

OPTICA APPLICATA

The quarterly
of the Faculty of Fundamental Problems of Technology
Wrocław University of Science and Technology, Poland
PL ISSN 0078-5466 Index 367729

EDITOR IN CHIEF – WAŁAW URBAŃCZYK
VICE-EDITOR – AGNIESZKA POPIOŁEK-MASAJADA

TOPICAL EDITORS

KRZYSZTOF ABRAMSKI, <i>Wrocław University of Science and Technology, Poland</i>	Fiber optics and optical communication, spectroscopy, lasers and their applications
TADEUSZ PUSTELNY, <i>Silesian University of Technology, Gliwice, Poland</i>	Integrated optics, acoustooptics, microoptics, optical instrumentation, optical measurements, optical sensing
TOMASZ SZOPLIK, <i>Warsaw University, Poland</i>	Nanooptics, plasmonics, optical imaging, optical computing, optical data storage and processing
HENRYK KASPRZAK, <i>Wrocław University of Science and Technology, Poland</i>	Holography, diffraction and gratings, biooptics, medical optics, optometry, optical imaging, Fourier optics
EWA WEINERT-RĄCZKA, <i>Szczecin University of Technology, Poland</i>	Nonlinear optics, optical waveguides, photonic crystals

INTERNATIONAL ADVISORY BOARD

OLEG V. ANGELSKY, *Chernivtsy University, Ukraine*
YASUHIKO ARAKAWA, *The University of Tokyo, Japan*
IVAN GLESK, *University of Strathclyde, UK*
CHRISTOPHE GORECKI, *FEMTO-ST, Besançon, France*
EUGENIUSZ JAGOSZEWSKI (**Chairman**), *Wrocław University of Science and Technology, Poland*
ROMUALD JÓZWICKI, *Warsaw University of Technology, Poland*
FRANCISZEK KACZMAREK, *Adam Mickiewicz University, Poznań, Poland*
BOLESŁAW KĘDZIA, *Poznań University of Medical Sciences, Poland*
MALGORZATA KUJAWIŃSKA, *Warsaw University of Technology, Poland*
NORBERT LINDLEIN, *University of Erlangen–Nürnberg, Germany*
MIROSLAV MILER, *Institute of Photonics and Electronics of the ASCR, v.v.i., Prague, Czech Republic*
JAN MISIEWICZ, *Wrocław University of Science and Technology, Poland*
WŁODZIMIERZ NAKWASKI, *Technical University of Łódź, Poland*
WOLFGANG OSTEN, *Universität Stuttgart, Germany*
JAN PEŘINA, *Palacký University, Olomouc, Czech Republic*
BARBARA PIERŚCIONEK, *University of Ulster, UK*
COLIN SHEPPARD, *National University of Singapore*
CONCITA SIBILIA, *Università di Roma “La Sapienza”, Italy*
TADEUSZ STACEWICZ, *University of Warsaw, Poland*
TOMASZ WOLIŃSKI, *Warsaw University of Technology, Poland*
JAN WÓJCİK, *Maria Curie-Skłodowska University in Lublin, Poland*
PAVEL ZEMANEK, *Institute of Scientific Instruments of the ASCR, v.v.i., Brno, Czech Republic*

Contents

All-optical switching

- Nonlinear inverse solution by the look-up table method for Risley-prism-based scanner*
ANHU LI, WANSONG SUN, XINJIAN GAO 501
- All-optical ultrafast switching in a silicon microring resonator and its application to design multiplexer/demultiplexer, adder/subtractor and comparator circuit*
J.K. RAKSHIT, J.N. ROY 517
- Creating the optical bistable switch in the dielectric slab doped with asymmetric semiconductor quantum wells*
R. NASEHI 541

Optical multiplexing

- Improved low channel spacing high quality factor four-channel demultiplexer based on photonic crystal ring resonators*
R. TALEBZADEH, M. SOROOSH, F. MEHDIZADEH 553

Optical waveguides

- Mode conversion in two-dimensional magneto-photonic crystal waveguide made by fully compatible optical sol-gel matrix*
A. KAHLOUCHE, A. HOCINI, D. KHEDROUCHE 565

Atmospheric optics

- Optimal threshold detection for Málaga turbulent optical links*
A. JURADO-NAVAS, J.M. GARRIDO-BALSELLS, M. CASTILLO-VÁZQUEZ, A. PUERTA-NOTARIO,
I. TAFUR MONROY, J.J. VEGAS OLMOS 577

Digital holography

- Simultaneous measurement of refractive index and thickness for optically transparent object with a dual-wavelength quantitative technique*
XIAOQING XU, YAWEI WANG, YUANYUAN XU, WEIFENG JIN 597

Humidity sensors

- Fast optoelectronic sensor of water concentration*
J.L. NOWAK, P. MAGRYTA, T. STACEWICZ, W. KUMALA, S.P. MALINOWSKI 607

Liquid crystals

- Nonlinear optimization approach to determine optical dispersion in liquid crystals*
P. MARCINIAK, P. MOSZCZYŃSKI 619

Quantum dots

Excitonic quasimolecule consisting of two semiconductor quantum dots

S.I. POKUTNYI, W. SALEJDA 629

Spectroscopy

Modulation index optimization for wavelength modulation spectroscopy

M. MOHAMMADI JOZDANI, A. KHORSANDI, S. GHAVAMI SABOURI 639

Stereo microscopy

Disparity servoing based fast autofocusing method for stereomicroscope

YI LIU, MEI YU, LI CUI, GANGYI JIANG, YIGANG WANG, SHENGLI FAN 651

Subwavelength gratings

A polarization selective beam splitter based on a subwavelength multisubpart profile grating structure

Y. XIAO, L. HUANG, H. WU, X. SUN, W. XIAO, J. DUAN 665