Special Issue: Plasma Agriculture and Food Safety

Atmospheric pressure nonequilibrium “cold” plasmas are rapidly gaining the interest of the food science and food technology community. Cold plasmas are a tunable catalyst where electric circuits can control certain active and reactive species’ production. The same plasma systems can then be used for a wide range of essential applications: from inactivating pathogenic organisms to promoting seed germination, plant development, and plant growth.

We have gathered contributions covering the critical and emerging range of potential applications in agriculture and food safety in this Special Issue. Dr. Volkov and his team study the effects of atmospheric pressure helium plasma jet on seed germination and early plant development stages. Dr. Koga’s team uses a surface dielectric barrier discharge to study the seed coat’s chemical changes. Dr. Takahashi et al. look at the effects of pulsed dielectric barrier discharge on removing airborne fungi. This treatment approach is also vital to analyze during the current global pandemic coming from the airborne SARS-CoV-2, which can also be removed from the air, possibly using similar or the same system as Dr. Takahashi and his team demonstrate. Dr. Wang and co-authors look at coaxial-type barrier discharge system and its optimization for the production of ozone. Ozone is an important molecule currently used in the industry both in agriculture and food safety. Finally, the special issue concludes with the work of Dr. Srisonphan and his colleagues on atmospheric corona effect on rice seed: from decontamination to seed germination and shelf-life extension. Pulsed coronas are volumetric discharges and are easy to scale up to industrial demands.

Guest Editor:

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