LSSE6-2 11:00-11:30 **Solar-Driven Photochemical and Electrochemical Energy Generation** INVITED

J.W. Ager[1,2,3]

[1] Joint Center for Artificial Photosynthesis, Lawrence Berkeley National Laboratory, USA
[2] Materials Sciences Division, Lawrence Berkeley National Laboratory, USA
[3] Department of Materials Science and Engineering, University of California Berkeley, USA

LSSE6-3 11:30-12:00 **User-on-demand Solar to Power System with Solar to Hydrogen on site Storage** INVITED

K. Fujii[1,2,3], K. Koike[3], M. Sugiyama[3], Y. Nakano[3], S. Nakamura[4], S. Wada[2]

[1] Institute of Environmental Science and Technology, The University of Kitakyushu, JAPAN
[2] RIKEN Center for Advanced Photonics, JAPAN
[3] School of Engineering, The University of Tokyo, JAPAN
[4] RIKEN Innovation Center, JAPAN

Lunch (12:00-13:10)

Room 316

LSSE6-4 13:10-13:40 **Recent R&D Status of Solar Power Satellite with Wireless Power Transfer** INVITED

N. Shinohara

Kyoto University, Japan

LSSE6-5 13:40-14:10 **Super high efficiency concentrator photovoltaic system and its application to make hydrogen** INVITED

K. Nishioka

Faculty of Engineering, Research Center for Sustainable Energy & Environmental Engineering, University of Miyazaki, Japan

14:10-16:50 LSSE7 — Room 316

Remote Sensing

Chair: N. Saito, RIKEN Center for Advanced Photonics, Japan

LSSE7-1 14:10-14:30 **Pulsating aurora-induced Na density depletion in the polar MLT region: high-speed sodium lidar and EISCAT radar observation**

T. Takahashi[1], T.T. Tsuda[2], K. Hosokawa[2], S. Nozawa[3], Y. Ogawa[1,4], M. Tsutsumi[1,4], Y. Hiraki[2], T.D. Kawahara[5], N. Saito[6], S. Wada[6], T. Kawabata[3], C. Hall[7], H. Miyaoka[1]

[1] Natinal Institute of Polar Research, Japan
[2] Department of Communication Engineering and Informatics, University of Electro-communications, Japan
[3] Institute for Space-Earth Environmental Research, Nagoya University, Japan
[4] Graduate University for Advanced Studies, SOKENDAI, Japan
[5] Faculty of Engineering, Shinshu University, Japan
[6] RIKEN Center for Advanced Photonics, Japan
[7] Tromsø Geophysical Observatory, The Arctic University of Norway, Norway

LSSE7-2 14:30-15:00 **Sodium LIDAR observations of polar mesosphere and lower thermosphere** INVITED

S. Nozawa[1], T. Kawahara[2], T.T. Tsuda[3], Y. Ogawa[4], T. Takahashi[4], N. Saito[5], S.Wada[5], H. Fujiwara[6], M. Tsutsumi[4], C. Hall[7], T. Kawabata[1], Y. Ogawa[1], A. Brekke[7]

[1] ISEE, Nagoya University, Japan
[2] Shinshu University, Japan
[3] The University of Electro-Communications, Japan
[4] NIPR, Japan
[5] RIKEN Center for Advanced Photonics, Japan
[6] Seikei University, Japan
[7] UiT The Arctic University of Norway, Norway

Break (15:00-15:30)

LSSE7-3 15:30-15:50 **Study on the Earth's metallic layers using optical remote sensing observations**

T.T. Tsuda[1], N. Saito[2], S. Nozawa[3], T.D. Kawahara[4], T. Kawabata[3], T. Takahashi[5], C.M. Hall[6], S. Wada[2], T. Nakamura[5], M.K. Ejiri[5], T. Nishiyama[5], M. Abo[7], K. Tsuno[2], J. Gumbel[8], J. Hedin[8]

[1] Department of Communication Engineering and Informatics, The University of Electro-Communications, Japan
[2] RIKEN Center for Advanced Photonics, Japan
[3] Institute for Space-Earth Environmental Research, Nagoya University, Japan
[4] Faculty of Engineering, Shinshu University, Japan
[5] Tromsø Geophysical Observatory, The Arctic University of Norway, Norway
[6] National Institute of Polar Research, Japan
[7] Faculty of System Design, Tokyo Metropolitan University, Japan
[8] Department of Meteorology, Stockholm University, Sweden

LSSE7-4 15:50-16:20 **Observations of the upper atmosphere using resonance scatter lidars** INVITED

T. Nakamura[1], M.K. Ejiri[1], M. Abo[2], T.D. Kawahara[3], T. Nishiyama[1], T.T. Tsuda[4], K. Tsuno[5,1]

[1] National Institute of Polar Research, Japan
[2] Tokyo Metropolitan University, Japan
[3] Shinshu University, Japan
[4] The University of Electro-Communications, Japan
[5] RIKEN Center for Advanced Photonics, Japan

LSSE7-5 16:20-16:50 **High-speed and high-resolution LED mini-lidar on planet** INVITED

T. Shiina

Graduate School of Advanced Integration Science, Chiba University, Japan

16:50-16:55 Closing — Room 316

16:50-16:55 **Closing Remarks**

T. Ebisuzaki, Conference Chair of LSSE2017

Computational Astrophysics Laboratory, RIKEN, Japan

OPTICS & PHOTONICS International Congress

Laser Solutions for Space and the Earth *2017*

April 18-21, 2017
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- Decommissioning and Monitoring for Power Reactors
- Social Infrastructure
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KEYNOTE SPEECH

Tuesday, April 18, 10:00-11:00
Room 316

Sylvestre Maurice
IRAP (Université Paul Sabatier, CNRS), France

Lasers on Mars: searching for habitability and traces of life

Friday, April 21, 9:30-10:30
Room 302

Akira Fujishima
Tokyo University of Science, Japan

Photocatalysis and Light Guide Pipe

Tuesday, April 18

09:45-10:00 Opening Room 316

09:45-10:00 Opening Remarks

T. Ebisuzaki, Conference Chair of LSSE2017
Computational Astrophysics Laboratory, RIKEN, Japan

10:00-12:00 LSSE1 Room 316

Lasers for Space Development and Earth Sciences

Chair: T. Ebisuzaki, Computational Astrophysics Laboratory, RIKEN, Japan

LSSE1-1 10:00-11:00 Lasers on Mars: searching for habitability and traces of life INVITED

S. Maurice[1], R.C. Wiens[2], F. Rull[3] on behalf of the ChemCam, RLS, and SuperCam teams
[1] IRAP (Université Paul Sabatier, CNRS), France
[2] Los Alamos National Laboratory, USA
[3] Unidad UVa-CSIC al Centro de Astobiología, University of Valladolid, Spain

LSSE1-2 11:00-11:30 Hadean environment inferred from the oldest zircon of the Earth: Application of micro-analysis by laser technologies INVITED

S. Yamamoto[1], S. Sakata[2], H. Ohbayashi[3], T. Hirata[3], T. Komiya[4]
[1] Graduate School of Environment and Information Sciences, Yokohama National University, Japan
[2] Department of Chemistry, Gakushuin University, Japan
[3] Graduate School of Science, The University of Tokyo, Japan
[4] Graduate School of Arts and Sciences, The University of Tokyo, Japan

LSSE1-3 11:30-12:00 The Origin and Evolution of Planet Mars INVITED

J.M. Dohm
The Univeristy Museum, The University of Tokyo, Japan

Lunch (12:00-13:30)

13:30-15:30 LSSE2 Room 316

Laser-Induced Breakdown Spectroscopy

Chair: T. Fujii, Central Research Institute of Electric Power Industry, Japan

LSSE2-1 13:30-14:00 Application of laser induced breakdown spectroscopy for the chemical investigation of concrete infrastructure INVITED

G. Wilsch, C. Gottlieb, T. Günther, S. Millar, N. Sankat, H. Wiggenhauser
BAM Federal Institute for Materials Research and Testing, Germany

LSSE2-2 14:00-14:30 LIBS techniques for detecting materials in severe environments INVITED

H. Ohba[1,2], I. Wakaida[2]
[1] Quantum Beam Science Research Directorate, National Institutes for Quantum and Radiological Science and Technology, Japan
[2] Collaborative Laboratories for Advanced Decommissioning Science, Japan Atomic Energy Agency, Japan

LSSE2-3 14:30-14:50 Laser-induced breakdown spectroscopy for diagnosis of porcelain insulators

T. Fujii[1,2], K. Motoki[2], K. Yaji[1], S. Eto[1], E. Hotta[2], T. Suekane[2]
[1] Electric Power Engineering Research Laboratory, Central Research Institute of Electric Power Industry, Japan
[2] Tokyo Institute of Technology, Japan

LSSE2-4 14:50-15:10 Remote measurement of energetic material using ultra-short pulse laser

N. Kitayama, K. Sugiyama
Ammunition and Energetics Research Section, Ballistics Research Division, Ground Systems Research Center, Acquisition, Technology and Logistics Agency, Japan

LSSE2-5 15:10-15:30 Combining Raman and Laser Induced Breakdown Spectroscopy by Double Pulse Lasing

V.N. Lednev[1], P.A. Sdvizhenskii[1], M.Ya. Grishin[2,3], V.V. Bukin[2], A.N. Fedorov[2], S.M. Pershin[2]
[1] National University of Science and Technology MISIS, Russia
[2] Prokhorov General Physics Institute, Russian Academy of Sciences, Russia
[3] Moscow Institute of Physics and Technology (State University), Russia

Wednesday, April 19

09:00-12:10 OPIC Plenary Session Room 501+502

Lunch (12:10-13:10)

13:10-15:10 LSSE3 Room 316

Decommissioning and Monitoring for Power Reactors

Chair: A. Nishimura, Japan Atomic Energy Agency, Japan

LSSE3-1 13:10-13:40 The composite-type optical fiberscope system and its industrial deployment INVITED

K. Oka[1],A. Nishimura[2]
[1] National Institutes for Quantum and Radiological Science and Technology, Japan
[2] Applied Laser Technology Institute, Japan Atomic Energy Agency, Japan

LSSE3-2 13:40-14:00 Nondestructive evaluation of plastic strain in carbon steels by magnetic incremental permeability method

T. Matsumoto[1], T. Uchimoto[2], T. Takagi[2], G. Dobmann[3]
[1] Graduate School of Engineering, Tohoku University, Japan
[2] Institute of Fluid Science, Tohoku University, Japan
[3] Saarland University, Germany

LSSE3-3 14:00-14:20 Laser Ultrasonic Approach for Detecting a Deteriorated Rebar in Concrete

A. Furusawa[1], A. Nishimura[1], Y. Takenaka[2]
[1] Japan Atomic Energy Agency, Japan
[2] A-tech Co., Ltd, Japan.

LSSE3-4 14:20-14:40 Evaluation of the Applicability of Laser Measurement Techniques for the Instrumentation of Fast Reactors using Sodium Engineering Research Facility

M. Ueda, K. Saruta, T. Yamaguchi
Japan Atomic Energy Agency, Japan

LSSE3-5 14:40-15:10 Development of laser techniques for decommissioning of Fukushima Daiichi Nuclear Power Station INVITED

T. Yamada[1], N. Phi Long[1], T. Hanari[1], T. Shibata[1], A. Nishimura[1], S. Koyama[1], H, Daido[1], Y. Shimada[2], O. Kotyaev[2], S. Kurahashi[2]
[1] Japan Atomic Energy Agency, Japan
[2] Institute for Laser Technology, Japan

Break (15:10-15:30)

15:30-17:40 LSSE4 Room 316

Social Infrastructure

Chair: Y. Shimada, Institute for Laser Technology, Japan

LSSE4-1 15:30-16:00 Development of High-speed Defect Inspection Technique for Concrete Structure using Laser Hammering Method INVITED

S. Kurahashi[1], T. Kitamura[1], H. Okada[2], S. Kondo[2], K. Mikami[2], N. Hasegawa[2], M. Nishikino[2], Y. Shimada[1]
[1] Institute for Laser Technology, Japan
[2] National Institutes for Quantum and Radiological Science and Technology, Japan

LSSE4-2 16:00-16:30 Non-contact acoustic inspection method for civil engineering structure using air-borne sound and laser Doppler vibrometer INVITED

T. Sugimoto[1], K. Sugimoto[1], N. Utagawa[2], K. Katakura[3]
[1] Toin University of Yokohama, Japan
[2] Sato Kogyo Co., Ltd., Japan
[3] Meitoku Engineering Laboratory, Japan

LSSE4-3 16:30-16:50 Development of Cutting Technology for Decommissioning of Nuclear Facilities Using High Power Fiber Laser

S. Toyama, R. Ishigami
The Wakasa Wan Energy Research Center, Japan

LSSE4-4 16:50-17:20 Laser cleaning system using a kW-class fiber laser for maintenance of social infrastructures INVITED

K. Fujita[1], K. Toyosawa[2], H. Inagaki[3], K. Takahara[2], T. Hongo[2], T. Akiyoshi[2], N. Maebashi[2], S. Okihara[1]
[1] The Graduate School for the Creation of New Photonics Industries,Japan
[2] Toyokoh Co., Ltd.,Japan
[3] Chubu Electric Power Co., Inc.,Japan

LSSE4-5 17:20-17:40 Deployment of sensing technologies to promote human resource development in Naraha Remote Technology Development Center of JAEA

A. Nishimura, T. Shibata, T. Yamada, H. Suzuki, K. Shimada, Y. Sato, S. Koyama
Naraha Remote Technology Development Center, Sector of Fukushima Research and Development, Japan Atomic Energy Agency, Japan

Thursday, April 20

13:30-15:00 LSSE5 Room 316

Space High Intensity Laser

Chair: T. Ebisuzaki, Computational Astrophysics Laboratory, RIKEN, Japan

LSSE5-1 13:30-14:00 A XCAN Laser for Small Space-Debris Mitigation INVITED

G. Mourou, J.C. Chanteloup
Ecole Polytechnique, France

LSSE5-2 14:00-14:30 Advanced Solid-state Lasers for Space - A Perspective on the Prospects of Spaceborne Lasers INVITED

J.-M. Hopkins
Fraunhofer Centre for Applied Photonics, UK

LSSE5-3 14:30-15:00 Prospective laser system architectures for space debris removal INVITED

I.B. Mukhin, I.I. Kuznetsov, O.V. Palashov, A.M. Sergeev
Institute of Applied Physics of the Russian Academy of Sciences, Russia

Friday, April 21

09:30-14:10 LSSE6 Room 302

Natural Energy Production

Chair: S. Wada, RIKEN Center for Advanced Photonics, Japan

LSSE6-1 09:30-10:30 Photocatalysis and Light Guide Pipe INVITED

A. Fujishima
Tokyo University of Science, Japan