

Editorial for Special Issue for the 50th Anniversary of the Invention of Optical Fiber Communications

In 1966, while working at Standard Telephones and Cables, Dr. Charles K. Kao and his co-author published the foundational paper on optical fiber communication, "Dielectric-Fiber Surface Waveguides for Optical Frequencies," which proposed the use of hair-thin optic fibers for communication. After many years of dedication in this field, Prof. Kao was honored around the globe as the "Father of Fiber Optic Communications." On October 6, 2009, Prof. Kao was awarded the Nobel Prize in Physics for "groundbreaking achievements concerning the transmission of light in fibers for optical communication." This year marks the 50th anniversary of the invention of the optical fiber communications. To celebrate this special occasion, *Chinese Optics Letters* (COL) hereby publishes this Special Issue, which is included in the December 2016 Issue of COL.

This Special Issue includes seven invited papers written by leading experts in our field. The first three papers focus on fiber transmissions from the early years to the present. Peter Winzer of Bell Labs, USA, tells the story of the evolution from the first fibers to mode-division multiplexing. Shaohua Yu of Wuhan Research Institute of Post & Telecommunications, China, reports recent progresses in ultra-high speed, ultra-large capacity, and ultra-long-distance fiber transmission. Naoya Wada of the National Institute of Information and Communications Technology, Japan, presents high-capacity space-division multiplexing transmission and its associated integrated optical switching technologies to effectively exploit the abundant bandwidth provided. The remaining four papers cover broad applications of optical fibers in different areas. Frank Effenberger of Futurewei Technologies, Huawei USA, presents the history and evolution of broadband access enabled by fiber optics. Yi Dong of Shanghai Jiao Tong University, China, reports the distribution of millimeter-waves over fiber links with high frequency stability. Hwa-Yaw Tam of the Hong Kong Polytechnic University, Hong Kong, China, presents the industrial applications of fiber Bragg gratings. Xiang Zhou of Google, USA, reviews the evolution and advancement of datacenter optical interconnects for meeting the explosive bandwidth demand growth of web and cloud-based services.

Due to the page limit of this Special Issue, we are only able to include these seven invited papers to exemplify the significant advances made since the invention of optical fibers. We would like to take this opportunity to thank the Executive Editor-in-Chief, Changhe Zhou, for inviting us to serve as Guest Editors, and Yanfang Hu and Jie Ding for their assistance in the publication of this Special Issue. Finally, we would like to send our best wishes to Professor Charles K. Kao and other pioneers who collectively started the remarkable field of optical fiber communications that is expected to continue benefiting our society for years to come.

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