FROM THE EDITOR

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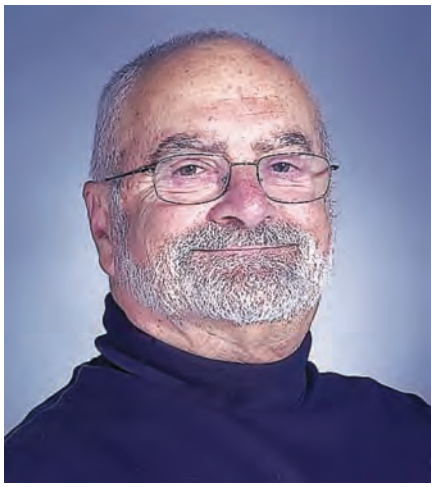

Once again it has been an honor to work with Veerle Keppens, *Acoustics Today*'s guest editor for this issue that focuses on physical acoustics. Veerle knows who to ask for an article and more to the point, who would be willing to say yes. The members of the Society owe her a debt of gratitude, as do I. Thank you Veerle.

Dick Stern

FROM THE GUEST EDITOR

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It has been a privilege and a pleasure to be closely involved with this *Acoustics Today* issue, focused on physical acoustics. Broadly defined, physical acoustics is the area of *acoustics* and *physics* that studies interactions of sound waves with a medium (solid, liquid, or gas). Determination of the sound propagation in a medium is often the choice technique to characterize the medium and help understand its basic properties. In addition, understanding how changes in the physical properties of a medium affect the propagation of the acoustic wave is paramount when tailoring a medium and/or the sound-medium interaction for specific applications. The articles featured in this issue highlight some of the fascinating aspects of interaction of sound and media. Tom Matula and Hong Chen's article focuses on "Microbubbles," micron-sized gas-filled bubbles that play an important role in diagnostic medical imaging. The bubbles act as very good ultrasound scatterers, and because they oscillate upon ultrasound exposure they can do therapeutic work on the surrounding tissue. Understanding and optimizing the growth and collapse of these microbubbles is expected to lead to improved diagnosis and treatment at reduced costs. Nico Declercq reports on some recent results on the diffraction of sound by periodic structures. Periodic structures, be it Mayan pyramids or modern-day phononic crystals, can function as acoustic prisms or frequency selective mirrors and hold promise for applications ranging from seismic wave deflection to accurate passive filters used in electronics. The third article, by Martin Smith, Michael Roddewig, Kurt Strovink, and John Scales, shows how low-cost and off-the-shelf materials can be used to build an active acoustic phased array with electronically-controlled time delays, a technology that is attractive for applications ranging from military target tracking radar systems to sophisticated medical imaging. I hope you will enjoy browsing through this issue and catch a glimpse of the intriguing work going on in the field of physical acoustics.