

2019

9.30

@ Osaka City Univ.  
Tanaka Memorial Hall

# International Workshop on Quantum Sensing & Biophotonics 2019

- 9:20 - 9:30    Opening Remarks
- 9:30 - 10:20    Brian Patton, University of Strathclyde, UK  
*"Nanodiamond as a robust probe for biological systems"*
- 10:20 - 10:30    Break
- 10:30 - 11:20    Kangwei Xia, Chinese Univ. of Sci. & Tech.,  
Hong Kong, China  
*"Nanometer-precision non-local deformation sensing using NV centers in diamond"*
- 11:20 - 11:45    Masazumi Fujiwara, OCU, Japan  
*"Nanodiamond quantum thermometry for biological applications"*
- 11:45 - 13:00    Lunch
- 13:00 - 13:25    Eriko Kage-Nakadai, OCU, Japan  
*"In vivo imaging of the nervous system of the nematode C. elegans"*
- 13:25 - 13:50    Hideyuki Matsumoto, OCU, Japan  
*"High resolution Opto-Electrophysiology: a new tool for analyzing brain functions"*
- 13:50 - 14:40    Kazuhide Sato, Nagoya University, Japan  
*"Near infrared Photoimmunotherapy: mechanism and applications"*
- 14:40 - 15:10    Coffee Break
- 15:10 - 16:00    Ikuko Fujiwara, OCU, Japan  
*"Cell motility based on the polymerization dynamics"*
- 16:00 - 16:50    Jia Su, Southern University of Sci. & Tech.,  
Shenzhen, China  
*"Photoswitchable fluorescent molecular nanoparticles with giant amplification effect"*
- 16:50 - 17:00    Concluding Remarks
- 17:00 - 19:00    Poster

Website



**Important dates**

**Registration: Sept. 26**

**Poster submission: Sept. 12**

## Purpose

This workshop aims to find technical challenges when implementing quantum sensing technology to real analyzing tools of chemistry and biology. Quantum sensing is an emergent technology which may bring its unprecedented high sensitivity into biochemical analysis. However its potential needs to be properly developed in the context of standard analytical methods of the target areas. By having invited speakers working in *quantum sensing, photochemistry, biophotonics*, these points will be discussed. The poster session covers broad related fields, such as *material science, electronics, informatics, and biomedical science*.

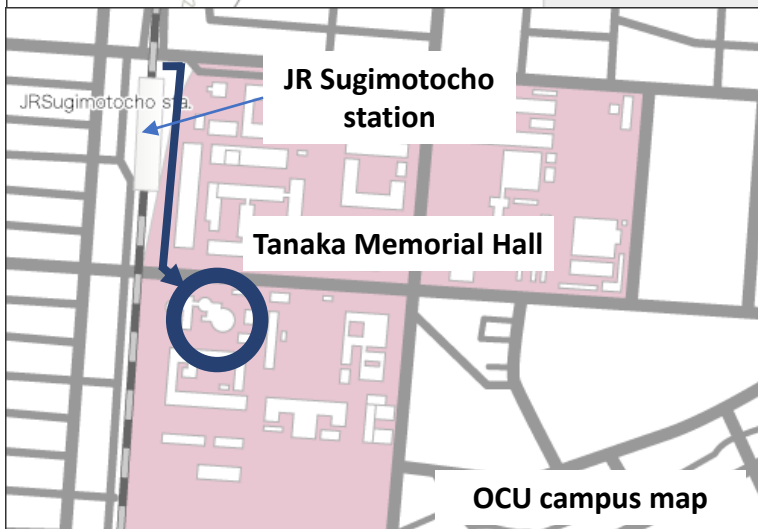
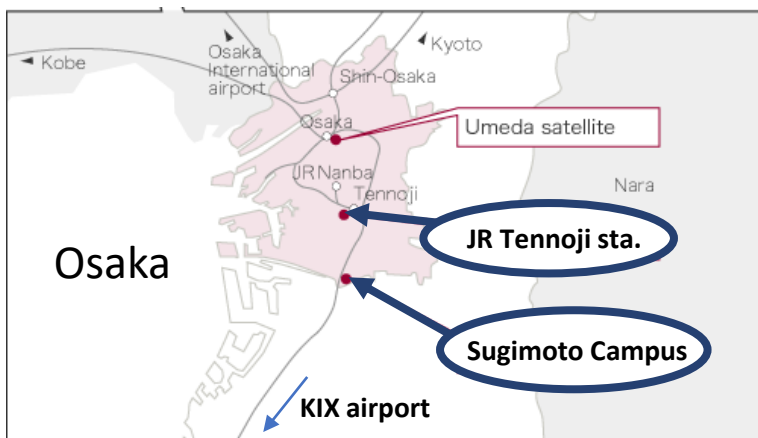
## Venue

### Osaka City Univresity

Sugimoto Campus, Tanaka Memorial Hall

Access:

<https://www.osaka-cu.ac.jp/en/about/access>



## Registration

Please complete registration and poster submission (if you wish to present) in the following link or QR-code. On-site registration may be possible if seats are still available.

<https://forms.gle/kzBfqYQSkS5X9o8h8>

Due dates:

Poster: **Sept. 12**

Registration:

**Sept. 26**



Registration



## Contact information

Email: [iwqsb2019@gmail.com](mailto:iwqsb2019@gmail.com)

Organizing committee:

OCU: Masazumi Fujiwara, Eriko Nakadai, Hideyuki Matsumoto, Eiji Shikoh, Tsutomu Matsubara, Kai Cai  
Keio U: Yutaka Shikano,

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# International Workshop on Quantum Sensing & Biophotonics 2019



9:20 - 9:30	Opening Remarks	Chairperson
9:30 - 10:20	Brian Patton, University of Strathclyde, UK "Nanodiamond as a robust probe for biological systems"	<i>Y. Shikano</i>
10:20 - 10:30	Break	
10:30 - 11:20	Kangwei Xia, Chinese Univ. of Sci. & Tech., Hong Kong, China "Nanometer-precision non-local deformation sensing using NV centers in diamond"	<i>Y. Shikano</i>
11:20 - 11:45	Masazumi Fujiwara, OCU, Japan "Nanodiamond quantum thermometry for biological applications"	<i>Y. Shikano</i>
11:45 - 13:00	Lunch	
13:00 - 13:25	Eriko Kage-Nakadai, OCU, Japan "In vivo imaging of the nervous system of the nematode <i>C. elegans</i> "	<i>M. Fujiwara</i>
13:25 - 13:50	Hideyuki Matsumoto, OCU, Japan "High resolution Opto-Electrophysiology: a new tool for analyzing brain functions"	<i>M. Fujiwara</i>
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14:40 - 15:10	Coffee Break	
15:10 - 16:00	Ikuko Fujiwara, OCU, Japan "Cell motility based on the polymerization dynamics"	<i>K. Sakota</i>
16:00 - 16:50	Jia Su, Southern University of Sci. & Tech., Shenzhen, China "Photoswitchable fluorescent molecular nanoparticles with giant amplification effect"	<i>K. Sakota</i>
16:50 - 17:00	Concluding Remarks	
17:00 - 19:00	Poster	

## List of Poster Contributions

<b>1</b>	<p><b>Tradeoffs in the estimation with postselection measurements</b> Le Bin Ho, Yasushi Kondo, Kindai Univ.</p>
<b>2</b>	<p><b>Elucidation of the cooperative dissociation process of J-aggregate induced by the density fluctuation of a mixed solvent</b> M. Harada, T. Yatsunami, K. Sakota Osaka City Univ.</p>
<b>3</b>	<p><b>Influence of the surface oxidation to the spin coherence of properties of single NV centers in nanodiamonds</b> Ryuta Tsukahara<sup>1</sup>, Masazumi Fujiwara<sup>1,2</sup>, Yoshihiko Sera<sup>1</sup>, Hideki Hashimoto<sup>1</sup>, Shinichi Shikata<sup>1</sup> 1. Kwansai Gakuin University 2. Osaka City University</p>
<b>4</b>	<p><b>Spatial correlation between NV centers and nonfluorescent defects in N-doped bulk diamonds</b> Hiroki Kuromatsu<sup>1</sup>, Ryuta Tsukahara<sup>1</sup>, Tokuyuki Teraji<sup>2</sup>, Masazumi Fujiwara<sup>3</sup>, Shinichi Shikata<sup>1</sup> 1. Kwansai Gakuin University. 2. NIMS. 3. Osaka City Univ.</p>
<b>5</b>	<p><b>Realtime nanodiamond thermometry probing in-vivo thermogenic responses</b> M. Fujiwara,<sup>1</sup> S. Sun,<sup>1</sup> A. Dohms,<sup>2</sup> Y. Nishimura,<sup>1</sup> K. Suto,<sup>1</sup> Y. Takezawa,<sup>1</sup> K. Oshimi,<sup>1</sup> L. Zhao,<sup>3</sup> N. Sadzak,<sup>2</sup> Y. Umehara,<sup>1</sup> Y. Teki,<sup>1</sup> N. Komatsu,<sup>4</sup> O. Benson,<sup>2</sup> Y. Shikano,<sup>5,6</sup>, E. Kage-Nakadai<sup>1</sup>, 1. Osaka City University. 2. Humboldt Universitat zu Berlin. 3. Soochow Univ. 4. Kyoto Univ. 5. Keio Univ. 6. Chapman Univ.</p>
<b>6</b>	<p><b>Photocurrent behavior and Electrically Detected Magnetic Resonance Study of TIPS-Pentacene Film Deposited by Vacuum Vapor Sublimation</b> Ken Kato, Yoshio Teki Grad. School of Sci., Osaka City Univ.</p>
<b>7</b>	<p><b>Spin transport properties in evaporated rigid molecular film by using spin-pumping</b> K. Nishida, Y. Teki, E. Shikoh Osaka City Univ.</p>
<b>8</b>	<p><b>Temperature dependence of electromotive forces in Ni80Fe20/VO2 bilayer junctions under the ferromagnetic resonance</b> K. Tamura<sup>1</sup>, T. Kanki<sup>2</sup>, S. Shirai<sup>1</sup>, H. Tanaka<sup>2</sup>, M. Shiraishi<sup>3</sup>, Y. Teki<sup>1</sup>, E. Shikoh<sup>1</sup> 1. Osaka City Univ. 2. Osaka Univ. 3. Kyoto Univ.</p>
<b>9</b>	<p><b>Molecular mechanism underlying resistance to Gram-positive bacteria conferred by Bacillus subtilis var. natto in the C.elegans model</b> Rina Katayama, Yumi Matsumoto, Yukina Higashi, Simo Sun, Yoshikazu Nishikawa, Eriko Kage-Nakadai Osaka City Univ.</p>
<b>10</b>	<p><b>Spin current in thermally-evaporated polyacene films induced by the spin-pumping</b> T. Kono<sup>1</sup>, M. Yamamoto<sup>1</sup>, Y. Tanaka<sup>1</sup>, Y. Tani<sup>1</sup>, T. Kondo<sup>1</sup>, Y. Teki<sup>2</sup>, E. Shikoh<sup>1</sup> 1. Osaka City Univ., Eng. 2. Osaka City Univ., Sci.</p>
<b>11</b>	<p><b>Construction of wide-field optically detected magnetic resonance method for intracellular temperature imaging</b> Y. Nishimura<sup>1</sup>, Y. Kumon<sup>2</sup>, K. Miyaji<sup>2</sup>, T. Matsubara<sup>1</sup>, K. Ikeda<sup>1</sup>, H. Yukawa<sup>2</sup>, Y. Baba<sup>2</sup>, Y. Teki<sup>1</sup>, M. Fujiwara<sup>1</sup> 1. Osaka City Univ. 2. Nagoya Univ.</p>
<b>12</b>	<p><b>Microwave-antenna-integrated cell dishes for nanodiamond quantum thermometry</b> K. Oshimi, Y. Nishimura, T. Matsubara, M. Tanaka, E. Shikoh, M. Fujiwara, Y. Teki Osaka City Univ.</p>
<b>13</b>	<p><b>Temperature sensing of stem cell regenerative function with fluorescent nanodiamond</b> Kazu Miyaji<sup>1</sup>, Hiroshi Yukawa<sup>1,2,3</sup>, Masazumi Fujiwara<sup>4</sup>, Yushi Nishimura<sup>4</sup>, Daisuke Onoshima<sup>1,2</sup>, Yoshinobu Baba<sup>1,2,3</sup> 1. Nagoya University Graduate school of Engineering. 2. Nagoya University Institutes of Innovation for Future Society. 3. National Institutes of Quantum and Radiological Science and Technology (QST). 4. Osaka City University Graduate School of Science</p>

14	<p>Elucidation of the mechanisms underlying preference to bitter and astringent compounds in foods using <i>C. elegans</i>  Y. Takezawa C. Iida Y. Yamada S. Sun Y. Nishikawa E. Kage-Nakadai  Osaka City Univ.</p>
15	<p><b>Polyglycerol grafted nanoparticles enhance stealth effect by shielding protein corona formation: A comparison study to PEG</b>  Y. Zou and N. Komatsu  Kyoto University</p>
16	<p><b>Evaluation of polymer content and net charge effects of nanodiamond toward protein affinity</b>  Y. Zou and N. Komatsu  Kyoto University</p>
17	<p><b>Comparison of gliding motility and machinery between two standard type strains in <i>Mycoplasma pneumoniae</i></b>  M. Mizutani<sup>1</sup>, M. Miyata<sup>1,2</sup>  1. Grad. Sch. of Sci. Osaka City Univ., 2. OCARINA, Osaka City Univ.</p>
18	<p><b>Effect of diffusely adherent <i>Escherichia coli</i> (DAEC) strain SK1144 isolated from healthy carrier on DSS-induced colitis of mice</b>  Atsuyuki Odani, Ayana Takaura, Sae Shinya, Natsuyuki Takayama, Yoshihiko Tanimoto,  Eriko Kage-Nakadai, Yoshikazu Nishikawa.  Graduate School of Human Life Science, Osaka City University</p>
19	<p><b>A search for genes suppressing inflammatory response of epithelial cells in diffusely adherent <i>Escherichia coli</i>: trial by transposon insertion mutants</b>  Ayana Takaura, Narumi Takeuchi, Yoshihiko Tanimoto, Eriko Kage-Nakadai, Yoshikazu Nishikawa.  Graduate School of Human Life Science, Osaka City University, Osaka, Japan</p>
20	<p><b>Performance comparison with a parallel plate iontrap and an endcap iontrap</b>  Masaki Noguchi, Motoya Sano, Tomoyuki Yatsunami, Kenji Sakota  Osaka City Univ</p>
21	<p><b>Relationship between molecular dynamics of glutamate receptors in an optical trap and electrical activity in neurons</b>  T. Kishimoto<sup>1,2</sup>, S. N. Kudoh<sup>2</sup>, T. Taguchi<sup>3</sup>, C. Hosokawa<sup>1,2,4</sup>  1. Osaka City Univ. 2. Kwansai Gakuin Univ. 3. NICT 4. AIST</p>
22	<p><b>Polymerization of bacterial actin MreB involved in swimming of <i>Spiroplasma eriocheiris</i></b>  D. Takahashi<sup>1</sup>, M. Miyata<sup>1,2</sup>  1. Grad. Sch. Sci., Osaka City Univ. 2. OCARINA, Osaka City Univ.</p>
23	<p><b>Movement of Gliding Motors in <i>Mycoplasma mobile</i> Visualized by High-speed Atomic Force Microscopy</b>  Kohei KOBAYASHI<sup>1</sup>, Noriyuki KODERA<sup>2</sup>, Yuhei O TAHARA<sup>1</sup>, Takuma TOYONAGA<sup>1</sup>, Taishi KASAI<sup>1</sup>,  Toshio ANDO<sup>2</sup>, Makoto MIYATA<sup>1</sup>  1. Graduate School of Science, Osaka City University, Japan  2. WPI NanoLSI, Kanazawa University, Japan. 3. OCARINA, Osaka City University</p>