computer Society (ACS), the Hong Kong Institution of Engineers (HKIE), the Institution of Engineering and Technol-

ogy (IET), and the Australian Academy of Technological Sciences and Engineering (ATSE) (Figure 5). In his talk, "Biomedical Data Processing for Future Medical Research and Health-Care Delivery," Prof. Feng discussed the impact of big data and artificial intelligence on biomedicine and how they will reshape the future of medical research and health-care delivery. The second keynote presentation was by Prof. Koichi Ito of Chiba University, a Life Fellow of the IEEE; a fellow of the Japanese Institute of Electronics,

Prof. Feng discussed the impact of big data and artificial intelligence on biomedicine and how they will reshape the future of medical research and health-care delivery.



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Figure 2. IMBioC 2019 attendees included well-known scientists and engineers from 18 countries and regions.

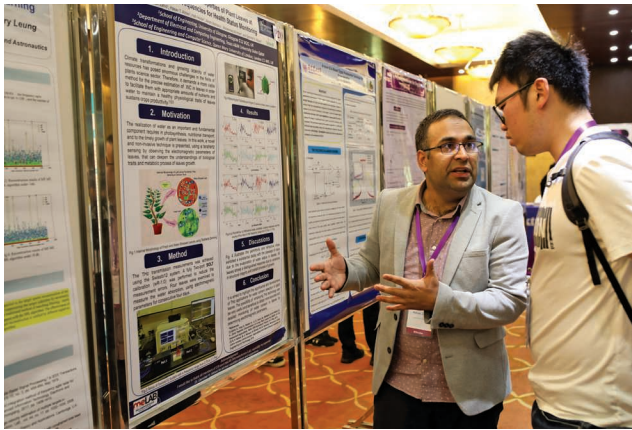


Figure 3. IMBioC is designed to foster discussion among presenters and attendees.



Figure 5. Prof. David Feng, Fellow of the IEEE, ACS, HKIE, IET, and ATSE, discussing the impact of big data and artificial intelligence on biomedicine.



Figure 4. The general chair of IMBioC 2019, Prof. Xiaohua Zhu, greeting attendees at the opening ceremony.



Figure 6. Guoliang Shao (standing, right) accepting the first place prize for the student paper competition.

Information, and Communication Engineers; current vice president of the Japanese Society for Thermal Medicine; vice chair of the International Union of Radio Science Commission K; and 2019 APS president. His thought-provoking presentation, “Physical Phantoms for Evaluation of Wireless In-Body Medical Devices,” encouraged the audience to think about the future of the field.

Students are an important part of the future of the radio and wireless community; therefore, IMBioC 2019 included a special paper competition to challenge students in terms of both technical content and presentation skills. This year, 43 entries were received for the competition,

the most ever. After peer review by the TPC members, 12 papers qualified for the final competition, held during the conference. Each student finalist presented his or her work by delivering a two-minute elevator pitch with a single slide. The competition was an opportunity for students to practice engaging the audience quickly with the value of their research and spark interest in what they are doing in their labs. Guoliang Shao (Figure 6) won first place for his paper “Wearable Magnetic Localization System with Noise Cancellation for Wireless Capsule Endoscopy.”

All accepted papers were included in the conference proceedings, which

was provided to every registered conference attendee on a USB thumb drive. Papers presented at the conference were made available for archiving on IEEE *Xplore*. All authors were invited to submit extended versions of their papers to a mini special issue of *IEEE Journal of Electromagnetics, RF, and Microwaves in Medicine and Biology*.

The next IMBioC will be held 25–28 May 2020 at the Hotel Mercure Compans Caffarelli, Toulouse, France, with new and exciting events expected. The deadline for paper submissions is 13 January 2020. We hope to see you in Toulouse!

