

# ADVANCE PROGRAM

# OWPT2019



## The 1st Optical Wireless and Fiber Power Transmission Conference

**April 23 (Tue.) - 25 (Thu.), 2019**

**PACIFICO Yokohama, Japan**

<https://owpt.opicon.jp/>

***Sponsored by***

*Optical Wireless Power Transmission Committee,  
The Laser Society of Japan*

***In cooperation with***

- Study Group of Optical Wireless Power Transmission
- IEEJ High Power Light Source and Applied System Survey Committee
- JSPS The 125th Com. on Mutual Conversion between Light and Electricity
- JSPS The 130th Com. on Optoelectronics
- JSPS The 175th Com. on Innovative Photovoltaic Power Generating Systems
- IEICE Technical Committee on Lasers and Quantum Electronics
- JSAP Microoptics Group
- JSAP Photonics Division



OWPT2019 will be held as one of conferences of the  
OPTICS & PHOTONICS International Congress 2019  
(OPIC2019).

**Early Registration: On/Before 8 April, 2019**

## INTRODUCTION

Optical Wireless and Fiber Power Transmission Conference (OWPT) is an international conference on optical wireless power transmission, optical fiber power transmission, and related technologies. The 1st Optical Wireless and Fiber Power Transmission Conference (OWPT2019) will be held on April 23 (Tue.) - 25 (Thu.), 2019 in Yokohama, Japan, at PACIFICO Yokohama as one of conferences of the OPTICS & PHOTONICS International Congress 2019 (OPIC2019). The OWPT2019 is intended to provide a central forum for the update and review of scientific and technical information on optical wireless power transmission and optical fiber power transmission covering a wide range of fields from fundamental research to systems and applications. The conference is sponsored by Optical Wireless Power Transmission Committee, The Laser Society of Japan in cooperation with several academic societies and associations.

## PLENARY TALKS

**H. Helmers**                      **Fraunhofer ISE**

“Highly efficient III-V based photovoltaic laser power converter”  
*OWPT-1-01, Tuesday, 23 April, 13:40-14:20, room 416+417*

**O. Alpert**                         **Wi-Charge Ltd.**

“Long-range wireless power delivery by infrared light beam –  
New applications for homes, offices, factories and public spaces”

*OWPT-1-02, Tuesday, 23 April, 14:20-15:00, room 416+417*

## SPECIAL TALKS

**N. Shinohara**                    **Kyoto Univ.**

“Advanced microwave wireless power transmission technology and its prospects”

*OWPT-4-01, Wednesday, 24 April, 10:45-11:15, room 416+417*

**K. Ueda**                            **Univ. Electro-Communications**

“Zero-emission-energy power feeding system to electric vehicle from solar power station in Tokyo Metro area”

*OWPT-6-01, Thursday, 25 April, 9:00-9:30, room 416+417*

## INVITED TALKS

**T. Umezawa**                    **NICT**

“100 GHz optical-to-radio converter module adopting power over fiber transmission”

*OWPT-2-01, Tuesday, 23 April, 15:30-16:00, room 416+417*

**S. Fafard**

**Broadcom Inc.**

“Ultrahigh efficiency optical power converters based on the Vertical Epitaxial HeteroStructure Architecture (VEHSA) design”

*OWPT-3-01, Wednesday, 24 April, 9:00-9:30, room 416+417*

**M. Matsuura**

**Univ. Electro-Communications**

“Over 100W power-over-fiber for remote antenna units”

*OWPT-5-01, Wednesday, 24 April, 15:15-15:45, room 416+417*

**T. Shimada and N. Yoshimoto**

**Trimatiz Ltd.**

“Aqua Local Area Network (ALAN)”

*OWPT-6-02, Thursday, 25 April, 9:30-10:00, room 416+417*

**M. Perales**

**MH GoPower Company Ltd.**

“Low cost laser power beaming and power over fiber systems”

*OWPT-7-01, Thursday, 25 April, 10:45-11:15, room 416+417*

**T. Tokuda**

**NAIST**

“1mm<sup>3</sup>-sized optogenetic stimulator with CMOS-integrated optical power receiver”

*OWPT-8-01, Thursday, 25 April, 13:15-13:45, room 416+417*

**T. Motohiro**

**Nagoya Univ.**

“Development of compact solar-pumped laser systems and their application to transport of solar energy for photovoltaics”

*OWPT-9-01, Thursday, 25 April, 15:15-15:45, room 416+417*

## **SCOPE**

Optical wireless and fiber power transmission conference covers optical power transmission technologies and its related subjects as shown in the following fields;

### **A. Device and components**

Light sources, Solar cells / photovoltaic power converters, Optical components, Lens systems, Modules, Theory, Design, Material, and Fabrication process etc.

### **B. Systems and subsystems**

Optical wireless / fiber power transmission, Non-optical wireless power transmission, Communication for optical power transmission, and Safety system etc.

### **C. Applications**

IoT, Automotive and vehicles, Drone, Robot, Medical implantable, Consumer / industrial equipment, Under water, Harsh environment, and Space solar power system etc.

### **D. Others**

Standardization, Regulations, and Novel / emerging topic related to the OWPT conference.

## ORAL PRESENTATION

Oral session is to be held in room 416/417 of PACIFICO Yokohama. The presentation time (including discussion) will be 40 minutes for plenary talks, 30 minutes for special talks, 30 minutes for invited talks, 15 minutes for regular papers. All the speakers are requested to present the paper with a data projector. Prior to the starting time of the session, the speakers are asked to contact the session chairs and to confirm the connection between their computer and the projector.

## POSTER SESSION

Poster session will be held in 13:15-14:45 of Wednesday, 24 April. All poster session of OPIC including OWPT will be held in a part of exhibition hall A/B of PACIFICO Yokohama, which is different building from that of oral session.

Each author is requested to display materials on a W90cm x H210cm bulletin board. Presenters should display the paper title, authors and affiliations on their poster.

Set-up: 12:45-13:15 / Tear-down: no later than 15:15

## PAPER AWARDS

Some excellent contributed papers will be awarded the Paper Award and some excellent papers presented by students will be awarded the Student Paper Award.

## REGISTRATION

In OPTICS & PHOTONICS International Congress 2019 (OPIC2019), fourteen international conferences are going to be held simultaneously. By registering for OWPT2019, you can participate in all international conferences, but abstract of other conferences are not included. Please register from following OPIC web.

<https://opicon.jp/registration/online>

## Registration Fees

	<b>Before/On Apr. 8, 2019</b>	<b>After Apr. 8, 2019</b>
<b>Member*</b>	JPY 55,000	JPY 60,000
<b>Non-member</b>	JPY 65,000	JPY 70,000
<b>Student, Retiree Member*</b>	JPY 18,000	JPY 21,000
<b>Student, Retiree Non-member</b>	JPY 21,000	JPY 23,000

\*Member of specialized International Conference Organizations shown in web; <https://opicon.jp/about/organization/organized-by>

## HOTEL ACCOMMODATION

Please visit following OPIC web.

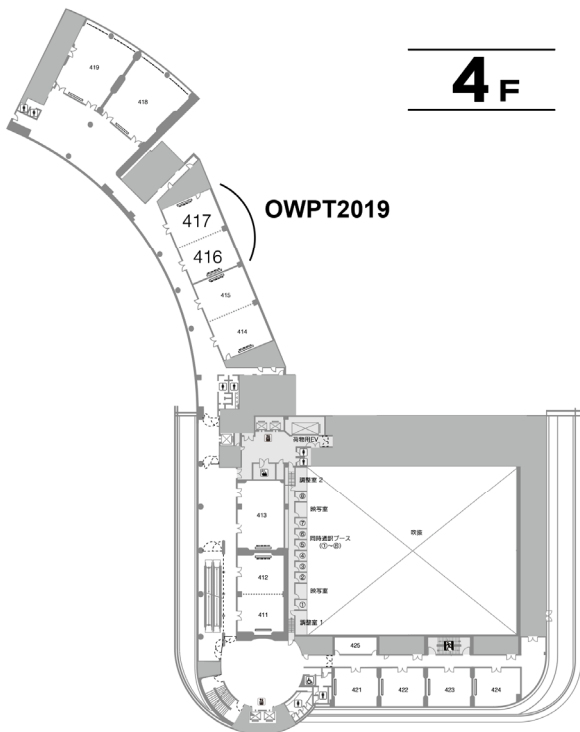
<https://opicon.jp/travel>

## CONFERENCE VENUE

The OWPT2019 takes place at PACIFICO Yokohama, Yokohama city, Kanagawa prefecture, JAPAN. Yokohama city, the center of Kanagawa prefecture is located south of Tokyo. PACIFICO Yokohama is conveniently located about 40 min. by Limousine Bus from Haneda Airport and 90 min. from Narita Airport.

### PACIFICO Yokohama

1-1-1 Minato Mirai, Nishi-ku, Yokohama 220-0012, Japan  
<http://www.pacifico.co.jp/english/index.html>



## EXHIBITION

OPTICS & PHOTONICS International Exhibition (OPIE'19) will be held simultaneously on April 24 (Wed) - 26 (Fri), 2019 at exhibition hall of PACIFICO Yokohama. The detail is shown in following OPIE web.

<https://www.opie.jp/en/>

## CONTACT

Tomoyuki Miyamoto,  
OWPT2019 Conference co-chair  
FIRST, IIR, Tokyo Institute of Technology  
4259 Nagatsuta, Midori-ku, Yokohama 226-8503, Japan  
Email: [tmiyamot@pi.titech.ac.jp](mailto:tmiyamot@pi.titech.ac.jp)

# OWPT2019 COMMITTEE MEMBERS



Miyamoto



Yokouchi



Hirota



Maruyama

## Organizing Committee

### Conference Co-chairs

- T. Miyamoto (Tokyo Tech)  
N. Yokouchi (American Furukawa Inc.)

### Members

- M. Hirota (Kyushu Univ.)  
T. Maruyama (Kanazawa Univ.)  
M. Arai (Univ. of Miyazaki)  
T. Kageyama (QD Laser, Inc.)  
M. Matsuura (Univ. Electro-Communications)  
S. Miyajima (Tokyo Tech)  
N. Mori (Yamashita Denso. Corp.)  
K. Nakada (Tokyo Tech)  
S. Shimizu (Yamashita Denso Corp.)  
T. Tayagaki (AIST)  
S. Uchida (Chiba Inst. Tech.)  
Y. Ushida (Toyoda Gosei)

## Program Committee

### Co-chairs

- M. Hirota (Kyushu Univ.)  
T. Maruyama (Kanazawa Univ.)

### Members

- M. Arai (Univ. of Miyazaki)  
G. Hatakoshi (Waseda Univ.)  
K. Ikeda (CRIEPI)  
A. Ishibashi (Hokkaido Univ.)  
T. Kageyama (QD Laser, Inc.)  
M. Matsuura (Univ. Electro-Communications)  
S. Miyajima (Tokyo Tech)  
N. Mori (Yamashita Denso. Corp.)  
K. Ogawa (Japan Women's Univ.)  
T. Saito (Tohoku Inst. Tech.)  
K. Tadatomo (Yamaguchi Univ.)  
T. Takagi (Samsung R&D Inst. Japan)  
T. Takeuchi (Meijo Univ.)  
T. Tayagaki (AIST)  
Y. Tohmori (Tsurugi-Photonics Foundation)  
Y. Ushida (Toyoda Gosei)  
S. Uchida (Chiba Inst. Tech.)  
H. Yamada (Tohoku Univ.)  
T. Yamaguchi (Kogakuin Univ.)  
K. Yokomori (NPEO)

# Technical Sessions

Tuesday, 23 April

Room 416+417 (4F)

## 13:30-13:40 Opening Remarks

Conference Co-chairs:

T. Miyamoto, *Tokyo Institute of Technology*  
N. Yokouchi, *American Furukawa Inc.*

## 13:40-15:00 Session: OWPT Plenary

Chairs: T. Miyamoto, *Tokyo Institute of Technology*  
N. Yokouchi, *American Furukawa Inc.*

### OWPT Highly efficient III-V based photovoltaic laser power -1-01 converters (Plenary)

13:40 H. Helmers, O. Höhn, D. Lackner, E. López, L. Ruiz-Preciado, M. Schauerte, G. Siefer, F. Dimroth, and A. W. Bett, *Fraunhofer ISE*

### OWPT Long-range wireless power delivery by infrared light -1-02 beam - New applications for homes, offices, factories and public spaces (Plenary)

14:20 O. Alpert, *Wi-Charge LTD.*

Break (15:00-15:30)

## 15:30-17:00 Session: Devices and Components 1

Chairs: M. Arai, *Univ. of Miyazaki*  
Y. Ushida, *Toyoda Gosei*

### OWPT 100GHz optical-to-radio converter module adopting -2-01 power over fiber transmission (Invited)

15:30 T. Umezawa and N. Yamamoto, *National Institute of Information and Communications Technology (NICT)*

### OWPT GaAs multi-junction photovoltaic power converters at -2-02 AZUR SPACE: current status and development activities

16:00 G. Keller, D. Fuhrmann, T. Wierzkowski, A.-K. Volk, C. Wächter, and V. Khorenko, *AZUR SPACE Solar Power GmbH*

### OWPT High power and high efficiency 9xx-nm broad area laser -2-03 diode

16:15 R. Nogawa<sup>1</sup>, Y. Kaifuchi<sup>1</sup>, Y. Yamagata<sup>1</sup>, K. Yoshida<sup>1</sup>, Y. Yamada<sup>2</sup>, and M. Yamaguchi<sup>1</sup>, *1.Fujikura Ltd., 2.Optoenergy Inc.*

### OWPT Laser power converters for eye-safe optical power -2-04 delivery at 1550nm: Physical characteristics and thermal behavior

16:30 S. J. Sweeney, S. D. Jarvis, and J. Mukherjee, *University of Surrey*

### OWPT Progress towards Vertically Stacked InAlGaAs -2-05 Photovoltaic Power Converters for Fiber Power Transmission at 1310 nm

16:45 M. M Wilkins<sup>1</sup>, M. N. Beattie<sup>1</sup>, D. Xia<sup>1</sup>, M. C. Tam<sup>2</sup>, M. Zamiri<sup>1</sup>, C. E. Valdivia<sup>1</sup>, S. Fafard<sup>3</sup>, D. P. Masson<sup>3</sup>, J. J. Krich<sup>1</sup>, Z. R. Wasilewski<sup>2</sup>, and K. Hinzer<sup>1</sup>, *1.University of Ottawa, 2.University of Waterloo, 3.Broadcom Semiconductors ULC*

# Technical Sessions

Wednesday, 24 April

Room 416+417 (4F)

## 9:00-10:15 Session: Devices and Components 2

Chairs: S. Uchida, *Chiba Inst. Tech.*  
T. Kageyama, *QD Laser, Inc.*

### OWPT Ultrahigh efficiency optical power converters based on -3-01 the Vertical Epitaxial HeteroStructure Architecture 9:00 (VEHSA) design (Invited)

S. Fafard, *Broadcom*

### OWPT Photovoltaic properties of triple-junction GaAs solar -3-02 cells and their application to laser power converters

9:30 T. Nakamoto<sup>1,2</sup>, K. Makita<sup>2</sup>, T. Tayagaki<sup>2</sup>, Y. Okano<sup>1</sup>, and T. Sugaya<sup>2</sup>, *1.Tokyo City University, 2.National Institute of Advanced Industrial Science and Technology (AIST)*

### OWPT MOVPE growth of InAlGaP based materials for short -3-03 wavelength range optical wireless power receiving 9:45 devices

M. Arai, S. Tsuboyama, K. Hiwada, D. Horita, R. Wakaki, and K. Maeda, *University of Miyazaki*

### OWPT Wide bandgap perovskite solar cells for OWPT -3-04 applications

10:00 R. Ishikawa<sup>1</sup>, T. Kato<sup>1</sup>, K. Yamamoto<sup>1</sup>, R. Anzo<sup>1</sup>, M. Nagatake<sup>1</sup>, N. Tsuboi<sup>1</sup>, and S. Miyajima<sup>2</sup>, *1.Niigata University, 2.Tokyo Institute of Technology*

Break (10:15-10:45)

## 10:45-11:45 Session: System and Subsystem 1

Chairs: K. Ogawa, *Japan Women's Univ.*  
T. Yamaguchi, *Kogakuin Univ.*

### OWPT Advanced microwave wireless-power-transmission -4-01 technology and its prospects (Special)

10:45 N. Shinohara, *Kyoto University*

### OWPT Design of projection system for optical wireless power -4-02 transmission using multiple laser light sources, fly-eye 11:15 lenses, and zoom lens

Nobuyoshi Mori, *Yamashita Denso Corporation*

### OWPT 5 W optical power link with generic voltage output and -4-03 modulated data signal

11:30 M. Haid, C. Armbruster, D. Derix, C. Schöner, and H. Helmers, *Fraunhofer Institute for Solar Energy Systems ISE*

Lunch Break (11:45-13:15)

Exhibition Hall A/B

## 13:15-14:45 Poster Session

### OWPT Optical wireless power transmission technology using 2- -P-01 junction solar cell and 2 lasers

F. Tanaka<sup>1</sup>, T. Suzuki<sup>1</sup>, N. Takahashi<sup>1</sup>, M. Ito<sup>1</sup>, Y. Komuro<sup>1</sup>, P. Dai<sup>2</sup>, S. Lu<sup>2</sup>, and S. Uchida<sup>1</sup>, *1.Chiba Institute of Technology, 2.Suzhou Institute of Nano-tech and Nano-bionics*



- OWPT Dependence of laser beam irradiation area on photoelectric conversion efficiency of InGaP solar cell**  
**-P-02** Y. Komuro, F. Tanaka, M. Ito, and S. Uchida, *Chiba Institute of Technology*
- OWPT CsPbBr<sub>3</sub> photovoltaic devices for blue laser power converter**  
**-P-03** A. Murata, T. Nishimura, and S. Miyajima, *Tokyo Institute of Technology*
- OWPT Towards a planer photon-harvesting waveguide having discrete translational symmetry with open core geometry**  
**-P-04** A. Ishibashi, Y. Oukura, and N. Sawamura, *Hokkaido University*
- OWPT Wireless power transmission with near-infrared LEDs**  
**-P-05** H. Yamada, C. Liu, and N. Uchiyama, *Tohoku University*
- OWPT Device simulation of CsPbBr<sub>3</sub> photovoltaic power converter**  
**-P-06** S. Miyajima and T. Nishimura, *Tokyo Institute of Technology*
- OWPT Experimental verification on spectral dependence of photovoltaic cell conversion efficiency for monochromatic radiation**  
**-P-07** T. Saito and M. Takesawa, *Tohoku Institute of Technology*
- OWPT CdS/ZnTe and ZnS/ZnTe photodiodes fabricated by close-spaced sublimation for receiver of optical wireless power transfer**  
**-P-08** M. Taki, S. Okamoto, N. Aso, and T. Okamoto, *Kisarazu National College of Technology*
- OWPT Relative phase noise evaluation of power-over-fiber in multimode fibers**  
**-P-09** A. Ikukawa, H. Kuboki, and M. Matsuura, *University of Electro-Communications*
- OWPT Beam control using liquid lens for optical wireless power transmission system**  
**-P-10** Y. Toyama and T. Miyamoto, *Tokyo Institute of Technology*
- OWPT Active recognition of position and size of solar cell for OWPT**  
**-P-11** K. Takahashi and T. Miyamoto, *Tokyo Institute of Technology*
- OWPT Prototype optical wireless power transmission system using blue LD as light source and LED as photovoltaic receiver**  
**-P-12** H. Hirukawa<sup>1</sup>, T. Ymaguchi<sup>1</sup>, Y. Ushida<sup>2</sup>, T. Onuma<sup>1</sup>, and T. Honda<sup>1</sup>, *1.Kogakuin University, 2.Nagoya University*
- OWPT Fundamental study on reduction of receiving intensity loss through atmospheric turbulence using LG beam and adaptive optics**  
**-P-13** M. Tatsutomi and K. Ogawa, *Japan Women's University*
- OWPT Evaluation of frequency response of photovoltaic power converter for controlling supply power via power-over-fiber systems**  
**-P-14** H. Nomoto, D. Kamiyama, N. Tajima, T. Okada, and M. Matsuura, *University of Electro-Communications*
- OWPT Cover configuration of solar cells for enhancing appearance design of OWPT**  
**-P-15** Y. Liu and T. Miyamoto, *Tokyo Institute of Technology*
- OWPT (No Show) Model on laser power beaming for an aerostat**  
**-P-16** ~~C. W. Wu, *Chinese Academy of Sciences*~~
- OWPT Investigation of optical wireless power transmission from air to underwater considering influence of waves**  
**-P-17** J. Li and T. Miyamoto, *Tokyo Institute of Technology*

**OWPT Numerical analysis of optical wireless power  
-P-18 transmission efficiency at low temperature**

H. Kohara and T. Miyamoto, *Tokyo Institute of Technology*

**OWPT Efficiency measurements & comparisons in power  
-P-19 beaming**

T. Nugent, *PowerLight Technologies*

**OWPT Numerical analysis of power generation characteristics  
-P-20 in beam direction control of optical wireless power  
transmission**

J. Tang, K. Matsunaga, and T. Miyamoto, *Tokyo Institute of Technology*

**OWPT 1.55  $\mu\text{m}$  waveband optically pumped VECSEL for laser  
-P-21 power beaming applications**

G. Suruceanu<sup>1</sup>, K. Nechay<sup>3</sup>, A. Mereuta<sup>2</sup>, A. Caliman<sup>1</sup>, N. Malpiece<sup>1</sup>, M. Naamoun<sup>1</sup>, P. Gallo<sup>1</sup>, M. Guina<sup>3</sup>, and E. Kapon<sup>2</sup>, *1.LakeDiamond SA, 2.École Polytechnique Fédérale de Lausanne, 3.Tampere University of Technology*

**Break (14:45-15:15)**

**Room 416+417 (4F)**

**15:15-17:00 Session: System and Subsystem 2**

Chairs: S. Miyajima, *Tokyo Tech*  
A. Ishibashi, *Hokkaido Univ.*

**OWPT Over 100-W power-over-fiber for remote antenna units  
-5-01 (Invited)**

15:15 M. Matsuura, *University of Electro-Communications*

**OWPT Laser beam focusing improvement for wireless power  
-5-02 transmission through the scattering atmosphere using  
15:45 adaptive optics**

I. Galaktionov<sup>1,2</sup>, J. Sheldakova<sup>1,2</sup>, A. Kudryashov<sup>1,2,3</sup>, and A. Nikitin<sup>1</sup>, *1.Institute of geosphere dynamics RAS, 2.AKA Optics SAS, 3.Moscow Polytech*

**OWPT Automatic active safety subsystem for laser power  
-5-03 beaming**

16:00 T. Nugent<sup>1</sup>, T. Arends, T. Griebing<sup>2</sup>, A. Hay<sup>3</sup>, and T. J. Sayles<sup>1</sup>, *1.PowerLight Technologies, 2.Tinman Corp., 3.Photon Manufacturing*

**OWPT Challenges in receiver design for free-space optical  
-5-04 power transfer**

16:15 P. P. Jenkins<sup>1</sup>, D. A. Scheiman<sup>1</sup>, R. Hoheisel<sup>2</sup>, J. R. Lorentzen<sup>1</sup>, R. P. Fischer<sup>1</sup>, D. T. Wayne<sup>3</sup>, B. E. Lynn<sup>3</sup>, C. M. Pogue<sup>3</sup>, and P. Jaffe<sup>1</sup>, *1.Naval Research Lab, 2.George Washington University, 3.SPAWAR Systems Center Pacific*

**OWPT Experimental characterization of uniform beam  
-5-05 irradiation using fly-eye lens for high efficiency optical  
16:30 wireless power transmission**

Y. Katsuta and T. Miyamoto, *Tokyo Institute of Technology*

**OWPT LED-based high power optical wireless power  
-5-06 transmission for compact IoT**

16:45 Y. Zhou and T. Miyamoto, *Tokyo Institute of Technology*

**InterContinental Ballroom, 3F**

**InterContinental Yokohama Grand**

**18:00-20:00 OPIC Reception (Free for OPIC2019 attendees.)**

# Technical Sessions

Thursday, 25 April

Room 416+417 (4F)

**9:00-10:15 Session: Applications and Related Technologies 1**

Chairs: H. Yamada, *Tohoku Univ.*  
T. Saito, *Tohoku Inst. Tech.*

**OWPT -6-01 Zero-emission-energy power feeding system to electric vehicle from solar (Special)**

9:00 K. Ueda, *University of Electro-Communications*

**OWPT -6-02 Aqua Local Area Network (ALAN) (Invited)**

9:30 T. Shimada<sup>1,2</sup> and Naoto Yoshimoto<sup>1,2,3</sup>, *1.ALAN consortium, 2.Trimatiz Ltd, 3.Chitose Institute of Science and Technology*

**OWPT -6-03 Object recognition and beam steering system for optical wireless power transmission to moving object**

10:00 H. Kato, H. Adinanta, A. W. S. Putra, and T Maruyama, *Kanazawa University*

Break (10:15-10:45)

**10:45-11:45 Session: Applications and Related Technologies 2**

Chairs: K. Ikeda, *CRIEPI*  
N. Mori, *Yamashita Denso. Corp.*

**OWPT -7-01 Low Cost Laser Power Beaming and Power over Fiber Systems (Invited)**

10:45 M.Perales, M.-H. Yang, and J. Wu, *GoPower Company Limited*

**OWPT -7-02 Condition monitoring of wind turbine rotor blades using optically powered sensors**

11:15 C. Klamouris<sup>1</sup>, K. Worms<sup>1</sup>, F. Wegh<sup>2</sup>, J. Leuthold<sup>3</sup>, and W. Stork<sup>4</sup>, *1.Fibergy GmbH, 2.Hasa-Computer-Elektronik GmbH, 3.Swiss Federal Institute of Technology (ETH), 4.Karlsruhe Institute of Technology (KIT)*

~~**OWPT -7-03 (Cancel) Performance and analysis of power beaming system under different weather conditions on 1350 m urban horizontal atmospheric path**~~

~~11:30 V. Kapranov<sup>1,2</sup>, *1.LLC OET, 2.S.P. Korolev Rocket and Space Corporation «Energia»*~~

Lunch Break (11:45-13:15)

**13:15-14:45 Session: Applications and Related Technologies 3**

Chairs: M. Matsuura, *Univ. Electro-Communications*  
T. Takeuchi, *Meijo Univ.*

**OWPT -8-01 1mm<sup>3</sup>-sized optogenetic stimulator with CMOS-integrated optical power receiver (Invited)**

13:15 T. Tokuda, M. Haruta, K. Sasagawa, and J. Ohta, *Nara Institute of Science and Technology*

**OWPT -8-02 Development of 100mW class microwave amplifier using optical fiber power transmission for remote antenna system using optical fiber**

13:45 K. Ikeda, *Central Research Institute of Electric Power Industry (CRIEPI)*

**OWPT Optical wireless power transmission through water**

**-8-03** A. W. S. Putra<sup>1</sup>, T. Yoshida<sup>2</sup>, H. Adinanta<sup>1,3</sup>, H. Kato<sup>1</sup>, and T. Maruyama<sup>1</sup>, *1.Kanazawa University, 2.Kanazawa University, 3. Indonesian Institute of Sciences (LIPI)*

**OWPT Wireless power transmission using 980nm laser beam**

**-8-04** H. Yamada, J. Zhou, and C. Liu, *Tohoku University*

**OWPT Inverse pulse position modulation scheme for underwater visible light simultaneous wireless information and power transfer**

**-8-05** Y. Kozawa<sup>1</sup>, R. Kimoto<sup>2</sup>, and Y. Umeda<sup>2</sup>, *1.Ibaraki University, 2.Tokyo University of Science*

**Break (14:45-15:15)****15:15-16:45 Session: System and Subsystem 3**

Chairs: M. Hirota, *Kyushu University*  
T. Maruyama, *Kanazawa University*

**OWPT Development of compact solar-pumped laser systems and their application to transport of solar energy for photovoltaics (Invited)**

**-9-01** T. Motohiro<sup>1</sup>, Y. Takeda<sup>2</sup>, H. Ito<sup>1</sup>, K. Hasegawa<sup>2</sup>, A. Ikeshue<sup>1</sup>, T. Ichikawa<sup>2</sup>, K. Higuchi<sup>3</sup>, A. Ichiki<sup>1</sup>, S. Mizuno<sup>2</sup>, T. Ito<sup>2</sup>, and N. Yamada<sup>2</sup>, *1.Nagoya University, 2.Toyota Central R&D Labs., Inc., 3.Nagoya Institute of Technology*

**OWPT Performance analysis of photovoltaic arrays for remote power beaming through the atmosphere**

**-9-02** 15:45 Y. Masui<sup>1</sup>, D. Bricker<sup>1</sup>, M. A. Vorontsov<sup>2,1</sup>, and T. Weyrauch<sup>2</sup>, *1.II-VI Optical Systems, 2.University of Dayton*

**OWPT (No Show) Wireless power systems derived from NASA's power beaming contest**

**-9-03** 16:00 B. Murray, *Lighthouse Dev LLC*

**OWPT Optical wireless power transmission with in-system boost converter using pulse-modulated laser light**

**-9-04** 16:15 Koji Kotani, *Akita Prefectural University*

**OWPT Payload portability of power-over-fiber drone for airborne base stations**

**-9-05** 16:30 R. Yazawa, D. Kamiyama, and M. Matsuura, *University of Electro-Communications*

**16:45-17:00 Award Ceremony and Closing Remarks**

Program Co-chairs:  
M. Hirota, *Kyushu University*  
T. Maruyama, *Kanazawa University*

**OPIC Plenary Session**

Tuesday, 23 April, 9:00-12:00, room 501+502

**Ursula Keller** (ETH Zurich), "Recent advances in SESAM-modelocked high-power thin disk lasers"

**Ruxin Li** (Chinese Academy of Sciences), "The 10PW and 100PW lasers: paving the way for exploring the next frontier of high field physics"

**Mike Dunne** (Stanford University), "A billion times brighter': An overview of the revolution underway in X-ray science"

**Yoshihisa Yamamoto** (JST), "Quantum Neural Network - Coherent Ising Machine, XY Machine and Recurrent Neural Network"