



From the Editor's Desk

Technical Features

■ Robert H. Caverly

IEEE *Microwave Magazine* publishes several technical features each month to keep readers up to date on various microwave technologies. More than half of each year's issues are 1) themed or focused issues where several of the technical committees of the IEEE Microwave Theory and Technique Society (MTT-S) provide articles focused on a topic that is unique to their technical area or 2) issues associated with the IEEE International Microwave Symposium (and Microwave Week) or with Radio and Wireless Week. The remaining issues feature technical overview articles on various aspects of microwave technology from interested readers. This month's issue is one of these issues, where four groups of authors have provided articles written on topics of interest to them and hopefully of interest to you.

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I encourage you to consider submitting a manuscript to *IEEE Microwave Magazine*. We welcome original manuscripts that enrich the existing body of knowledge in microwave engineering within the field of interest of the MTT-S. Original review/tutorial articles and surveys of a technology field are considered for publication even if new data or concepts are not presented. Each technical article submitted to *IEEE Microwave Magazine* is evaluated by at least two independent reviewers, and the published article will also appear in *IEEE Xplore*.

In this month's issue, we have three technical features and an "Application Notes" column, all of which cover a

wide range of microwave topics. Our first technical feature, "Two Decades of UWB Filter Technology" by Shome et al., focuses on the two-decade history of ultrawideband (UWB) filter applications. The article reviews various UWB filtering technologies and discusses their design and performance characteristics. Several comparison tables and an extensive list of references have been provided for you to further investigate the technology. The second technical feature, "Cryogenic Noise-Parameter Measurements" by Sheldon et al., looks at some of the history behind cryogenically cooled low-noise amplifiers (LNAs) and their various low-noise measurement techniques. The authors then review these techniques in a specific cryogenic LNA case to show their usefulness. If the theme of low noise sounds familiar, it is because we published a focus issue from the MTT-11 Microwave Low-Noise Techniques Committee just last month. The third technical feature this month, "Gyrator-C-Based CMOS Active Inductors" by M. Mhiri and K. Besbes,

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provides an extensive overview of integrated circuit active inductors. Fundamental physics dictates that, even as CMOS devices trend smaller in size, for a given value of inductance, the physical dimensions of passive inductors do not scale accordingly, and so inductors exhibit an oversize footprint in RF integrated circuit designs. The authors review methods for improving performance in CMOS active inductors and provide extensive references and comparison tables for the studied circuits. In this month's "Application Notes" column, Zhou et al. investigate methods for harnessing harmonics in Doherty power amplifiers to help improve performance and even improve the overall third-order intermodulation performance.

As microwave engineers, we must continually stay informed about the latest technologies and applications. In this month's "President's Column," Gregory Lyons focuses on some of the ways that the MTT-S is helping foster education and mentoring by describ-

ing the various activities underway by different groups in the Society. Keeping with the education theme, the "Education News" column from the MTT-S's Education Committee provides a summary of the 2021 Graduate Student Fellowship Awards, in which the awardees and their research projects are outlined. I was impressed by the breadth and level of the work these students are undertaking, and I am sure you will be as well. Over the last few months, our "MicroBusiness" column has covered various aspects of success. The theme of this month's column is the linkage of success to merit and technological quality. Periodically, *IEEE Microwave Magazine* publishes an interview with the chair of one of the MTT-S Administrative Committee (AdCom) subcommittees. In this month's "MTT-S Society News" spotlight column, we talk with the current chair of the Electronic Information Committee (EICO), Anding Zhu. In this interview, Anding describes the far reach

of this committee and the exciting initiatives that EICO has helped foster, including those that have come out of the pandemic as well as those that might continue postpandemic. I found the work by the committee on MTT-S's social media presence to be particularly interesting. Keeping with news about the MTT-S, we also have a report from the MTT-12 Microwave High-Power Techniques Committee on its activities over the last few years. Rounding out the issue is the "MTT-S Ombuds Officer" report, a new "Enigmas, etc." for you to consider, and the conference calendar. Finally, we have an "In Memoriam" column dedicated to Tapan K. Sarkar, who passed away this past March. Dr. Sarkar was well known and worked tirelessly for both the MTT-S and the IEEE Antennas and Propagation Society (APS), having served as president of the APS in 2014. He will be sadly missed.



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