

Commission K (Electromagnetics in Biology & Medicine) Activity Report
July 2021 – May 2022

May 17, 2022
Soichi Watanabe

1. Activities

Commission K Business meetings during GASS 2021.

Date: August 30, September 1 and 3, 2021

Place: Online

Prof. Koichi Ito has been promoted as the new chair of Commission K. Dr. Kensuke Sasaki has continue the ECR of Commission K. Candidates of a new vice chair and another ECR have been elected.

The 2nd Meeting of the Japanese URSI-Commission K for the 25th term of the Science Council of Japan

Date: November 12, 2021

Place: Online

- Topics:
- 1) Approval of the minute of the 1st meeting.
 - 2) Report of the Japanese National Committee of URSI.
 - 3) Report of the Commission Coordinating Activities Meeting.
 - 4) Relationship between the flagship conferences of URSI and other related conferences.
 - 5) Progress report of URSI GASS 2023, AT-AP-RASC 2022, and BioEM 2022.
 - 6) Report of other societies and meetings.
 - 7) Other businesses.

The core member meeting of secretaries of the Japanese URSI-Commission K.

Date: January 17, 2022

Place: Online

- Topics
- 1) Activity plan of the Japanese URSI-Commission K in FY2022.
 - 2) Next symposium on Electromagnetics in Biology and Medicine.
 - 3) Promotion for the submission to BioEM 2022.
 - 4) URSI
AT-AP RASC 2022, URSI GASS 2023
JRSM 2022
 - 5) Other businesses

The 3rd Meeting of the Japanese URSI-Commission K for the 25th term of the Science Council of Japan

Date: April 20, 2022

Place: The University of Tokyo and online (hybrid)

- Topics:
- 1) Approval of the minute of the 2nd meeting.
 - 2) Report of the Japanese National Committee of URSI.
 - 3) Report of the international activities of the Commission K.
 - 4) Progress report of URSI GASS 2023, AT-AP-RASC 2022, and JRSM 2022.
 - 5) Progress report of BioEM 2022.
 - 6) Report of other societies and meetings.
 - 7) Other businesses.

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

Date: April 20, 2022

Place: The University of Tokyo and online (hybrid)

Number of participants: 38

7 oral presentations and 2 special lectures were given to the participants.

- 1) “Measurement of exposure levels to electromagnetic fields around broadcast transmit towers” by K. Tobita et al. (NICT)
- 2) “Temperature measurement in a tissue-equivalent phantom by a fluorescent thermoprobe” by S. Yamazaki et al. (NICT)
- 3) “Approximating Temperature Rise in Transcatheter Renal Denervation Using Machine Learning” by A. Rakhmadi et al. (Chiba University)
- 4) “Numerical Estimation of Human Body Blockage Characteristics at Cellular and Wireless LAN Frequency Bands for Epidemiologic Research on Children’s Health” by K. Yamamoto et al. (Hokkaido University)
- 5) “A Basic Study of EEG Detection in Hand Closing Movement” by R. Shoji et al., (Nagoya Institute of Technology)
- 6) “Reconstruction of the electrical properties in human bodies based on the estimation of the unmeasurable magnetic field” by N. Eda, et al., (The University of Tokyo)
- 7) “Analysis of the head induced electric field during the magnetic-particle imaging”, S. Liu et al., (The University of Tokyo)

Special Lecture 1) Mathematical approaches to biomagnetic inverse problems: magnetoencephalography (MEG) and magnetic resonance electrical property tomography (MREPT) by T. Nara (The University of Tokyo)

Special Lecture 2) Electromagnetic environment and health ~Looking back on 40 years of research life~ by J. Miyakoshi (Kyoto University)

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. Many members of Japanese Commission K are preparing to host the BioEM 2022 in Nagoya.

<https://www.bioem2022.org/>

3 Awards

Young Scientist Award at URSI GASS 2021

- Dr. Sen Liu (National Institute of Information and Communications Technology) won the Young Scientist Award for his paper entitled “Incident power density assessment of smart surfaces for exposure compliance.”

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

- Mr. N. Eda with the University of Tokyo “Reconstruction of the electrical properties in human bodies based on the estimation of the unmeasurable magnetic field”

4 Associated meetings

4.1 Past meeting

1. BioEM, Ghent, Belgium, 26--30 September 2021, <<https://www.bioem2021.org/>>

4.2 Future meetings

1. BioEM, Nagoya, Japan, 19—24 June, 2022, < <https://www.bioem2022.org/> >