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Editorial

The 19th century was a century of steam, the 20th was a century of atom. The beginning of the 21st century suggests that it might be a century of light. We are, however, aware of the fact that there are other strong candidates for playing this role, such as gene or nanotechnology.

As opticians we believe that photonics, which is a technology of generating electromagnetic wave and employing it as information carrier, will revolutionize our life. A discussion on the extension of meaning of the word photonics is still being continued [1]. So far the commonly accepted understanding includes in photonics various processes of light emission and all operations made on and with photons. Here, light means a visible part of electromagnetic spectrum as well as close ultraviolet and infrared frequencies. What is, then, the relation between photonics and optics? The answer is difficult but it emphasises a rapid development of recently created optical devices and new applications in telecommunication and other fields. In a similar way, half a century ago electronics emerged from electrotechnics. Electronics has also began with the development of new electronic devices and their applications.

The definition of photonics may still be modified as it happened with analogous definition of electronics. At present, photonics comprises the following areas of science and technology: optical waveguides and their applications, integrated optics, microoptics, light sources, amplifiers and detectors, optical information processing and storage, nanophysical optical metrology, and others.

The emergence of photonics from optics and its rapid growth during the last years encouraged us to propose a publication of this special issue of *Optica Applicata* devoted to

PHOTONICS

We note with pleasure that both theoretical and experimental works submitted from several Polish laboratories are equally represented in this issue. It covers a wide range of topics and is organised as follows: the first two papers are devoted to devices made in arsenide technology by the research group of Professor Maciej Bugajski. The next four describe simulations of both production and performance of the arsenide surface- and edge-emitting lasers. In the subsequent two papers, the performance of a future nitride VSCSEL and of a modified laser with distributed feedback/distributed Bragg reflector is considered. The next paper deals with the use of diode lasers for the pumping of an upconversion laser. This part devoted to semiconductor photonics devices is followed by a few papers on optical planar and fiber waveguides and their applications as sensors. Photonic systems for grey-scale

image processing are presented in the next two papers. The last contribution discusses metrology of weak optical signals.

This issue of *Optica Applicata* featuring photonics reflects an interest of the Polish optical community in modern light-oriented technologies. Their wide and enthusiastic response of its members to our call for papers makes us believe that the next issues on photonics will appear regularly.

[1] T. Szoplik, W. Urbańczyk, W. Nakwaski, B. Mroziewicz, T. Woliński, H. Malak, *A conversion on photonics*, submitted for publication in "Postępy Fizyki".

Prof. Tomasz Szoplik
Prof. Włodzimierz Nakwaski
Guest Editors