

Commission K (Electromagnetics in Biology & Medicine) Activity Report
April 2019 – September 2020

September 18, 2018

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1 Activities

2019 URSI-Japan Radio Science Meeting

Date: September 5-6, 2019

Place: The University of Electro-Communications, Tokyo

- Topics: 1) Professor Emeritus Shoogo Ueno (The University of Tokyo) gave an invited lecture entitled “New horizons in electromagnetics in medicine and biology.”
- 2) Oral Session 1: Recent Research Trends in Bioelectromagnetics (1) consisted of 5 invited talks.
- 3) Oral Session 2: Recent Research Trends in Bioelectromagnetics (2) consisted of 5 invited talks.
- 4) Poster Session: Electromagnetics in Biology and Medicine consisted of 5 presentations.

3rd Meeting of the Japanese URSI-Commission K for the 24th term of the Science Council of Japan

Date: September 6, 2019

Place: The University of Electro-Communications, Tokyo

- Topics: 1) Minute of 2nd Meeting of the Japanese URSI-Commission K.
- 2) Hosting the 2022 Annual Meeting of BioEM in Japan.
- 3) Recommendation of a candidate for the URSI Award (van der Pol Gold Medal).
- 4) URSI Centenary Book.
- 5) Organization of scientific sessions for URSI GASS 2020 at Rome.
- 6) Associated conferences.

Scientific symposium (Co-operated by Japanese Society for Electromagnetics in Biology and Medicine)

Date: February 17, 2020

Place: Akihabara Satellite Campus, Tokyo Metropolitan University, Tokyo

Number of participants: 37

Seven oral presentations and one special lecture were given to the participants.

- 1) “Numerical evaluation and experimental validation of magnetic markers for localised tumour

- excision” by Y. Xiao et al. (The University of Tokyo)
- 2) “Investigation of the brain response to the motor cortical stimulation in rats” by Z. Xin et al. (The University of Tokyo)
 - 3) “Preliminary study on the method to estimate the condition of fruits using electromagnetic fields” by Y. Jin et al. (Tokyo Metropolitan University)
 - 4) “Development and evaluation of a catheter for microwave denervation” by S. Matsubara et al. (Chiba University)
 - 5) “Methods for calculating electric field intensity in microwave dosimetry of WPT systems” by N. Fujita (Aoyama Gakuin University)
 - 6) “FDTD simulations for investigating quantitative relations between the electric field intensity and the rat whole body SAR in a reverberation. chamber” by R. Ito (Nagoya Institute of Technology)
 - 7) “Methods for calibrating optical electric field probes for measuring induced fields in the body at 85 kHz” by E. Oho (Tokyo University of Agriculture and Technology)
- Special Lecture) Development of medical devices at clinical sites by N. Takeshita (National Cancer Center Japan)

4th Meeting of the Japanese URSI-Commission K for the 24th term of the Science Council of Japan

Date: February 17, 2020

Place: Akihabara Satellite Campus, Tokyo Metropolitan University, Tokyo

- Topics: 1) Minute of 3rd Meeting of the Japanese URSI-Commission K.
 2) Hosting the 2022 Annual Meeting of BioEM in Japan.
 3) URSI GASS 2020 at Rome.
 4) Associated conferences.

Core member meeting of the Japanese Commission K

Date: November 27, 2019, March 25, May 7, May 14, May 27, July 30, and August 19, 2020,

Place: National Institute of Information and Communications Technology, Otemachi, Tokyo or teleconference

Topic: Hosting the 2022 Annual Meeting of BioEM in Japan.

Hosting the 2022 Annual Meeting of BioEM in Japan

BioEM is the world's largest and most highly recognized bioelectromagnetics conference attracting academic and industrial participants at all career stages from all over the world. The core members of Japanese Commission K submitted a proposal of hosting BioEM 2022 in Nagoya to the Bioelectromagnetic Society and European BioElectromagnetics Association. Their decision will be

announced soon.

2 Awards

Balthasar van der Pol Gold Medal at URSI GASS 2020

- Professor Koichi Ito (Chiba University) won the Balthasar van der Pol Gold Medal for his contributions to research and development in the fields of medical applications of electromagnetic waves and their evaluation using human-equivalent phantoms.

Young Scientist Award at URSI GASS 2020

- Dr. Yinliang Diao (Nagoya Institute of Technology) won the Young Scientist Award for his paper entitled “Comparison of spatial averaging methods of in situ electric field for low-frequency magnetic field exposures.”
- Dr. Kun Li (Kagawa University) won the Young Scientist Award for his paper entitled “Computational Comparison of Power Density Definitions in the Proximity of Antennas for the Assessment of Human Exposure to EMF above 6 GHz.”
- Dr. Kento Takabayashi (Okayama Prefectural University) won the Young Scientist Award for his paper entitled “A study on Smart BAN physical layer applying multi-level PSK modulation.”

Student Paper Competition at URSI GASS 2020

- Mr. Shuang Liu (The University of Tokyo) was selected as a finalist of student paper competition for his paper entitled “Design of multi-locus transcranial magnetic stimulation coil with single driver.”

A young research excellent presentation award at the Scientific Symposium of the Japanese Society for Electromagnetics in Biology and Medicine

- Ms. Yingyi Xiao (The University of Tokyo) won the young research excellent presentation award for her presentation entitled “Numerical evaluation and experimental validation of magnetic markers for localised tumour excision.”

3 Associated meetings

3.1 Past meetings

1. BioEM, Montpellier, France, 23 - 28 June 2019, < <https://www.bioem2019.org/> >
2. URSI-Japan Radio Science Meeting, Tokyo, Japan, 5 – 6 September 2019, < <http://www.ursi.jp/conference/jrsm2019/> >
3. BioEM, Oxford, UK, 21 - 26 June 2020, < <https://www.bioem2020.org/> >
4. URSI GASS, Rome, Italy, 29 August - 5 September 2020, < <http://www.ursi2020.org/> >

3.2 Future meetings

1. BioEM, Honolulu, Hawai'i, 13 - 18 June 2021, < <https://www.bioem2021.org/> >
2. URSI GASS, Rome, Italy, 28 August - 4 September 2021, < <http://www.ursi2021.org/> >