

OPTICA APPLICATA

Vol. XXIX (99) No. 4

PL ISSN 0078-5466

Index 367729

A joint publication of the

INSTITUTE OF PHYSICS,
WROCLAW UNIVERSITY
OF TECHNOLOGY,
POLAND

&

SPIE/POLAND CHAPTER
in association with
SPIE—THE INTERNATIONAL SOCIETY
FOR OPTICAL ENGINEERING

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Editorial

This issue of *Optica Applicata* is the third one of the special series at the turn of the century devoted predominantly to recent achievements of the Polish scientists as well as foreign cooperating research groups in the specialised fields of optics and optoelectronics. The topic of this issue is

OPTICAL METHODS IN ENVIRONMENTAL STUDIES

It is my pleasure to express my deep gratitude to Professor Krzysztof Ernst, the guest editor, for the exceptionally efficient cooperation in realizing this task. This issue is made complete with articles from the other fields of optics, as well.

Dr. Ireneusz Wilk
Editor in Chief

Editorial by the Guest Editor

This issue of *Optica Applicata* is dedicated to **optical methods in environmental studies**. We present results obtained recently by several Polish research groups as well as by two foreign groups involved in such research and cooperating with Polish physicists. The selection of subjects may also reflect the variety of activities carried out in this field.

Atmospheric studies by means of lidar systems are the main topic of the issue. P. F. AMBRICO *et al.* present their results of air monitoring over an industrial area in southern Italy. T. ZIELIŃSKI *et al.* apply their lidar system to measure the optical depth over the coastal zone of the Baltic Sea. J. WALCZEWSKI *et al.* describe their measurements on the dynamics of atmospheric aerosol leading to the determination of the mixing layer height. S. PUCHALSKI analyses the atmospheric dust component, and S. CHUDZYŃSKI *et al.* propose two practical solutions for calibration of the DIAL systems in selective measurements of concentrations of specific atmospheric pollutants.

The papers mentioned above illustrate the various and numerous advantages of remote sensing techniques when applied to atmospheric studies. At present, lidars are the unique systems which provide reliable information on the dynamics of processes occurring in the atmosphere. This is one of the important reasons for their applications in testing and verifying various atmospheric models.

The papers by H. WREMBEL and K. KOLWAS *et al.* are dedicated to laboratory measurements connected with environmental phenomena. The first one describes a high sensitive analytical method used in order to detect ultratrace levels of environmental mercury. The second is dedicated to the determination of the atmospheric particle size by analysing the light scattered on the object studied.

A. PRZYBYSZEWSKA *et al.* analyse spectral information content of a satellite picture of a terrain in north-west Poland in order to classify forest areas.

Finally, in the leading work of our presentation, L. WÖSTE shows fascinating perspectives of femtosecond spectroscopy for understanding the dynamics of clusters as well as for indicating exciting atmospheric applications such as remote aerosol analysis or the laser control lightning.

Prof. Krzysztof Ernst