

**Special issue on *Biochemical and Biomedical Effects of Plasma-Liquid Activation***

**Call for Papers**

Guest Editors

E Szili, V Colombo, and Z Machala

Gas phase, low temperature plasmas interacting with biological systems invariably involve the liquid phase. Plasma can alter biological organisms through the creation of reactive chemical species; electric fields and currents; and photons, among other effects. Virtually all plasma-generated reactive oxygen and nitrogen species are known to be created naturally in aerobic organisms in a liquid environment and they generally have biochemical roles. Plasma-generated electric fields, currents and charged species exert biological effects through aqueous (e.g. electrolyte) and non-aqueous (e.g. lipid) cellular liquids. Relevant organisms include all of aerobic biology: plants, animals and microorganisms.

The topic of plasma-liquid interaction has received considerable attention in the last several years but understanding of the biochemical and biomedical aspects of the topic is especially under-developed at present. Spectroscopic and imaging tools are just beginning to be applied but are not widely adopted or exploited. Mathematical models and simulations of plasma-liquid interactions have addressed mostly simple aqueous liquid solutions. And the relations between known and suspected plasma-biology mechanisms and actual plasma conditions are dimly understood at best. These challenges prompted the proposal to create this special issue of IEEE Transactions on Radiation and Plasma Medical Science. A major goal is to strengthen and extend the current understanding of plasma-liquid mechanisms as they impact plasma biomedical applications.

You are therefore invited to submit relevant papers to this special issue on topics that include, but are not limited to the following:

- The clinical perspective on plasma-liquid activation, e.g. for bacterial decontamination, wound healing, cancer therapy and cell growth stimulation
- Spectroscopic and imaging diagnostics relevant to plasma-liquid interactions in a biological context
- Mathematical models and numerical simulations associated with plasma-liquid interactions with a biomedical emphasis
- Plasma source design and control for plasma-liquid biomedical applications

Authors must submit papers digitally to <https://mc.manuscriptcentral.com/trpms>, using standard IEEE Transactions format (<http://ieeauthorcenter.ieee.org>), indicating in their cover letter that the submission is aimed for this special issue. Authors are encouraged to contact the guest editors to determine suitability of their submission for this special issue.

**Guest Editors:**

Endre Szili, University of South Australia, [Endre.Szili@unisa.edu.au](mailto:Endre.Szili@unisa.edu.au)

Vittorio Colombo, University of Bologna, [vittorio.colombo@unibo.it](mailto:vittorio.colombo@unibo.it)

Zdenko Machala, Comenius University, [machala@fmph.uniba.sk](mailto:machala@fmph.uniba.sk)

**Schedule:**

Submission of manuscripts: November 15, 2018

Acceptance/rejection notification: March 1, 2019

Revised manuscripts due: May 1, 2019

Publication: September 1, 2019 (tentative)