

## VIRTUAL MOBILITY (VM) GRANT REPORT TEMPLATE

This report shall be submitted by the VM grantee to VNS Manager, who will coordinate the approval on behalf of the Action MC, within 30 day from the VM activity end and in any case no later than the 20 October 2021.

Action number: CA19110

VM grant title: Round table “GREEN PLASMA FOR GREEN FUTURE”

VM grant start and end date: 27/09/2021 to 26/10/2021

Grantee name: NINA RECEK

### Description of the outcomes and achieved outputs (including any specific Action objective and deliverables, or publications resulting from the Virtual Mobility).

The event organized by the support of the VM grant took place on the ZOOM video platform. The round table started with the presentation of the Virtual Mobility scheme presented by Dr. Augusto Stancampiano. After this, five oral presentations covering different topics followed:

- Introduction – overview of the problems and issues faced before/ during/after experimental work (Dr. Nina Recek)
- Variety of plasma devices (home-made devices): Issues arising from comparing the experimental data and incomparability of experimental results (Assoc. Prof. Dr. Gregor Primc)
- Plasma decontamination of seeds: Comparison between evaluation techniques for decontamination (Jure Mravlje, Ph.D. student)
- Protocols for plasma treatment od seeds (Pia Starič, Ph.D. student)
- Upscaling of plasma systems in industry and continuous production line (Dr. Peter Gselman, CEO of INTERKORN Ltd., expert from industry)

The most exciting and welcomed contributions for the participants were presentations from Jure Mravlje and Dr. Peter Gselman. Jure Mravlje presented different methodologies for the evaluation of seed contamination with fungi. It was noted that it is important to use at least two different approaches/methods as not all methods are suitable for assessing different fungi presence.

An exciting and informative presentation was a contribution from Dr. Peter Gselman, the CEO of Interkorn Ltd. As an expert from the seed industry, he presented how plasma technology could be implemented in the industry and provided some plasma reactors that could soon be used for plasma treatment of seeds on the industrial level.

During the discussion, the participants agreed to several issues that need to be addressed in the research community in the field of plasma research:

- Use of ISTA standards for seed treatment
- Evaluation techniques for seed decontamination
- Importance of seed dormancy period: when to use seeds for experiments (the time frame from harvesting to sowing)?

- Standardization of plasma parameters (fluence of radicals and ions, reactive species, OES measurements, atom density per number/mass of seeds etc.)

### **Description of the benefits to the COST Action Strategy (what and how).**

The round table event, “Green plasma for green future”, has also benefited to several points in the COST Action Strategy:

The event enabled a multidisciplinary discussion and the sharing of new knowledge, such as possible decontamination methods of seeds and knowledge from experts from the industry. It was also emphasized that common basic protocols are necessary to enable reproducible results in different laboratories. An essential addition would be for all scientists from the field of plasma agriculture to provide specific information on plasma discharge, such as power density per number/mass of seeds. Often, in literature, important plasma parameters, such as fluence of radicals and ions, reactive species, OES measurements, are missing. It is crucial for everyone to measure and write down these parameters, so the results can be compared and even more important, standardization of parameters is needed.

The meeting also enabled the support and involvement of early-career investigators and female researchers to gain valuable experience in organizing and leading the meeting and roundtable discussion.

### **Description of the virtual collaboration (including constructive reflection on activities undertaken, identified successful practices and lessons learned).**

The invitations for the event “Green plasma for green future” were sent to COST action members, as well as through other forms such as social media (LinkedIn). Those interested in the event were asked to register through Google forms and answer a few questions that would help us with the organization of the event. We received a total of 61 registrations from all over Europe (Italy, Spain, France, Slovenia, Croatia, Serbia,...). Interestingly, only 50 % of the registered participants were members of PLAGRI COST action and 72% had not participated in a round table before.

The virtual collaboration, the round table “Green plasma for green future”, was successfully executed. The activity took place on the ZOOM video platform. The total number of participants in the meeting was around 55 people.

After each topic, the participants had the opportunity to ask questions about the presentation. After the presentations, the meeting continued with the round table discussion, where the participants actively participated.

It was of great interest discussion about upscaling the pilot-scale plasma reactor to industrial reactor. The participation and explanation from industry expert, CEO of the company Interkorn have been a great added value to the round table. Experiences in constructing large scale plasma reactors for the treatment of seeds in the continuous mode were very interesting to hear; explained were the issues arising during the constructions, critical points, drawbacks, pros and cons of using plasma in industry.

A discussion was also about how to introduce standards in experimental work: we need standardization of plasma and discharge parameters on at least one plasma device, which everybody could refer to when comparing their results of research work.