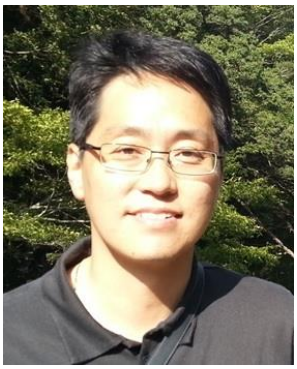
Requests for Collaboration

**Name:** Jun-Seok Oh
**Current position:** Associate professor
**E-mail address:** jsoh@osaka-cu.ac.jp



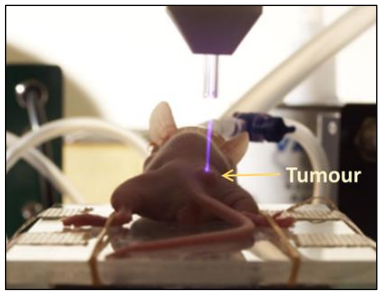
**Research Interests**

- Diagnostics of plasma-generated reactive species in both gas and liquid phases using optical and electrical methods.
- Plasma-medicine, -agriculture, and recent -cosmetic: Effect of the plasma-generated reactive species on the biological target(s)
- Liquid and (nano-) material processes with new plasma technique

**Creative Achievements in The Application of New and Existing Science and Technology**

**(1)** In **fundamental plasma physics** (**plasma diagnostics**), the absolute density (value) of positively and negatively charged species, and neutral reactive species in gaseous discharge plasma was investigated using **ambient mass spectrometry** associated with optical and electrical methods.

**(2)** ***In-situ*** **UV absorption spectroscopy** has been developed to investigate real-time measurement of plasma-generated reactive oxygen and nitrogen species (RONS) in liquid (tissue fluid) and through model film (biological barrier). The validity of the results of the model experiment has been confirmed by the investigation of real tissue and animal experiments (figure on the right).




**(3)** Both and / or each **traditional low-pressure plasma** in vacuum and recent **non-thermal atmospheric-pressure plasma** have been considered to investigate new plasma processes including gas, liquid, and solid material.

**Technology (Product, Process, Device, Service etc.) That I Want to Request for Collaboration**

- Mass spectrometric system or other(s) for detecting target species in gas or liquid phase
- Facility to do investigate plasma-biological response in wide range covers from cell to animal
- Polymerization and / or material process(es) including material synthesis and / or surface treatment

**A List of 5 Key Publications**

- UV–vis spectroscopy study of plasma-activated water: Dependence of the chemical composition on plasma exposure time and treatment distance, J.-S. Oh, E. J. Szili, K. Ogawa, R. D. Short, M. Ito, H. Furuta, A. Hatta, ***Jpn. J. Appl. Phys.***, **57**, 0102B9 (2018)
- Modelling the helium plasma jet delivery of reactive species into a 3D cancer tumour, E. J. Szili, J.-S. Oh, H. Fukuhara, R. Bhatia, N. Gaur, C. K. Nguyen, S.-H. Hong, S. Ito, K. Ogawa, C. Kawada, T. Shuin, M. Tsuda, M. Furuhata, A. Kurabayashi, H. Furuta, M. Ito, K. Inoue, A. Hatta, R. D. Shor, ***Plasma Sources Sci. Technol.***, **27**, 014001 (2018).
- Plasma cell treatment device *Plasma-on-Chip*: Monitoring plasma-generated reactive species in microwells, J.-S. Oh, S. Kojima, M. Sasaki, A. Hatta, S. Kumagai, ***Scientific Reports***, **7**, 41953 (2017).
- Bactericidal pathway of *Escherichia coli* in buffered saline treated with oxygen radicals, T. Kobayashi, N. Iwata, J.-S. Oh, H. Hahizume, T. Ohta, K. Takeda, K. Ishikawa, M. Hori, M. Ito, ***J. Phys. D: Appl. Phys.***, **50**, 155208 (2017).
- How plasma induced oxidation, oxygenation, and de-oxygenation influences viability of skin cells, J.-S. Oh, X. Strudwick, R. D. Short, K. Ogawa, A. Hatta, H. Furuta, N. Gaur, S.-H. Hong, A. J. Cowin, H. Fukuhara, K. Inoue, M. Ito, C. Charles, R. W. Boswell, J. W. Bradley, D. B. Graves, E. J. Szili, ***Appl. Phys. Lett.***, **109**, 203701 (2016).