

**The 14th Conference**  
**INTEGRATED OPTICS**  
**- SENSORS, SENSING STRUCTURES and METHODS**

**Szczyrk 25.02-01.03.2019**

<b>25.02.2019 Monday</b>	
<b>13:00</b>	<b>Dinner</b>
14:30-14:35	<b>OPENING CEREMONY of the Conferences</b> 48 <sup>th</sup> WSW&QA 47 <sup>th</sup> WSEA&V 14 <sup>th</sup> IOS'2019
14:35-15:30	<b>JUBILEE OF PROFESSOR WIESŁAW WOLIŃSKI</b>
15:30-16:30	<b>SESSION DEDICATED TO PROFESSOR WIESŁAW WOLIŃSKI IN JUBILEE'S CELEBRATION</b>
15:30-16:00	<i>Invited lecture</i> <b>Graphene in infrared and terahertz detector family</b> A. ROGALSKI
16:00-16:30	<i>Invited lecture</i> <b>Examination of the bottom of the Gdansk Bay by means of acoustic methods</b> <u>E. KOZACZKA, G. GRELOWSKA</u>
<b>16:30-17:00</b>	<b>Coffee break</b>
17:00-18:00	<b>SESSION DEDICATED TO PROFESSOR WIESŁAW WOLIŃSKI IN JUBILEE'S CELEBRATION</b>
17:00-17:20	<i>Invited lecture</i> <b>Synthesis and propagation of structured light beams in nematic liquid crystals</b> U. A. LAUDYN, M. KWAŚNY, J. PIŁKA, P. JUNG, <u>M. A. KARPIERZ</u>
17:20-17:40	<i>Invited lecture</i> <b>The problems of the direction finding by air vehicles of the radars working with rotating antenna</b> <u>A. RUTKOWSKI, A. KAWALEC</u>
17:40-18:00	<i>Invited lecture</i> <b>Near-infrared emission in fluoroindate glasses co-doped with rare-earth</b> M. KOCHANOWICZ, J. ŻMOJDA, P. MILUSKI, A. BARANOWSKA, T. RAGIŃ, J. DOROSZ, M. KUWIK, W. A. PISARSKI, J. PISARSKA, M. LEŚNIAK, B. STARZYK, M. FERRARI, <u>D. DOROSZ</u>
<b>19:00</b>	<b>Supper</b>
<b>20:00</b>	<b>MUSIC GLANCE – moment with string quartet</b>

<b>26.02.2019 Tuesday</b>	
<b>13:00</b>	<b>Dinner</b>
14:30-15:00	<i>Plenary Lecture</i> <b>Investigation depolarization in variable medium by spatial interferometric system</b> A. KALBARCZYK, <u>L. R. JAROSZEWICZ</u> , N. BENIS, I. MERTA, M. CHRUSCIEL, P. MARC
15:00-15:30	<i>Plenary Lecture</i> <b>Sensors characteristics of helically twisted microstructured optical fibers</b> <u>P. MERGO</u> , M. MAKARA, K. POTURAJ, L. CZYZEWSKA, G. WOJCIK, A. WALEWSKI, J. KOPEC
15:50-15:50	<b>Optimization of silica glass capillary and rods drawing process</b> <u>G. WOJCIK</u> , K. POTURAJ, M. MAKARA, P. MERGO
15:50-16:10	<b>The SS-OCT endomicroscopy probe based on MOEMS Mirau micro-interferometer and MEMS 2-axis electrothermal microscanner for optical coherence tomography imaging</b> <u>P. STRUK</u> , S. BARGIEL, Q. TANGUY, F. E. GARCIA RAMIREZ, R. CHUTANI, P. LUTZ, O. GAIFFE, L. FROEHLI, N. PASSILLY, H. XIE, CH. GORECKI.
<b>16:30-17:00</b>	<b>Coffee break</b>
17:00-17:30	<i>Plenary lecture:</i> <b>Coupled Microresonators</b> <u>M. TRIPPENBACH</u> , V. KONOTOP, N. VIET HUNG, A. RAMANIUK, K. ZEGADŁO
17:30-18:00	<i>Plenary Lecture:</i> <b>Integrated photonics – technologies and applications</b> <u>R. PIRAMIDOWICZ</u> , S. STOPINSKI, A. KAZMIERCZAK, A. PASNIKOWSKA, M. SLOWIKOWSKI, A. JUSZA, K. ANDERS, W. PLESKACZ, P. SZCZEPANSKI
18:00-18:20	<b>Distributed optical fiber sensors for high temperature applications</b> <u>A. RAFALAK</u> , K. WILCZYŃSKI, T. STAŃCZYK, K. MARKIEWICZ, A. DOMINGUEZ LOPEZ, J. KACZOROWSKI, Ł. SZOSTKIEWICZ, M. NAPIERAŁA, T. NASIŁOWSKI
18:20-18:40	<b>Bend sensor based on microstructured multicore optical fiber</b> <u>D. BUDNICKI</u> , P. DEBOWSKI, Z. HOLDYNSKI, L. SZOSTKIEWICZ, K. MARKIEWICZ, K. WILCZYNSKI, M. MURAWSKI, G. WOJCIK, M. MAKARA, K. POTURAJ, P. MERGO, O. KARCZEWSKI, M. NAPIERAŁA, T. NASIŁOWSKI
18:40-19:00	<b>Research of advanced signal detection methods for optical fiber methane sensor</b> <u>S. CHOJNOWSKI</u> , K. WYSOKIŃSKI, Z. HOŁDYŃSKI, J. ZAJIC, K. MARKIEWICZ, O. KARCZEWSKI, T. TENDERENDA, M. NAPIERAŁA, T. NASIŁOWSKI
<b>18:30-19:00</b>	<b>POSTER SESSION -mounting of posters</b>
<b>19:00</b>	<b>Supper</b>
<b>20:00</b>	<b>POSTER SESSION</b>

<b>27.02.2019 Wednesday</b>	
<b>13:00</b>	<i>Dinner</i>
14:30-15:00	<i>Plenary Lecture:</i> <b>Generation of optical vortices in nonlinear photonic crystals</b> K. SWITKOWSKI, S.LIU, Y. SHENG, <u>W.KROLIKOWSKI</u>
15:00-15:20	<b>Optimization of optical properties of photonic crystal fibers infiltrated with chloroform for supercontinuum generation</b> C. V. LANH, V. T. HOANG, V. C. LONG, K. BORZYCKI, K. D. XUAN, V. T. QUOC, M. TRIPPENBACH, R. BUCZYŃSKI, <u>J. PNIEWSKI</u>
15:20-15:40	<b>Experimental analysis of the Bragg reflection peaks splitting in gratings fabricated using a multiple order phase mask</b> <u>G. STATKIEWICZ-BARABACH</u> , K. TARNOWSKI, D. KOWAL, P. MERGO
15:40-16:00	<b>Integrated ring lasers for optical gyroscope systems</b> <u>S. STOPIŃSKI</u> , M. SIENNICKI, R. PIRAMIDOWICZ
16:00-16:20	<b>Liquid-crystal diffraction gratings based on azo polymer aligning layers exposed to blue light interference pattern</b> <u>A. KOZANECKA-SZMIGIEL</u> , K. RUTKOWSKA, M. NIEBOREK, M. KWAŚNY, D. SZMIGIEL
<b>16:30-17:00</b>	<i>Coffee break</i>
17:00-17:30	<i>Plenary Lecture:</i> <b>High-resolution optical fiber bundles based on high-contrast soft glasses for fluorescence imaging</b> <u>R. BUCZYŃSKI</u> , B. MOROVA, R. KASZTELANIC, N. BAVILI, Ö. YAMAN, A. FILIPKOWSKI, D. PYSZ, B. YIĞIT, M. ZEYBEL, M. AYDIN, B. DOGAN, A. KIRAZ
17:30-17:50	<b>0.3 mW MIR output power from multimode chalcogenide glass fiber doped with praseodymium</b> <u>S. SUJECKI</u> , L. SOJKA, M. SHEN, D. JAYASURIA, Z. TANG, E. BARNEY, D. FURNISS, T. BENSON, A. SEDDON
17:50-18:10	<b>Structural properties and mid-infrared emission of heavy metal oxide glass and optical fibre co-doped with Ho<sup>3+</sup>/Yb<sup>3+</sup> ions</b> <u>T. RAGIŃ</u> , A. BARANOWSKA, M. KOCHANOWICZ, J. ŻMOJDA, P. MILUSKI, D. DOROSZ
18:10-18:30	<b>Broad-band polymers planar waveguide interferometer</b> K. GUT
<b>19:30</b>	<i>Festive Supper (Banquet)</i>
<b>28.02.2019 Thursday</b>	
<b>8:00</b>	<i>Breakfast</i>
<b>13:00</b>	<i>Dinner</i>

14:30-14:50	<i>Plenary Lecture:</i> <b>T2SLs InAs/GaSb and T2SLs InAs/InAsSb higher operating temperature detectors – where is the limit?</b> <u>P. MARTYNIUK</u> , K. HACKIEWICZ
14:50-15:10	<i>Plenary Lecture:</i> <b>Ultrasensitive detection of selected gases by infrared absorption spectroscopy</b> J. WOJTAS, Z. BIELECKI, T. STACEWICZ, J. MIKOŁAJCZYK, M. NOWAKOWSKI, B. PIETRZYK, D. SZABRA, A. PROKOPIUK, K. ACHTENBERG
15:10-15:30	<b>Silk fibroin thin films - biomaterial for optical humidity sensing</b> <u>M. PROCEK</u> , Z. OPILSKI, A. MARQUEZ MARQEDA, X. MUÑOZ-BERBEL, C. DOMINGUEZ HORNA
15:30-15:50	<i>Plenary Lecture:</i> <b>Objects tracking in virtual reality applications using SteamVR tracking system - selected issues</b> M. MACIEJEWSKI, M. PISZCZEK, <u>N. PAŁKA</u>
15:50-16:10	<b>Stability of information coding in the phase difference of radiation pulses in a fibre optic pulse interferometer</b> M. ŻYCZKOWSKI
16:10-16:30	<b>Identification of optical signatures for the augmented reality system</b> <u>T. PAŁYS</u> , A. ARCIUCH
<b>16:30-17:00</b>	<i>Coffee break</i>
17:00 – 17:30	<i>Plenary lecture:</i> <b>Vision sensor to measure liquid volume</b> <u>K. MURAWSKI</u> , M. MURAWSKA
17:30-17:50	<b>Determination of gas pressure with use of a camera and neural networks</b> <u>L. GRAD</u> , T. MALINOWSKI, K. MURAWSKI
17:50-18:10	<b>Evaluation of the impact of evolution strategy parameters on the optimization of the markers distribution on the VAD membrane</b> <u>T. MALINOWSKI</u> , L. GRAD, K. MURAWSKI
18:10-18:30	<b>Study on feature detection analysis used for designing hand-held retina vessels detection sensor</b> <u>P. A. BULER</u> , K. MURAWSKI
18:30-18:50	<b>Thrombogenicity assessment of biomaterials – do we need new methods?</b> M. GAWLIKOWSKI
<b>18:50</b>	<i>Closing ceremony</i>
<b>19:00</b>	<i>Supper</i>
<b>01.03.2019 Friday</b>	
<b>8:00</b>	<i>Breakfast</i>

## Poster presentations

### **Analysis of optical magnetic field sensor in wide range of wavelengths**

Kamil BARCZAK

### **Ellipsometric studies of antibody-functionalized sensors: estimation of surface coverage of diamond and gold electrodes**

Bartłomiej DEC, Michał RYCEWICZ, Robert BOGDANOWICZ

### **Luminescence properties in SGB glass fibers co-doped with Eu<sup>3+</sup>/Ag ions**

Karol CZAJKOWSKI, Jacek ŻMOJDA, Piotr MILUSKI,  
Marcin KOCHANOWICZ

### **Spectral characteristics of anion derivatives of the benzoic acid**

Lidia CZYZEWSKA, Małgorzata GIL, Paweł MERGO

### **Sensitivity of the graphene oxide under the influence of hydrogen**

Sabina DREWNIAK, Marcin PROCEK

### **Determination the optimal extrusion temperature PMMA optical fibers**

Malwina NIEDŹWIEDŹ, Małgorzata GIL, Mateusz GARGOL,  
Wiesław PODKOŚCIELNY, Paweł MERGO

### **Organic Thin Film Transistor based on conductive graft copolymer thin films as a gas sensor**

P. KAŁUŻYŃSKI, M. PROCEK, E. MACIAK, A. STOLARCZYK

### **Light-driven bending of the azo poly(amide imide) cantilevers**

Anna KOZANECKA-SZMIGIEL, Dariusz SZMIGIEL,  
Jolanta KONIECZKOWSKA, Ewa SCHAB-BALCERZAK

### **Set of the fiber optic rotational seismographs for mining activity monitoring**

Anna KURZYCH, Leszek R. JAROSZEWICZ, Zbigniew KRAJEWSKI,  
Jerzy K. KOWALSKI, Michał DUDEK

### **Growth and preliminary characterization of InAsSb photodiodes for mid-wave infrared range**

Kordian LIPSKI, Łukasz KUBISZYN, Krystian MICHALCZEWSKI  
Krzysztof MURAWSKI, Piotr MARTYNIUK

### **Investigation of room temperature optical gas sensing properties of chitosan/AuNPs blend nanostructures**

Erwin MACIAK

### **Singular-value decomposition model for partial polarizing optical fiber elements**

Paweł MARĆ, Karol STASIEWICZ, Joanna KOREC, Leszek R. JAROSZEWICZ

**Hybrid connection of functional materials and tapered optical fiber**

Joanna E. MOŚ, Karol A. STASIEWICZ, Leszek R. JAROSZEWICZ

**Temperature dependence of Raman scattering in nanometric films of GaS and SnS<sub>2</sub>**

Katarzyna OLKOWSKA, Cezariusz JASTRZEBSKI, Daniel J. JASTRZEBSKI  
Sławomir PODSIADŁO

**Sensor-based perimeter protection of hard-to-reach wetlands and rivers - conception of the system**

Norbert PAŁKA\*, Jarosław MŁYŃCZAK, Marek ŻYCZKOWSKI,  
Marek PISZCZEK, Mateusz KAROL, Marcin MACIEJEWSKI,  
Wiesław CIURAPIŃSKI, Marcin KOWALSKI, Artur GRUDZIEŃ,  
Michał WALCZAKOWSKI, Elżbieta CZERWIŃSKA,  
Piotr MARKOWSKI, Konrad BREWCZYŃSKI  
and Mieczysław SZUSTAKOWSKI

**A simulation tool to check correctness of optical signatures detection**

Artur ARCIUCH, Tomasz PAŁYS

**Zero- and ultra- low-field nuclear magnetic resonance with atomic magnetometer**

Kacper POPIOŁEK, Piotr PUT, Szymon PUSTELNY

**Theoretical studies on refractive index profile of nanostructured fibre**

Piotr PUCKO, Marcin FRANCZYK, Adam FILIPKOWSKI, Ryszard BUCZYŃSKI

**The hypothesis about the electrical non-neutrality of the Universe**

Tadeusz PUSTELNY

**Light guiding channels in polymer-supported liquid crystalline materials and structures**

Katarzyna RUTKOWSKA, Anna KOZANECKA-SZMIGIEL,  
Miłosz CHYCHŁOWSKI

**Tuning optical properties of fluorescent nanodiamonds: influence of solvent polarity and pH**

Mateusz FICEK, Michał RYCEWICZ, Maciek GŁOWACKI,  
Marcin MARZEJON, Katarzyna KARPIENKO, Mirosław SAWCZAK  
and Robert BOGDANOWICZ

**Design of an integrated optics sensor structure for haemoglobin property detection**

Przemysław STRUK

**An application of thulium doped fiber laser in wood cutting**

Sławomir SUJECKI, Monika ANISZEWSKA, Adam MACIAK,

Witold ZYCHOWICZ, Samir LAMRINI, Karsten SCHOLLE, Peter FUHRBERG

**Application of Evolutionary Algorithm to Optimization of DWDM networks**

Kacper WNUK, Sławomir SUJECKI, Stanisław KOZDROWSKI

**Application of Machine Learning Methods in provisioning of DWDM channels**

Piotr PAZIEWSKI, Sławomir SUJECKI, Stanisław KOZDROWSKI

**Integrated transceiver of free space optics**

Janusz MIKOŁAJCZYK, Dariusz SZABRA, Artur PROKOPIUK,  
Krzysztof ACHTENBERG, Jacek WOJTAS, Zbigniew BIELECKI

**Optical anisotropy of phosphorene flakes**

Aleksandra WIELOSZYŃSKA, Łukasz MACEWICZ, Paweł JAKOBCZYK,  
Robert BOGDANOWICZ

**Laser detection and tracking system for low-flying objects**

Marek ŻYCHKOWSKI, Piotr MARKOWSKI, Konrad BREWCZYŃSKI,  
Norbert PAŁKA, Jarosław MŁYŃCZAK, Marek PISZCZEK, Mateusz KAROL, Marcin  
MACIEJEWSKI, Wiesław CIURAPIŃSKI, Marcin KOWALSKI,  
Artur GRUDZIENI, Michał WALCZAKOWSKI, Elżbieta CZERWIŃSKA