

11th Global Plasma Forum

Recent topics of plant science and low-temperature plasma science

Date and time: 14:00-18:00 JST, October 31, 2021

Format: Online open meeting

Host institutes: Center for low-temperature sciences (clps) and International center for research and education in agriculture (ICREA), Nagoya University; Center of plasma nano-interface engineering (CPNE), Kyushu University; Interdisciplinary research center for non-equilibrium plasma, Tohoku University

Organizers: Kenji Ishikawa and Kazunori Koga

Promotion of seed germination and plant growth by irradiation of low-temperature physics gas plasma has attracted attention as a new technology for agriculture. Seeds are major crops and are used in many fields such as food, medicine, resources, and energy. In addition to crop breeding, global environmental changes have caused plants to deviate from their tolerance to environmental stresses, affecting in no small part the physiological mechanisms of plants that sense environmental temperature, nutrient level, and light conditions and determine the timing of germination from dormancy. Low-temperature plasma irradiation has been found to break dormancy, acting with short-lived active species that are useful in crop cultivation. Therefore, we focus on the reactive species common to both fields and provide an opportunity to invite experts in both plant science and low-temperature plasma science to discuss the topic. We look forward to participation of many participants.

Program

(Lecture time: 30 minutes for each lecture; official language: English)

- 14:00-14:30 **Yoshihisa Ikeda** (Ehime U) Mechanism of molecular introduction into plant cells by plasma treatment
- 14:30-15:00 **Yuki Yanagawa** (Chiba U/RIKEN) Introduction of macromolecules into plant cells by plasma irradiation
(break 15:00-15:30)
- 15:30-16:00 **Sugihiko Ando** (Tohoku U) Activation of plant immunity by exposure to plasma generated reactive molecules
- 16:00-16:30 **Mana Kano-Nakata** (Nagoya U) Strategy of adaptation and plasticity of crop root under water stress environment
(break 16:30-17:00)
- 17:00-17:30 **Kazumi Nakabayashi** (R Holloway U London) Characterisation of molecular mechanisms of seed dormancy release by gas-plasma activated water