

President's Message

When we think about optical fiber, communications is probably the first thing that comes to mind. But the sensitivity of telecom-grade fiber optics to stress, strain and temperature has also opened them up to a new world of applications in sensing. This month's cover story explores how fiber optics is being used to provide real-time monitoring of the integrity of civil structures such as buildings, dams and bridges. It's a wonderful example of how a mature technology can move into new application areas that no one could have predicted.

Meanwhile, the field of fiber optic communications continues to advance beyond what many of us ever thought possible as well. As this month's OFC/NFOEC conference in Anaheim, Calif., U.S.A., will highlight, 400G networks are now emerging from the planning stage; 1Tb and photonic integrated technologies are driving tomorrow's networks; and the IT industry is increasingly deploying dynamic cloud computing environments.

On p. 23 of this issue, Brian Protiva describes another key trend that will be explored at OFC/NFOEC this year: software-defined networking (SDN)—which challenges the vertically integrated approach to the switch-and-router design of the past 20 years. SDN may be a key component of the Internet of the future. To learn more about the meeting or to register, visit www.ofcnfoec.com.

Another striking possibility for future networks is the application of quantum physics to computing technology. As the article on p. 34 describes, some researchers predict that a quantum Internet could be a reality within the next 15 years. This form of computing would enable the transmission of massive volumes of data and complicated computations and searches—all with zero lag time.

If you like a good detective story, you will likely enjoy Jeff Hecht's article on p. 42, titled "Saving Hubble." While today we think of the Hubble as a resounding optics success story, around the time of its launch scientists feared that the telescope might go down in history as one of NASA's most expensive flops. Spherical aberration in its primary mirror caused its images to come back no clearer than those captured from a high-elevation ground telescope.

OSA Past President Duncan Moore was charged with diagnosing the optical problem and designing repairs. Fortunately, optical engineers were able to pinpoint the issue using ingenious "forensic" optics and then devise a clever fix, transforming Hubble into the world-class telescope we know it as today.

What all these stories have in common is their ability to challenge our assumptions—and imaginations—about what can and cannot be accomplished through optics. As you read through your issue, I hope you will bring from it a sense of optimism that you can apply to your own lab, classroom or business. Anything is possible.



“The field of fiber optic communications continues to advance beyond what many of us ever thought possible.”

*—Donna Strickland
OSA President*