



Newsletter No. 59

Session “Pulsed electric and magnetic fields in biology, medicine and biotechnology” at the BES2021 Symposium

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The XXVth International Symposium on Bioelectrochemistry and Bioenergetics of the Bioelectrochemical Society will be held between the 9th and 13th of May 2021, in Cluj-Napoca, Romania. The general theme of the symposium “Bioelectrochemistry for improved Life Quality” is widely encompassing, and the scientific program of the symposium is intended to feature aspects of the highly interdisciplinary areas of Bioelectrochemistry and Bioenergetics. Therefore, an extensive selection of lectures to be given by leading scientists on recent trends in major research fields involving electrochemical investigations is scheduled.

The symposium program includes a session entitled “Pulsed electric and magnetic fields in biology, medicine and biotechnology”. To make this session truly one of interdisciplinarity and excellence, its list of scheduled lectures comprises:

- A Plenary lecture by Damijan Miklavčič (University of Ljubljana, Slovenia) entitled “Electroporation-based Technologies and Treatments”,
- Two Keynote lectures: Julita Kulbacka (Wroclaw Medical University, Poland) with “Milli-, micro, and nanosecond PEF in gastrointestinal related cancers - in vitro and in vivo models” and Antoni Ivorra (Universitat Pompeu Fabra, Spain) with “Injectable wireless microstimulators based on electronic rectification of volume conducted currents”, and
- An Invited lecture of Felix Sima (National Institute for Lasers, Plasma and Radiation Physics, Magurele-Romania) entitled “Ultrafast laser processing of glass microfluidic systems: application to cancer research”.

The oral presentations of the session will cover diverse research themes ranging from fundamentals to clinical applications of electroporation.

Within the basics, there are presentations on:

- how the membrane asymmetry and charges influence the dynamics of giant unilamellar vesicles exposed to electroporation as seen by fast videomicroscopy,

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- the subtleties of lipid packing in cellular membranes during and after application of electroporation pulses as seen by spectrofluorimetry,
- how autocorrelation functions may be used on time-series of quantitative phase images of electroporated cells to evidence membrane regions prone to permeabilization,
- molecular dynamics simulation of strong electric field effects on microtubules,
- how the pulsed electric fields may impact the dermal extracellular matrix of a human dermal substitute model.

Clinical data on electrochemotherapy will be shown in oral presentations on:

- the outcomes of a phase II trial on evaluation of calcium electroporation for the treatment of cutaneous metastases, and
- the initial results of a study on bleomycin-based electrochemotherapy for deep-seated soft tissue sarcomas.

From the poster presentations, three have been chosen for a 4-minute-long flash presentation during a special poster session covering all the topics of the symposium; this is a special session conceived to encourage discussions, promote young researchers, and catalyse new collaborations.

Forced to face the challenges of the ongoing SARS-CoV-2 pandemic, the team of local organizers coordinated by Robert Sandulescu in agreement with the Society Council, moved the symposium completely on-line. They are working on preparing a good multimedia support for all sessions to be easily accessible to participants coming from various countries and different time zones. The organizers are working on compensating for the enjoyable social events initially planned to showcase the beauties of a city with over 2000 years of history, or to introduce to the participants the traditional dish “varză à la Cluj”, with activities that can be attended on-line.

We are all forced to experience new ways by which to exchange scientific knowledge and expertise. Continuing with organisation and participation to high quality scientific meetings during difficult times of a pandemic is an achievement *per-se*. You can find more information on the symposium web page www.bes2021.org. Registration is still open, so, do not hesitate to join us.

Forthcoming events

XXVIth International Symposium on Bioelectrochemistry and Bioenergetics of the Bioelectrochemical Society

Cluj-Napoca, May 9 – 13, 2021

<http://www.bes2021.org>

7th School on Pulsed Electric Field Applications in Food and Biotechnology

Zaragoza, May 31 – June 2, 2021

<https://pefschool2021.electroporation.net>

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*Somes river in Cluj-Napoca,
Romania.*

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