

November 11th (Mon.)

Venue: TOGO-KINENKAN

10:10 **Opening**

[Complimentary Address]

Toyohiko Yatagai
(Honorary Director, Center for Optical Research for Education, Utsunomiya
University/Former President of SPIE)

Plenary Session

Chair: Yasuhiro Koike (Keio University)

10:25 01 **[Plenary] Integrated Photonics for Sensing, Interconnects and
Computing with Artificial Intelligence and Machine Learning Applications**

Ray T. Chen
(University of Texas, Austin)

11:00 02 **[Plenary] Internet Civilization and the Role of Optical Technology**

Jun Murai
(Keio University)

Session 1 Sensor

Chair: Yasuhiro Koike (Keio University)

11:35 03 **[Invited] Optical Fiber Bundles for Linear and Angular Displacement
Measurement**

Joseba Zubia¹, Gorka Zubia¹, Josu Amorebieta¹, Gotzon Aldabaldetrekua¹, Gaizka Durana¹
(1.University of the Basque Country)

11:55 04 **[Invited] Applications of Plastic Optical Fiber in Sensors for Oil & Gas,
Electric Power, and Biotechnology Sectors**

Marcelo Martins Werneck¹, Juan David Lopez Vargas¹, Paulo Henrique Silva Pinto¹,
Reegina Celia Silva Barros Allil¹
(1.Universidade Federal do Rio de Janeiro)

12:15 **Lunch (buffet style)**

at TOGO-KINENKAN on the 3rd floor “Juko” and 1st floor “Kagura”

Session 2 Sensor

Chair: Rainer Engelbrecht (POF AC)

13:30 05 **[Invited] Polymer Optical Fibre Sensing for Challenging Environments**

Patricia Scully¹, Jessica Hyde²
(1.University of Galway, 2.The University of Manchester)

13:50 06 **Evaluation of POF Functionalization for the Detection of Escherichia Coli
in Water Samples**

Stella Ricardo Santos¹, Priscilla Braga Antunes Bedor¹, Marco Antônio Lemos Miguel¹,
Regina Célia Silva Barros Allil¹, Marcelo Martins Werneck¹
(1.Federal University of Rio de Janeiro)

14:05	07	Motion Monitoring via Cross-Coupling Between Soft and Hard POF Using Deep Learning Jan Kallweit ¹ , Mark Pätzel ¹ , Fabian Köntges ¹ , Robert Kowal ² , Nadeem Shah ² , Thomas Gries ¹ (1.Institut für Textiltechnik of RWTH Aachen University, 2.Otto von Guericke University)
14:20	08	Femtosecond Laser Inscribed CYTOP Polymer Optical Fiber FBG Implants for Temperature Sensing of the Brain Kyriacos Kalli ¹ , Kunyang Sui ^{2,3} , Andreas Ioannou ¹ , Marcello Meneghetti ^{2,3} , Guanghui Li ³ , Rune W. Berg ³ , Christos Markos ² (1.Cyprus University of Technology, 2.Technical University of Denmark, 3.University of Copenhagen)
14:35	09	Needle-Sized Ultrafine Disposable Endoscope Using Graded-Index Plastic Optical Fiber Ikko Koike ¹ , Hiromasa Yamashita ³ , Kenta Muramoto ² , Masaya Nakamura ¹ , Yasuhiro Koike ² (1.Department of Orthopaedic Surgery, School of Medicine, Keio University, 2.Keio Photonics Research Institute, Keio University, 3.Air Water Inc.)
15:10		Social Program Japanese Garden Tour at TOGO-KINENKAN and Prayers at TOGO Jinja (shrine)
16:30		Poster Session at TOGO-KINENKAN on the 3rd floor “Juko”
18:00		Conference Dinner at TOGO-KINENKAN on the 4th floor “Tensho”

November 12th (Tue.)

Venue: Keio University Mita Campus North Bldg. ground floor

		Session “Welcome to Keio University”
		- Keio’s Initiatives for AI Technology – Chair: Tetsuya Toma (Keio University)
9:30	S-01	Welcome Address Masayuki Amagai (Vice President, Keio University)
9:35	S-02	[Guest talk] AI@Microsoft: Initiatives and Products Yukiko Shinozuka (Senior Product Manager, Microsoft AI)
9:50	S-03	Error-Free POF for Beyond 5G and AI Technology Yasuhiro Koike (Keio University)
10:05	S-04	Distributed Control Based on AI Technology Nobuyuki Yamasaki (Keio University)

Session 3 Datacom

Chair: Shingo Kawai (Tokyo Information Design Professional University)

10:20 10 [Invited] High-Speed Optical Transmission Technologies for In-Vehicle Networks

Atsushi Kanno
(Nagoya Institute of Technology)

10:40 11 [Invited] Demonstration of Throughput Improvement for 5G-NR mm-Wave Communication Inside Small Office by Analog Radio over Graded-Index Plastic Optical Fiber

Takamitsu Aiba¹, Tomohiro Wakabayashi¹
(1.YAZAKI Corporation)

11:00 Coffee break (20 min.)

Session 4 Sensor

Chair: Joseba Zubia (University of the Basque Country)

11:20 12 [Invited] Current Trends in POF-Based Distributed Brillouin Sensing

Yosuke Mizuno
(Yokohama National University)

11:40 13 [Invited] Field Test Results of a POF Sensor for Crack Detection in Blade Bearings of Wind Turbines

Rainer Engelbrecht¹, Michael Lubert¹, Juri Vinogradov¹, Moritz Hemmerlein², Mathias Pick², Olaf Ziemann¹
(1.Technische Hochschule Nuernberg Georg Simon Ohm, 2.eolotec GmbH)

12:00 14 Incoherent OFDR System for Distances up to 200 m SI-POF

Juri Vinogradov¹, Roman Kruglov¹, Olaf Ziemann¹, Rainer Engelbrecht¹
(1.Technische Hochschule Nuernberg Georg Simon Ohm)

12:15 15 Brillouin Frequency Shift Dependences on Strain and Temperature in POFs with Small Diameters

Shimbu Shirai¹, Seiga Ochi¹, Yuji Wada², Kentaro Nakamura², Toru Moriya³, Yugo Kaseda³, Takashi Shimizu³, Yosuke Mizuno¹
(1.Yokohama National University, 2.Tokyo Institute of Technology, 3.Nitto Denko Corporation)

12:30 16 Sensing Capabilities of Bragg Reflectors Inscribed in Polypropylene No-Core Waveguides

Ivan Chapalo¹, Vasilis Sarakatsianos¹, Eleni Grantzioti¹, Theodoros Manouras^{1,2}, Maria Vamvakaki^{1,2}, Maria Konstantaki¹, Stavros Pissadakis¹
(1.Foundation for Research and Technology - Hellas, 2.University of Crete)

12:45 Lunch

on your own

Session 5 Datacom

Chair: Manabu Kagami (Nagoya Institute of Technology)

- 14:15** **17** **[Invited] Small Core Gi-POF for Data Communications in OPTICALization**
Dexi Weng^{1,2}, Whitney White³, Qiurong Chen⁴, Mingqiang Wang⁶, Yoshiyuki Okamoto⁵
(1.Dexyan Poly Research Institute, 2.Comeall (Shanghai) Tech. Co., Ltd, 3.Chromis Technologies, 4.Applied Tech Institute, CAS, 5.New York University, 6.Zhejiang Megacore Chip Co., Ltd.)
- 14:35** **18** **Recent Advances in WDM-POF Links with Extended Capabilities**
David Sanchez Montero¹, Diego López-Salinas¹, Rubén Altuna¹, Javier Barco¹, Pedro Luis Carro², Carmen Vázquez García¹
(1.Universidad Carlos III de Madrid, 2.University of Zaragoza)
- 14:50** **19** **Ultra-Low Bit Error Rate Plastic Optical Fiber for High-Performance Data Centers and Generative AI**
Kenta Muramoto¹, Yasuhiro Koike¹
(1.Keio University)
- 15:05** **20** **Network-Transparent Decryption at the Edge and Management of Decryption Authority**
Yuri Sato¹, Takuma Fukui¹, Hiroaki Nishi¹
(1.Keio University)

15:20 **Coffee break (15 min.)**

Session 6 Transmission

Chair: Dexi Weng (Executive Director of Hangzhou FlexMI Technology Co., Ltd.)

- 15:35** **21** **[Invited] High-Power Optical Fiber Transmission Using Hollow-Core Fibers**
Motoharu Matsuura
(The University of Electro-Communications)
- 15:55** **22** **[Invited] Near-Infrared Optical Self-Coupling: Recent Progress and Future Challenges**
Okihiro Sugihara¹, Hidetaka Terasawa¹, Keisuke Kondo¹, Tsuyoshi Namekawa²
(1.Utsunomiya University, 2.Orbray Co., Ltd.)
- 16:15** **23** **Subcarrier-Multiplexing (SCM) LoRa-like Waveform Intermodulation in Analog Radio over SI-POF for Internet of Things**
Pedro Luis Carro¹, Maria Ángeles Losada¹, Paloma García-Dúcar¹, Antonio Valdovinos¹, Jesus de Mingo¹, Alicia López¹, Javier Mateo¹, Juan Antonio Casao¹, David Montero²
(1.University of Zaragoza, 2.Universidad Carlos III de Madrid)

16:30 **Exhibition & Poster**
at Keio Univ. North Bldg.

17:30 **Move to “Kojunsha” by chartered bus**

18:30 **Conference party**
at "Kojunsha Club" in Ginza

November 13th (Wed.)

Venue: Keio University Mita Campus North Bldg. ground floor

Session 7 Fiber

Chair: Josef Faller (Homefibre digital network gmbh)

- 9:30 24 **[Invited] Introduction of Toray Plastic Optical Fiber**
Masahiro Yoshioka
(Toray Industries, Inc.)
- 9:50 25 **[Invited] The Plastic Optical Fiber Cables with Environment Friendly Jacketing**
Koshi Okita¹, R. Nakahara¹
(1.Asahi Kasei Corp.)
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Session 8 Application

Chair: Marcelo Martins Werneck (Universidade Federal do Rio de Janeiro)

- 10:10 26 **POF Based Luminescent Solar Concentrators for Space Applications**
Jon Grandes¹, Eduardo Urrutia¹, Eneko Arrospide¹, María Asunción Illarramendi¹, Joseba Zubia¹
(1.University of the Basque Country (UPV/EHU))
- 10:25 27 **Online Transmission Response of Perfluorinated Polymer Fiber to Gamma Radiation: The Effects of Dose-Rate and Temperature**
Ivan Chapalo^{1,2}, Andrei Gusarov³, Karima Chah², Patrice Megret²
(1.Foundation for Research and Technology - Hellas, 2.University of Mons, 3.SCK-CEN)
- 10:40 28 **Comparative Study on Hydrogen Sulfide Sensor Using Plastic Optical Fiber Coated with Iron Oxide and Silver: Iron Oxide Nanoparticles**
Juan David Lopez Vargas^{1,2}, Regina Celia Allil², Marcelo Martins Werneck^{1,2}
(1.Nanotechnology Engineering Research Program, Federal University of Rio de Janeiro, 2.Electric Engineering Program – COPPE, Federal University of Rio de Janeiro)
- 10:55 29 **Polymer Fibre FBG Sensor Array for Lumbar Puncture Sensing**
Andreas Ioannou¹, Kyriacos Kalli¹
(1.Cyprus University of Technology)
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11:10 **Coffee break (15 min.)**

Session 9 Fiber & Material

Chair: Patricia Scully (University of Galway)

- 11:25 30 **[Invited] SI-POF Technology in Automotive Applications**
Yoshihiro Tsukamoto
(Mitsubishi Chemical Corporation)
- 11:45 31 **Synthesis of Temperature Resistant Fluoropolymers for GI-POF for OPTICALization**
Dexi Weng^{1,2,3}, Frank (Minfeng) Fang^{1,2,3}, Conroy (Chuanyou) Zhang², Bruno Ameduri⁴, Howard Chiang⁵, Yoshiyuki Okamoto⁵
(1.Dexyan Poly Research Institute, 2.Change (Zhejiang) Polyation Tech. Co., Ltd, 3.Comeall (Shanghai) Tech. Co., Ltd, 4.Institut Charles Gerhardt, University Montpellier, CNRS, 5.New York University)

- 12:00 32 Production and Evaluation of Melt-Spun PFAS-Free POF with Poly(4-methyl-1-pentene) as the Cladding Material**
Mark Pätzel¹, Jan Kallweit¹, Thomas Gries¹
(1.Institut für Textiltechnik of RWTH Aachen University)
- 12:15 33 Higher Order Optical Flow Model of Step-Index Plastic Optical Fibers**
Pedro Luis Carro¹, Maria Angeles Losada¹, Javier Mateo¹, Alicia López¹, Jesus de Mingo¹, Paloma García-Dúcar¹, Antonio Valdovinos¹, Juan Antonio Casao¹, Joseba Zubia²
(1.University of Zaragoza, 2.University of Basque Country)
- 12:30 34 ~~Withdrawn~~ Overcoming the Physical Constraints of Plastic Optical Fibers Through Neural Network Framework**
Jorge Orlando Guerrero Aguilar^{1,2}, Dwight Richards², Maria Angeles Losada³, Alicia Lopez³, Javier Mateo³, Neo Antoniadou², Nicholas Madamopoulos¹, Xin Jiang²
(1.The City College of New York, CUNY, 2.The College of Staten Island, CUNY, 3.University of Zaragoza)
Free time
for Exhibition & Poster

12:45 Lunch
on your own

Session 10 Datacom

Chair: Yoshihiro Tsukamoto (Mitsubishi Chemical Corporation)

- 14:15 35 [Invited] The Potential of POF in the Future of Wireless Systems**
Josef F. Faller¹, Michael Faller¹
(1.homefibre digital network gmbh)
- 14:35 36 [Invited] Development of Heat-Resistant GI Type Plastic Optical Fiber**
Kazuyoshi Kurashima
(AGC Inc.)
- 14:55 37 [Invited] Graded-Index Plastic Optical Fiber for High-Data Rate Transmission**
Yuichi Tsujita¹, Kazuya Takayama¹, Takashi Shimizu¹
(1.Nitto Denko Corporation)

15:15 Award Ceremony
Closing

Poster Presentation

Presentation Time: Nov. 11th, 16:30–18:00 (Venue: TOGO-KINENKAN, 3rd floor, “Juko”)

Exhibition and Poster Time: Nov. 12th, 16:30–17:30 (Venue: Keio University Mita Campus, North Bldg.)

P-01 Evaluation of Scattering Suppression Effects in Double-Cladding Birefringence-Reduced Core Polymer Optical Fiber

Yurika Kuga¹, Kimiteru Yamauchi, Yuki Ino, Shingo Sode, Rei Furukawa¹
(1.The University of Electro-Communications)

P-02 Performance of Commercially Available Fluorescent Plastic Optical Fibre Intended to be an “Optical Antenna”

Bettina Fanzeres Cordoniz Buckingham Maia¹, Ivan Landerson das Chagas Pinheiro¹, Ricardo Marques Ribeiro¹, Vinicius Nunes Henrique Silva¹
(1.Universidade Federal Fluminense)

P-03 All Solid Flexible Light-Induced Self-Written Optical Soldering Using Photocurable Gel Material

Hayato Kakurai¹, Hidetaka Terasawa¹, Keisuke Kondo¹, Okihiro Sugihara¹
(1.Utsunomiya University)

P-04 Fabrication of Light-Induced Self-Written Optical Waveguide Using 2 μm Laser Light

Mizuki Shiba¹, Yuta Sasaki¹, Hidetaka Terasawa¹, Keisuke Kondo¹, Okihiro Sugihara¹
(1.Utsunomiya University)

P-05 Helical Axis Orientation of Carbon Micro Coils Using Host Polymer Orientation

Nao Mochizuki¹, Yusuke Nakashima¹, Rei Furukawa¹
(1.The University of Electro-Communications)

P-06 In-Depth Analysis of POF-Based Twist Sensor Performance via Core-Offset-Free Modal Interference

Ryo Takano¹, Hamza Javid¹, Yosuke Mizuno^{1,2}
(1.Faculty of Engineering, Yokohama National University, 2.Institute for Multidisciplinary Science, Yokohama National University)

P-07 Touch Sensing Using FBG Inscribed in POF: Effect of Grating Number

Nonoka Kitamura¹, Hamza Javid¹, Shunsuke Watanabe², Heeyoung Lee³, Yosuke Mizuno^{1,4}
(1.Faculty of Engineering, Yokohama National University, 2.OXIDE Corporation, 3.Shibaura Institute of Technology, 4.Institute of Multidisciplinary Sciences, Yokohama National University)

P-08 Distributed Vibration Detection in POF Using High-Speed Brillouin Optical Correlation-Domain Reflectometry

Shuto Tsurugai¹, Seiga Ochi², Kohei Noda³, Yosuke Mizuno², Heeyoung Lee¹
(1.Shibaura Institute of Technology, 2.Yokohama National University, 3.The University of Tokyo)

P-09 Excitation of Axially Asymmetrical Modes in Plasma-Etched POF for High-Sensitivity Modal-Interference-Based Strain Sensing

Akihito Kato¹, Ryo Nakashima², Takuto Nakanishi², Daisuke Yamane², Yosuke Mizuno³, Heeyoung Lee¹
(1.Shibaura Institute of Technology, 2.Ritsumeikan University, 3.Yokohama National University)

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- P-10 Strategies for Improving Spatial Resolution in POF-Based Brillouin Optical Correlation-Domain Reflectometry**
Seiga Ochi¹, Keita Kikuchi², Shuto Tsurugai², Heeyoung Lee², Yosuke Mizuno^{1,3}
(1.Faculty of Engineering, Yokohama National University, 2.Shibaura Institute of Technology, 3.Institute of Multidisciplinary Sciences, Yokohama National University)
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- P-11 Machine-Learning Assisted Speckle-Based POF Sensor for Detecting Microvibrations**
David Sanchez Montero¹, Jesús Yaque¹, Rubén Altuna¹, Javier Barco¹, Joseba Zubía Zaballa², Carmen Vázquez¹
(1.Universidad Carlos III de Madrid, 2.University of the Basque Country)
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- P-12 Ribbon and Wide Fabric for Curing UV Adhesives Using Side-Emitting POF**
Mark Pätzel¹, Jan Kallweit¹, Robert Seewald², Alexander Schiebahn², Uwe Reisinger², Friederike Brackmann³, Florian Rackerseder³, Sarah Klein³, Martin Traub³, Alexander Olowinsky³, Thomas Gries¹
(1.Institut für Textiltechnik of RWTH Aachen University, 2.Welding and Joining Institute, RWTH Aachen University, 3.Fraunhofer Institute for Laser Technology ILT)
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- P-13 Spatial Data and Feed Light Divider Using a Silicon PV Cell for Power-Over-Fiber Systems**
Yu Miyakawa¹, Yuya Yaguchi¹, Shih-Chun Lin², Suresh Subramaniam³, Hiroshi Hasegawa⁴, Motoharu Matsuura¹
(1.The University of Electro-Communications, 2.North Carolina State University, 3.George Washington University, 4.Nagoya University)
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- P-14 Effects of the Dye Distribution on the Performance of Doped POFs as Solar Concentrators**
Jagoba Barata¹, María Asunción Illarramendi¹, Jon Arrue¹, Joseba Zubia¹
(1.The University of the Basque Country)
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- P-15 Knot Tenacity of POF as a Proxy for Weavability**
Jan Kallweit¹, Mark Pätzel¹, Fabian Köntges¹, Frederik Traue¹, Thomas Gries¹
(1.Institut für Textiltechnik of RWTH Aachen University)
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- P-16 Mode Stabilization Analysis of Refractive Index Distribution-Controlled Terpolymer Optical Fibers**
Hikaru Sato¹, Kimiteru Yamauchi, Rei Furukawa¹,
(1.The University of Electro-Communications)
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- P-17 Polarization Control of Graded-Index Plastic Optical Fiber Links for Improving Data Transmission Quality**
Shizuki Sasaki¹, Kenta Muramoto¹, Yasuhiro Koike¹
(1.Keio University)
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- P-18 Simulation for Multimode Fiber- Waveguide Coupling Based on Near Field and Far Field Pattern**
Ziqiao Ni¹, Okihito Sugihara¹
(1.Utsunomiya University)
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P-19 Communication Error Measurement System to Design High-Efficient Codec for Error-Free POF

Kohei Wada¹, Takero Magara², Nobuyuki Yamasaki², Kenta Muramoto³, Yasuhiro Koike³
(1.Faculty of Science and Technology, Keio University, 2.Graduate School of Science and Technology, Keio University, 3.Keio Photonics Research Institute, Keio University)

P-20 200 m Gigabit POF Link Based on 520 nm Laser Diode and PAM Media Converter

Juri Vinogradov¹, Roman Kruglov¹, Ulrich Wetzel², Rainer Engelbrecht¹, Olaf Ziemann¹
(1.Technische Hochschule Nuernberg Georg Simon Ohm, POF-AC, 2.Siemens AG, Digital Industries Motion Control Innovation Center for applied Power Electronics)

P-21 Plastic Optical Fiber-Based Wiring Solution for Automotive Power Electronics Systems

Gaizka Durana¹, Edorta Ibarra², Iñigo Kortabarria², Asier Matallana², Gotzon Aldabaldetrekua¹
(1.Department of Communications Engineering, Engineering School of Bilbao / University of the Basque Country, 2.Department of Electronics Technology, Engineering School of Bilbao / University of the Basque Country)

P-22 Performance Comparison of Simple Manual Facet Finishing Techniques for POFs

Masashi Eguchi¹, Akaru Okazaki¹, Kotaro Takahashi¹, Kimio Oguchi²
(1.Chitose Institute of Science and Technology, 2.National Taiwan University of Science and Technology)

P-23 An Optoelectronic Oscillator Based on Plastic Optical Fibre for Didactic Purpose

Vitor Tavares Ferreira¹, José Roberto Moraes de Andrade¹, Vanessa Przybylski Ribeiro Magri¹, Alexandre Castro De Toledo Santos¹, Vinicius Nunes Henrique Silva¹, Ricardo Marques Ribeiro¹
(1.Universidade Federal Fluminense)

P-24 Optically Powered Antenna Module Without Electrical Power Amplifiers

Yuki Gomi¹, Souya Sugiura¹, Motoharu Matsuura^{1,2}
(1.The University of Electro-Communications, 2.Keio University)
