

# Oral Presentation

Nov. 21 (Fri) Room A

Opening (9:50 ~ 9:55)

9:55 **【Presentation Award Candidates】** (Chair: Kiminori Maeda)

**J-1 Accurate EPR oxygen mapping using TV regularization**

○Yohei Kudo<sup>1</sup>, Shingo Matsumoto<sup>2</sup>, Hiroshi Hirata<sup>2</sup>

<sup>1</sup>Grad. Sch. of Info. Sci. and Tech. Hokkaido Univ.; <sup>2</sup>Fac. of Info. Sch. and Tech. Hokkaido Univ.

**J-2 Characterization of anion radical formation of halogenated phthalocyanine derivatives**

○Yuto Goto, Osamu Inanami, Mikako Ogawa

Grad. Sch. of Pharm. Sci., Hokkaido Univ.

**J-3 Oxygen partial pressure measurement based on relaxation times using OX071 and 750 MHz CW-EPR**

○Misa Oba<sup>1</sup>, Shingo Matsumoto<sup>2</sup>, Hiroshi Hirata<sup>2</sup>

<sup>1</sup>Grad. Sch. of Info. Sci. and Tech.; <sup>2</sup>Facul. of Info. Sci. and Tech., Hokkaido Univ.

**J-4 ESR study on charges accumulated by gate voltage in organic photoelectrochemical transistors**

○He Wenhao<sup>1</sup>, Wang Jiayi<sup>1</sup>, Yukihiro Shimoi<sup>1,2</sup>, Kazuhiro Marumoto<sup>1,2,3</sup>

<sup>1</sup>Dep. Mater. Sci., Univ. of Tsukuba; <sup>2</sup>OIQSST, Univ. of Tsukuba; <sup>3</sup>TREMS, Univ. of Tsukuba

**J-5 Structural and functional analysis of the S<sub>2</sub> State (*g* ~ 5) of the Mn<sub>4</sub>CaO<sub>5</sub> cluster in photosystem II by EPR spectroscopy**

○Shinya Kosaki<sup>1</sup>, Yoshiki Nakajima<sup>2</sup>, Jian-Ren Shen<sup>2</sup>, Hiroyuki Mino<sup>1</sup>

<sup>1</sup>Grad. Sch. Sci., Nagoya Univ.; <sup>2</sup>Res. Inst. Interdiscip. Sci., Okayama Univ.

Lunch (11:50 ~ 13:00)

13:00 **【Oral】** (Chair: Tomoaki Miura)

**1A-01 Crystal size effect on singlet fission dynamics in rubrene orthorhombic crystals**

○Yusuke Wakikawa<sup>1</sup>, Kazuma Kachi<sup>1</sup>, Tadaaki Ikoma<sup>2,3</sup>

<sup>1</sup>Shizuoka Inst. of Sci. and Tech; <sup>2</sup>Grad. Sch. of Sci., Niigata Univ; <sup>3</sup>CCRF, Niigata Univ.

**1A-02 Effect of CISS on the magnetoreception by cryptochrome**

○Yasuhiro Kobori, Misato Hamada, Tatsuya Iwata, Hiroki Nagashima, Stefan Weber

(Chair: Yusuke Wakikawa)

**1A-03 Recent advances in magnetic field effects due to excited triplet states**

Reina Konaka<sup>1</sup>, Yusei Jin<sup>1</sup>, Syohei Ishii<sup>2</sup>, Kousei Kitajima<sup>2</sup>, Tadaaki Ikoma<sup>1,2</sup>, ○Tomoaki Miura<sup>1,2</sup>

<sup>1</sup>Grad. Sch. of Sci. and Tech., Niigata Univ.; <sup>2</sup>Fac. of Sci., Niigata Univ.

Break (14:00 ~ 14:10)

**1A-04 Electronic states of a chromic NAD<sup>+</sup>-Type Co-dioxolene complex**

○Kodai Tsubokawa, Kiyoshi Tsuge, Hideki Ohtsu

Grad. Sch. of Sci. and Eng., Toyama Univ.

**1A-05 Time-resolved spectroscopy of magnetoresponse fluorescent protein MagLOV**

○Shogo Ono, Noboru Ikeya, Woodward Jonathan

Grad. Sch. of Arts and Sci., Tokyo Univ.

**1A-06 Control of liquid crystalline capsule by magnetic field**

○Yoshiaki Uchida

Grad. Sch. Eng. Sci., Univ. Osaka

Poster Presentation (15:10~17:30)

Extraordinary General Meeting (17:30 ~ 18:30)

Nov. 21 (Fri) Room B

13:00 **【Oral】** (Chair: Miho Emoto)

**1B-01 Dynamics of epigenetic reader heterochromatin 1 (HP1) during phase separation, as studied by ESR spectroscopy**

I. Suetake<sup>2,3</sup>, K. Sato<sup>1</sup>, T. Sugishita<sup>2</sup>, T. Takei<sup>2</sup>, Y. Mishima<sup>2</sup>, M. Miyata<sup>1</sup>, T. Takui<sup>1</sup>, T. Fujiwara<sup>2</sup>, Y. Matsuki<sup>2</sup>,  
H. Hojo<sup>2</sup>, ○T. Arata<sup>1,2</sup>

<sup>1</sup>Grad. Sch. Sci., Osaka Met. Univ.; <sup>2</sup>IPR, Osaka. Univ.; <sup>3</sup>Grad. Sch. Home Economics, Kobe Women's Univ.

**1B-02 Unique active site in inorganic pyrophosphatase**

○Masaki Horitani<sup>1,2</sup>

<sup>1</sup>Fac. Agri, Saga Univ.; <sup>2</sup>Unit. Grad. Sch. Agri. Sci., Kagoshima Univ.

**1B-03 Development of the MRI contrast agent of organic NO radicals to establish the quantitative method for in vivo reductant**

○Naoko Iizuka<sup>1</sup>, Yuto Kawai<sup>1</sup>, Kazuteru Usui<sup>1</sup>, Daisuke Yoshihara<sup>2</sup>, Tatsuya Naganuma<sup>3</sup>, Satoru Karasawa<sup>1</sup>

<sup>1</sup>Grad. Sch. Pharm. Sci., Showa Pharm. Uni.; <sup>2</sup>ISIT; <sup>3</sup>Japan REDOX

Break (14:00 ~ 14:10)

(Chair: Masaki Horitani)

**1B-04 Observation of radical polymerization reactions using time-resolved ESR and photoinitiators**

○Atsushi Kajiwara

Nara Univ. of Education

**1B-05 ESR spectra of bis(iminonitroxide) biradicals dispersed in PMMA polymer**

○Hirokazu Kobayashi<sup>1</sup>, Kento Akiniwa<sup>2</sup>, Fumiyasu Iwahori<sup>3</sup>, Hidehiko Honda<sup>1</sup>, Masato Yamamoto<sup>1</sup>

<sup>1</sup>Fac. of Arts and Sci., Showa Med. Univ.; <sup>2</sup>Grad. Sch. of Integrated Basic Sci., Nihon Univ.; <sup>3</sup>Col. Humanities and Sci., Nihon Univ.

Poster Presentation (15:10~17:30)

Early-Career Researchers' Meeting (17:30 ~ 18:30)

Nov. 22 (Sat) Room A

9:20 【Plenary lecture】 (Chair: Masaki Horitani)

**PL-01 Spins in action: Advanced EPR Approaches to Biology, Catalysis, and Quantum Systems**

○Sun Hee Kim

Metropolitan Seoul Center, KBSI

Break (10:10~10:20)

10:20 【Symposium: Spin and Quantum Aspects of Biological Systems】 (English Session)

(Chair: Hiroki Nagashima and Ikuo Nakanishi)

**2S-00 Introduction**

○Hiroki Nagashima

Grad. Sch. Sci. Eng., Saitama Univ.

**2S-01 Elementary reaction rate constants of free radicals measured by spin echo observation using pulsed ESR spectroscopy**

Hiroki Hirano<sup>1</sup>, Masatoshi Kato<sup>1,2</sup>, Kaito Marumo<sup>1</sup>, Hirona Takahashi<sup>3</sup>, Yusuke Miyake<sup>4</sup>, Ikuo Nakanishi<sup>2</sup>,  
○Akio Kawai<sup>1,2</sup>

<sup>1</sup>Grad. Sch. of Sci., Kanagawa Univ.; <sup>2</sup>Inst. Quant. Life Sci., Natl. Inst. Quant. Sci. Tech.; <sup>3</sup>Dept. of Chem., Okayama Univ. of Sci.; <sup>4</sup>Fac. Mol. Chem. Eng., Kyoto Inst. Tech.

**2S-02 Microscopic tools for studying radical pairs in biological systems**

Noboru Ikeya, Shogo Ono, ○Jonathan Woodward  
Grad. Sch. of Arts and Sci., Tokyo Univ.

**2S-03 Discovery of hidden magnetic property in iron-sulfur proteins using ESR and SAXS**

○Shigeki Arai<sup>1\*</sup>, Shogo Soga<sup>2</sup>, Ryoma Kobayashi<sup>1</sup>, Mitsuhiro Hirai<sup>3</sup>, Kiminori Maeda<sup>2</sup>, Hiroki Nagashima<sup>1,2\*</sup>

\*These two authors contributed equally to this work.

<sup>1</sup>Inst. Quantum Sci. Tech., QST; <sup>2</sup>Grad. Sch. Sci. Eng., Saitama Univ.; <sup>3</sup>Grad. Sch. Sci. Tech., Gunma Univ.

**2S-04 Complementary relationship in protein molecule structure analysis and spin structure analysis**

○Hiroyuki Mino  
Grad Sch. Sci., Nagoya Univ.

Lunch / Editorial Committee / Awards Committee (12:05~13:00)

General assembly (13:00 ~ 14:00)

Break (14:00 ~ 14:10)

14:10 【Award lecture 1】 (Chair: Hironobu Yasui)

**Y-01 The development of 4D EPR spectroscopic mapping and its application in biomedical studies**

○Hiroshi Hirata  
Facul. Info. Sci. & Tech., Hokkaido Univ.

14:50 【Award lecture 2】 (Chair: Keizo Takeshita)

**Y-02 Development and application of technology for the detection of lipid radicals and oxidized lipids**

○Ken-ichi Yamada  
Fac. of Pharm., Kyushu Univ.

Break (15:30 ~ 15:40)

15:40 【Award lecture 3】 (Chair: Yasuhiro Kobori)

**Y-03 Spin dynamics in triplet pairs**

○Tomoaki Yago

Grad. Sch. of Sci. and Eng., Saitama Univ.

16:10 【Award lecture 4】 (Chair: Hisao Murai)

**Y-04 Development of high-sensitivity microspectropic methods and spin dynamics software for investigating quantum spin effects in flavin-based radical pairs**

○Lewis M. Antill

Sungkyunkwan Univ.

Presentation award and Poster Award Ceremony (16:30 ~ 16:45)

Break (16:45~16:55)

16:55 【Oral】 (Chair: Jonathan Woodward)

**2A-01 Dynamic nuclear polarization NMR by surface electrons on nanodiamonds and its sample dependence**

○Ken Kato<sup>1,2</sup>, Hajime Tamaki<sup>1</sup>, Yoh Matsuki<sup>1,3</sup>

<sup>1</sup>IPR, Univ. Osaka; <sup>2</sup>NINS; <sup>3</sup>QIQB, Univ. Osaka

**2A-02 ESR direct observation of spin gap at magnetization plateau of distorted diamond spin chain**

○Toru Sakai

Hyogo Univ.

**2A-03 Development of highly-sensitive detection for fluorine-containing compounds via photo-chemically induced dynamic nuclear polarization (photo-CIDNP)**

○Shoya Shiromizu<sup>1</sup>, Yuta Sawada<sup>2</sup>, Koki Nishimura<sup>2</sup>, Nobuhiro Yanai<sup>2</sup>, Masayuki Matsuo<sup>1</sup>, Fuminori Hyodo<sup>1</sup>

<sup>1</sup>Grad. Sch. Med., Gifu Univ.; <sup>2</sup>Grad. Sch. Sci., Tokyo Univ.

Banquet (18:30~20:30)

Nov. 22 (Sat) Room B

10:20 【Oral】 (Chair: Yugo Oshima)

**2B-01 High-frequency ESR measurements of spin frustration magnet  $\text{CoCu}_3(\text{OH})_6\text{Cl}_2$**

○Susumu Okubo<sup>1,2</sup>, Yuma Hosomi<sup>2</sup>, Hitoshi Ohta<sup>1</sup>, Shunpei Kojima<sup>3</sup>, Yutaka Fujii<sup>4</sup>, Hikomitsu Kikuchi<sup>1,4</sup>

<sup>1</sup>Mol. Photoscience Res. Center, Kobe Univ.; <sup>2</sup>Grad. Sch. of Sci., Kobe Univ.; <sup>3</sup>Dep. Appl. Phys., Univ. of Fukui; <sup>4</sup>FIR Center, Univ. of Fukui

**2B-02 Characterization of cylindrical dielectric antennas for enhancing terahertz oscillating magnetic fields**

○Yuma Igo<sup>1</sup>, Hiroki Kudo<sup>2</sup>, Eiji Ohmichi<sup>1</sup>

<sup>1</sup>Grad. Sch. of Sci., Kobe Univ.; <sup>2</sup>Fac. of Sci., Kobe Univ.

**2B-03 ESR measurements of triangular cupola antiferromagnet SrCu(OH)<sub>3</sub>Cl II**

○Takaya Matsumura<sup>1</sup>, Shigeo Hara<sup>2</sup>, Takahiro Sakurai<sup>3</sup>, Susumu Okubo<sup>1,4</sup>, Hitoshi Ohta<sup>4</sup>, Fusako Kon<sup>5</sup>, Hiroyuki K. Yoshida<sup>5</sup>

<sup>1</sup>Grad. Sch. of Sci., Kobe Univ.; <sup>2</sup>Res. Fac. Center for Sch. and Tech., Kobe Univ.; <sup>3</sup>Core Fac. of Center, The Univ. of Osaka; <sup>4</sup>Mol. Photoscience Res. Center, Kobe Univ.; <sup>5</sup>Grad. Sch. of Sci., Hokkaido Univ.

(Chair: Susumu Okubo)

**2B-04 Anisotropic spin dynamics in a quantum spin liquid candidate: hidden one-dimensionality in a triangular lattice**

○Yugo Oshima<sup>1</sup>, Yasuyuki Ishii<sup>2</sup>, Francis. L. Pratt<sup>3</sup>, Isao Watanabe<sup>1</sup>, Hitoshi Seo<sup>1</sup>, Takao Tsumuraya<sup>4</sup>, Tsuyoshi Miyazaki<sup>5</sup>, Reizo Kato<sup>1</sup>

<sup>1</sup>RIKEN; <sup>2</sup>SIT; <sup>3</sup>ISIS; <sup>4</sup>Kumamoto Univ.; <sup>5</sup>NIMS

**2B-05 Development of ground-state singlet biradicals capable of intramolecular diamagnetic/paramagnetic switching**

○Mahiro Somei, Takayuki Ishida

Grad. Sch. of Info. and Eng., The Univ. of Electro-Communications

**2B-06 Analysis of organic ferromagnetic materials based on bis(biphenyl) nitroxides**

○Akane Hase, Takayuki Ishida

Grad. Sch. of Info. and Eng., The Univ. of Electro-Communications

Lunch (11:55 ~ 13:00)

16:55 【Oral】 (Chair: Kazuhiro Marumoto)

**2B-07 Radical intermediates in photocatalytic activation of carboxylic acids: A spin trapping study**

Riko Maruyama<sup>1</sup>, Gunik Lee<sup>1</sup>, Haifan Huang<sup>2</sup>, Hisao Yoshida<sup>2</sup>, ○Jun Kumagai<sup>3</sup>

<sup>1</sup>Grad. Sch. Eng., Nagoya Univ.; <sup>2</sup>Grad. Sch. Human Environ., Kyoto Univ.; <sup>3</sup>IMaSS, Nagoya Univ.

**2B-08 Proton-polarized small-angle neutron scattering study of nano-ice crystals in frozen sugar solutions**

○Takayuki Kumada

JAEA

**2B-09 ESR analyses of high-spin Mn-complexes ( $S = 5/2$ ): Extending the effective true relations to hyperfine interaction parameters**

○Takeshi Yamane<sup>1,2</sup>, Kenji Sugisaki<sup>1,2,3,4,5,6</sup>, Kazunobu Sato<sup>1</sup>, Kazuo Toyota<sup>1</sup>, Daisuke Shiomi<sup>1</sup>, Satoshi Takebayashi<sup>7</sup>, Takeji Takui<sup>1</sup>

<sup>1</sup>Grad. Sch. Sci., Osaka Met. Univ.; <sup>2</sup>Quantum Comp. Center, Keio Univ.; <sup>3</sup>Grad. Sch. Sci. Tech., Keio Univ.;

<sup>4</sup>KSQAIC, Keio Univ. <sup>5</sup>CQuERE TCG-CREST; <sup>6</sup>JST-CREST; <sup>7</sup>Sci. Tech. G., OIST

Nov. 23 (Sun) Room A

9:20 **【Symposium: Spin and Computational Chemistry: Practical Approaches to Magnetic Parameters and Fluctuations】** (Chair: Kiminori Maeda and Motoko S. Asano)

**3S-00 Introduction**

○Motoko S. Asano

Grad. Sch. Sci. Tech., Gunma Univ.

**3S-01 Synergistic approach to transient radical analysis: Time-resolved EPR experiments and quantum chemical calculations**

○Masaaki Fuki

Mol. Photo. Sci. Res. Center, Kobe Univ.

**3S-02 Understanding magnetic parameters and electronic structures of paramagnetic molecules with the help of quantum chemical calculations**

○Kazunobu Sato

Grad. Sch. of Sci, Osaka Metropolitan Univ.

**3S-03 Electron spin dynamics in quantum chemistry: transitions, polarization, and relaxation**

○Yuki Kurashige

Kyoto Univ.

Break (10:40 ~ 10:50)

**3S-04 Theoretical calculation of zero-field splitting by the SAC-CI method**

○Kazuo Toyota

Osaka Metropolitan Univ.

**3S-05 Spin dynamics of radical pairs and molecular dynamics calculation**

○Kiminori Maeda

Grad. Sch. of Sci. and Eng., Saitama Univ.

**3S-06 Molecular dynamics simulation of radical pairs in the binding pocket of bovine serum albumin**

○Yasuhiro Matsunaga<sup>1,2</sup>

<sup>1</sup>Grad. Sch. of Sci. and Eng., Saitama Univ.; <sup>2</sup>R-CCS, RIKEN

Closing (12:00 ~ 12:10)

Luncheon seminar (12:10 ~ 13:10)

Nov. 23 (Sun) Room B

9:20 **【Oral】** (Chair: Ken Kato)

**3B-01 EPR imaging studies of mice using nitroxide probes with acetoxymethyl groups**

○Miho C Emoto<sup>1</sup>, Hideo Sato-Akaba<sup>2</sup>, Hirokata Fujii<sup>3</sup>

<sup>1</sup>School of Med. Tech., Health Sci. Univ. of Hokkaido; <sup>2</sup>Grad. Sch. of Eng., Shizuoka Univ.; <sup>3</sup>Advanced Research Promotion Center, Health Sci. Univ. of Hokkaido

**3B-02 Development and optimization of a low-power OMRI method for *in vivo* measurements**

○Ayano Enomoto, Kazuhiro Ichikawa

Fac. of Pharm. Sci., Nagasaki Int'l Univ.

**3B-03 Direct ESR observation of interfacial charge accumulation in PEAI-interface-modified lead perovskite solar cells**

○Liqi Liu<sup>1</sup>, Yizhou Chen<sup>1</sup>, Atsushi Sato<sup>1</sup>, Seira Yamaguchi<sup>1</sup>, Kazuhiro Marumoto<sup>1,2,3</sup>

<sup>1</sup>Dep. Mater. Sci., Univ. of Tsukuba; <sup>2</sup>OIQSST, Univ. of Tsukuba; <sup>3</sup>TREMS, Univ. of Tsukuba

**3B-04 Evaluation of molecular orientation in non-fullerene organic solar cells by ESR spectroscopy**

○Atsushi Sato<sup>1</sup>, Seira Yamaguchi<sup>1,2</sup>, Itaru Osaka<sup>3</sup>, Kazuhiro Marumoto<sup>1,2,4</sup>

<sup>1</sup>Dep. Mater. Sci., Univ. of Tsukuba; <sup>2</sup>OIQSST, Univ. of Tsukuba; <sup>3</sup>Hiroshima Univ.; <sup>4</sup>TREMS, Univ. of Tsukuba

Break (10:35 ~ 10:45)

(Chair: Shojiro Kimura)

**3B-05 ESR study on charge transfer at the interface between hole transport layer and Sn-Ge perovskite**

○Zhang Xubo<sup>1</sup>, Liqi Liu<sup>1</sup>, Yizhou Chen<sup>1</sup>, Atsushi Sato<sup>1</sup>, Kazuhiro Marumoto<sup>1,2,3</sup>

<sup>1</sup>Dep. Mater. Sci., Univ. of Tsukuba; <sup>2</sup>OIQSST, Univ. of Tsukuba; <sup>3</sup>TREMS, Univ. of Tsukuba

**3B-06 Possible contribution of radical pairs to the magnetic field effect in ISCA1**

○Hiroki Nagashima<sup>1,2</sup>, Shogo Soga<sup>1</sup>, Kiminori Maeda<sup>1</sup>, Shigeki Arai<sup>2</sup>

<sup>1</sup>Grad. Sch. Sci. Eng., Saitama Univ.; <sup>2</sup>Inst. Quantum Sci. Tech., QST

**3B-07 Direct and real-time radical detection in a standard electrochemical cell using an EPR-on-a-chip sensor**

○Takuma Sato<sup>1</sup>, Kaltum Abdiaziz<sup>1</sup>, Silvio Künstner, Anh Chu<sup>3</sup>, Michal Kern<sup>3</sup>, Jens Anders<sup>3</sup>, Klaus Lips<sup>2</sup>,  
Alexander Schnegg<sup>1</sup>

<sup>1</sup>MPI CEC; <sup>2</sup>HZB ASPIN; <sup>3</sup>Univ. Stuttgart

**3B-08 Synthesis and physical properties of liquescent dihydrophenazine radical cation salts**

○Ritsuki Tanaka<sup>1</sup>, Takeshi Naota<sup>1</sup>, Takayuki Ishida<sup>2</sup>, Shuichi Suzuki<sup>1</sup>

<sup>1</sup>Univ. of Osaka; <sup>2</sup>Univ. of Electro-Communications

Lunch (12:10 ~ 13:10)