

Introduction

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This section covers the 25-year period extending from 1990 to 2014. This period is often referred to as the Information Age because of the advent of the Internet during the early 1990s. It is also the period during which computer technology became mature enough that it became difficult to imagine life without a computer. These developments affected quite dramatically both the field of optics and The Optical Society devoted to serving it. The articles in this section make an attempt to document the advances made during this recent period and how they impacted the functioning of The Optical Society.

The most dramatic story of the 1990s is the exponential growth in the capacity of optical communication networks, fueled by the advances such as wavelength division multiplexing and erbium-doped fiber amplifiers. A set of three articles provides the sense of history of this period. In the first one, Jeff Hecht discusses the birth and growth of fiber-optic communication industry starting in 1970 when Corning first announced the invention of the low-loss fiber. In the second of his articles, Jeff Hecht describes how the telecommunication industry grew so rapidly during the 1990s that it led to a “telecom bubble” in the stock market that burst eventually in 2001. In the third article, Rod Alferness, who was at the forefront of this revolution taking place during the 1990s, provides his perspective on the evolution of optical communication networks since 1990.

A set of six articles provides a flavor of how the field of optics is evolving in the twenty-first century. They cover diverse research areas ranging from integrated photonics to biomedical optics to quantum information. The first article by Radha Nagarajan focuses on the recent advances in the area of integrated photonics that are behind the revival of the telecommunication industry after bursting of the “telecom bubble” in 2001. It is followed by Phillip Russell’s article on the new wave of microstructured optical fibers. Russell was the first one to make fibers known as photonic crystal and photonic bandgap fibers. Here is your chance to hear the history from the inventor himself.

The third article in this section, by Wayne Knox, covers the history of ultrafast laser technology. Knox has been involved with ultrafast lasers for a long time and knows their history well. The fourth article is devoted to advances in biomedical optics. Greg Faris describes in this article both the *in vivo* and *in vitro* applications made possible by recent advances in the area of biomedical optics. In the next article, David Hagan and Steven Moss focus on novel optical materials that are likely to revolutionize the twenty-first century. The last article by Carlton Caves is devoted to the history of the emerging field of quantum information.

It was difficult to choose among a wide range of topics, and many could not be included because of space limitations, among other things. It is my hope that the reader will gain an appreciation of how the field of optics is evolving during the twenty-first century.