

Report on 16th International Scientific Workshop and Postgraduate Course Electroporation-Based Technologies and Treatments 2022

This year we organised the 16th edition of the International scientific workshop and postgraduate course Electroporation-Based Technologies and Treatments. The event was held on November 13 – 19, 2022 at University of Ljubljana, Faculty of Electrical Engineering, Ljubljana, Slovenia and on-line in hybrid way. The scientific workshop and course is intended both for novices and experts in electroporation, including PhD students, researchers, and end-users. This year it was attended by 24 participants and 17 lectures from 10 countries with 23 organisers of the practical works. According to the words of attendees, this course is an excellent platform to learn, and advance the knowledge on electroporation mechanisms and applications.

The topics covered were electrical properties of cells and tissues and their behaviour in the electric field, physical chemistry of membrane electroporation, electroporation *in vitro* and *in vivo*, development of devices and electrodes, electrochemotherapy of tumours, and applications of electroporation in gene transfection. Additionally, invited lecturers presented state of the art results in their field. Joel N. Bixler started Monday afternoon invited lecture entitled Nanosecond strobe fluorescence confocal micrography of cell transmembrane voltage. Jesper Nylandsted showed membrane repair mechanisms, Javier Raso gave a lecture on Novel processing technologies in food processing, Adam Williamson presented treatment of epilepsy with temporal interference stimulation and focal ablations using electroporation. Tomás García-Sánchez had lecture on Pulsed Field Ablation (PFA): current knowledge and future challenges, and Shaurya Sachdev presented DNA electrophoresis in gene electro transfer.

The participants who sought for ECTS or CME credits have been asked to submit an abstract, present their work and prepare a poster, select practical work sessions, and fill the lab safety survey. All submitted abstracts were gathered with invited lecturers abstract in EBTT Proceedings (available online: <http://2022.ebtt.org/proceedings/>) Short presentations of abstract were given before lunch break. The question and discussion has been taken around the posters each day during coffee break. On Friday coffee break a number of commercial and “homemade” electroporators owned by Laboratory of Biocybernetics, University of Ljubljana, Faculty of Electrical Engineering were exhibited in the auditorium and were available to view and test.

The laboratory practices sessions were conducted on the afternoon both on-site and online. Participants could choose between wet labs, computer simulations, e-learning and hardware laboratory practices. Participants were choosing from 20 practical works. Based on selection 14 were performed in the laboratories for 19 participants and 4 were performed online for five participants.

The morning lectures were vital to acquire all the theoretical knowledge, while in the afternoon the attendees were invited into laboratories to participate in practical work sessions. In the evenings, social events were organised to strengthen the relations between researchers, lecturers and attendees.

In sixteen editions, 1024 participants from 44 countries visited the course since 2003 when school was organised the first time. Our main goal remains to constantly improve the quality of the school.

Chairman of the EBTT:
Assistant professor Peter Kramar, PhD

Co. director of the EBTT:
Professor dr. Damijan Miklavcic, dr.h.c.



Participants of the EBTT 2022.



Exhibition of a commercial and homemade electroporators at the Friday coffee break.



In the lecture room ...



Wet lab practical work