

Editorial

It is a great honor for us to present this special topic on optoelectronic technology and its applications in SCIENCE CHINA. Information optoelectronics is widely used in optical communications, computing, sensing, and military applications. Currently, communication networks are facing capacity and power consumption challenges due to the ever-increasing requirements of users. Optoelectronic technologies are the effective solution to break the electronic bottleneck and improve the network performance, resulting in booming of novel optoelectronic devices.

There are three main development trends for optoelectronics. Multiplexing technologies are developing towards multiple dimensions, such as wavelength-division multiplexing (WDM), orthogonal frequency division multiplexing (OFDM), polarization-division multiplexing (PDM), and space-division multiplexing (SDM). The optoelectronic devices are progressing from discrete components towards high density integration chips, and on-chip integration facilitates the development of novel information transmission and processing architectures. The combination of the optical and microwave technologies is another trend for optoelectronics advancement, and microwave photonic techniques,

devices, and systems enable the generation, transmission, detection, processing, and control of microwave signals in optical domain.

The purpose of this special issue is to document recent developments and trends in the field from both experimental and theoretical perspectives. This topic contains 16 papers selected from the major research groups in this field in China. We would like to thank all the authors for their excellent contributions and original ideas. We are grateful to our reviewers who have provided thorough evaluations of the submitted manuscripts.

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