No.45

IPPS Lecture & Seminar
（大学間連携オムニバス講義）

Title：Progress on Nanosecond-pulse Discharge and Plasma Applications in IEE CAS

Lecturer: Prof. Tao Shao [Pulsed Power & Plasma Laboratory Institute of Electrical Engineering, Chinese Academy of Sciences Beijing, China]

Date & Time：January 30 2019, 13:00-14:30

Venue：Kurokami South [Kasetsu-D]（1F meeting room B）

Abst.：Nanosecond pulsed discharge has become a promising solution for generating atmospheric-pressure plasmas in open air. Nanosecond pulsed discharge has many advantages, such as high power density, high reactive efficiency, and high average electron energy, and this kind of discharges can be used in many fields including material treatment, green energy, flow control, biomedical and medicine, etc. This presentation focuses on the research work of nanosecond-pulse discharges and their applications at atmospheric pressure in the Institute of
Electrical Engineering, Chinese Academy of Sciences (IEE CAS). Firstly, investigations on the behavior of runaway electrons in nanosecond-pulse discharges, including measurements of runaway electrons beam and X-rays, are presented. Secondly, electrical characteristics of typical discharges, such as dielectric barrier discharge, diffuse discharge, atmospheric-pressure plasma jet and gliding discharge, are described.
Finally, some typical applications of nanosecond-pulse discharges are introduced, including surface modification and thin film deposition on polymer and metal surface, methane conversion.

Keywords: Nanosecond pulse, runaway electrons, dielectric barrier discharge, atmospheric-pressure plasma jet, gliding discharge, surface modification, methane conversion

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