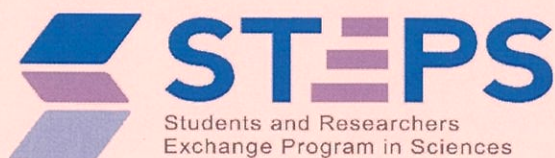


**The 4th STEPS Symposium**  
**on**  
**Photon Science**

*March 20 - 22, 2019*

*Auditorium, Chemistry Main Bldg. 5th Floor*  
*Hongo Campus, The University of Tokyo*

Organized by: The University of Tokyo  
Saint Petersburg State University  
Lomonosov Moscow State University





## Program

### March 20 (Wed)

17:00 - Departure from Hotel Metropolitan Edmont Tokyo to Hongo Campus

18:00 - 19:30 **Welcome dinner** at Sanjo Conference Hall

### March 21 (Thu)

9:00 - 9:10 **Welcome address**  
Shinichi Ohkoshi (Vice Dean, School of Science, The University of Tokyo)

9:10 - 9:20 **Opening remarks**  
Kaoru Yamanouchi (The University of Tokyo)  
Sergey Tunik (St. Petersburg University)  
Vladimir Makarov (Moscow State University)

### Session I: Photochemistry of novel materials (Chair: Kana Yamada)

9:20 - 9:45 Andrey S. Mereshchenko (St. Petersburg State University)  
*Excited state dynamics of copper(II) halide complexes in solution*

9:45 - 10:10 Alina Manshina (St. Petersburg State University)  
*Energy transfer processes in REI-doped systems*

10:10 - 10:35 Alexander Konev (St. Petersburg State University)  
*Photocurrent and photocatalysis: On the way to utilization of solar energy*

10:35 - 10:45 **Coffee break**

**Session II: Magnetic properties of solid** (Chair: Atsushi Iwasaki)

- 10:45 - 11:10 Alexander Shikin (St. Petersburg State University)  
*Out-of-plane and in-plane magnetization generated in magnetic topological insulators by laser and synchrotron radiation*
- 11:10 - 11:35 Artem Rybkin (St. Petersburg State University)  
*Band structure mapping of magneto-spin-orbit graphene by spin- and angle-resolved photoemission spectroscopy*
- 11:35 - 12:00 Shin-ichi Ohkoshi (The University of Tokyo)  
*Design of light- or electromagnetic-wave-correlating phase transition materials and research of their advanced functionalities*
- 12:00 - 12:10 Message from Mr. Konstantin Vinogradov  
(Director, Rossotrudnichestvo Representative in Tokyo)
- 12:10 - 13:00 **Lunch**

**Session III: Photons and applications** (Chair: Erik Lötstedt)

- 13:00 - 13:25 Vladimir Makarov (Moscow State University)  
*Angular momentum of elliptically polarized cnoidal waves and breathers in a nonlinear gyrotropic medium with frequency dispersion*
- 13:25 - 13:50 Kirill Grigoriev (Moscow State University)  
*Emerging of polarization singularities in the light beam reflected from the isotropic chiral medium probed by two non-coplanar beams*
- 13:50 - 14:15 Mikhail Fedorov (Moscow State University/Russian Academy of Science)  
*Oscillations and temporal combs in the Hong-Ou-Mandel effect with non-collinear and non-degenerate in frequencies biphoton states*
- 14:15 - 14:40 Norikatsu Mio (The University of Tokyo)  
*Progress of gravitational wave astronomy*
- 14:40 - 15:10 **Coffee break**

**Session IV: Photobiology and imaging** (Chair: Takashi Hiroi)

15:10 - 15:35 Alexei Kononov (St. Petersburg State University)

*Fluorescent metal clusters for biomedical applications*

15:35 - 16:00 Keisuke Goda (The University of Tokyo)

*Intelligent image-activated cell sorting*

16:00 - 16:25 Hideaki Yoshimura (The University of Tokyo)

*Novel optical techniques to explore biological function in single living cells*

16:25 - 16:50 Sergey Tunik (St. Petersburg State University)

*Phosphorescent emitters for functional bioimaging: Design on demand*

**Session V: New trends in chemistry** (Chair: Kaoru Yamanouchi)

17:00 - 17:25 Hiroshi Nishihara (The University of Tokyo)

*Functional coordination nanosheets*

17:25 - 17:50 Eiichi Nakamura (The University of Tokyo)

*Probing the mechanism of chemical reactions with electron microscopy*

18:30 - 20:30 **Banquet** at Sanjo Conference Hall

*Speech by*

Olga Bogomolova (Deputy Head, Department of Development Program,  
Moscow State University)

*The STEPS Program*

**March 22 (Fri)**

**Session VI: New methods in spectroscopy and electron scattering (Chair: Reika Kanya)**

- 9:00 - 9:25           Andrey Stolýarov (Moscow State University)  
*Deperturbation treatment of the fully mixed diatomic states with the spectroscopic accuracy*
- 9:25 - 9:40           Toshiaki Ando (The University of Tokyo)  
*Strong-field high-resolution spectroscopy of hydrogen molecule and molecular ion*
- 9:40 - 9:55           Takashi Hiroi (The University of Tokyo)  
*Electron impact excitation spectroscopy of highly excited  $H_2$*
- 9:55 - 10:20         Konstantin Kouzakov (Moscow State University)  
*Electron scattering in combined Coulomb and laser fields: A novel theoretical approach*
- 10:20 - 10:30        **Coffee break**

**Session VII: Molecules and clusters interacting with laser fields (Chair: Shinichi Fukahori)**

- 10:40 - 11:05        Tatsuya Tsukuda (The University of Tokyo)  
*Photoelectron spectroscopy on chemically-modified coinage metal clusters in the gas phase*
- 11:05 - 11:20        Youyuan Zhang (The University of Tokyo)  
*Mechanism of population inversion between the B-X states in  $N_2^+$  by Floquet Theory*
- 11:20 - 11:35        Kana Yamada (The University of Tokyo)  
*Real-time probing of ultrafast dissociation dynamics of electrically excited  $N_2^+$  created by high-order harmonics of near-IR femtosecond laser pulses*
- 11:35 - 11:50        Qiqi Zhang (The University of Tokyo)  
*Carrier-envelope-phase dependence of single and double ionization of methanol in intense few-cycle laser fields*
- 12:00 - 13:00        **Lunch**

**Session VIII: Light propagation and plasma physics.**(Chair: Toshiaki Ando)

- 13:00 - 13:25 Svyatoslav Shlenov (Moscow State University)  
*Multifocus structure and annular bullets under self-action of femtosecond optical vortex in fused silica and fluorides*
- 13:25 - 13:50 Olga Kosareva (Moscow State University)  
*Nonlinear transparency window for ultraintense femtosecond laser pulses in the atmosphere*
- 13:50 - 14:15 Alexander Andreev (St. Petersburg State University)  
*Attosecond bunches of gamma photons and positrons generated in nanostructure targets*
- 14:15 - 14:40 Yutaka Ohira (The University of Tokyo)  
*Collisionless shocks driven by a high-power laser*
- 14:40 - 15:10 **Coffee break**

**Session IX: Spectroscopy of solid and nanostructures** (Chair: Hiroto Motoyama)

- 15:10 - 15:35 Oleg Vyvenko (St. Petersburg State University)  
*Orientation of chemical bonds in the core of dissociated dislocation probed by polarization optical spectroscopy*
- 15:35 - 16:00 Natalia Kopteva (St. Petersburg State University)  
*Ultrafast optical spectroscopy of semiconductor nanostructures*
- 16:00 - 16:25 Vyacheslav Morozov (Moscow State University)  
*CARS diagnostics of molecular fluid phase behavior in nanoporous glasses*
- 16:25 - 16:35 **Coffee break**

**Session X: Photonics and applications** (Chair: Tsuyoshi Kato)

- 16:35 - 17:00 Jun Okabayashi (The University of Tokyo)  
*Spin-orbit proximity in magnetic thin film interfaces probed by x-ray magnetic spectroscopies*
- 17:00 - 17:25 Alexander Shkurinov (Moscow State University)  
*Terahertz phonics of liquid gas*
- 17:25 - 17:50 Junji Yumoto (The University of Tokyo)  
*High aspect ratio laser cutting of CFRP using nanosecond UV laser pulses*
- 17:50 - 18:00 **Closing Remarks**
- 19:00 - 21:00 **Dinner**