Contribution ID: **877** Type: **Either**

3P40 - Improvement of ozone generation characteristics with shorter rise time of nanosecond pulse voltage

Wednesday 26 June 2019 13:30 (1h 30m)

Ozone has strong oxidation power and no-residual toxicity, therefore it is expected one of the next-generation oxidants. There are various applications using ozone such as clarification of drinking water, industrial wastewater treatment, and so on. At present, dielectric barrier discharge is the main method used for commercial ozonizers. However, as most of the input energy is lost as heat, its low energy efficiency into plasma phase has been a problem. In recent years, it is demonstrated that the pulsed discharge produced by 7 ns duration pulsed power gave us the high energy efficient ozone generation. However, there is still problems that the maximum ozone concentration using the nanosecond pulsed discharge has been saturated at approximately 40 g/m3. Therefore, in this study, the experimental results of high concentration ozone generation using nanosecond pulsed discharge was performed.
In this study, the purpose of improving pulse rise time, nanosecond pulse forming line using peaking switch was developed. The fast rise time pulse was formed by a peaking switch, and the rise time of pulse is shorten into 2 ns on the discharge reactor. Additionally, we investigated the effect of pulse rise time on ozone generation. As the result, in case of the experiment of faster rise time pulse, the efficiency of ozone generation is higher than the previous one which has 7 ns pulse which and 3 ns pulse rise time.

Author: FUKUOKA, Hideaki (Graduate School of Science and Technology)

Co-authors: Mr IIDA, Shuhei (Graduate School of Science and Technology, Kumamoto University –Japan); Prof. WANG, Douyan (Institute of Pulsed Power Science, Kumamoto University –Japan); Prof. NAMIHIRA, Takao (Institute of Pulsed Power Science, Kumamoto University –Japan)

Presenter: FUKUOKA, Hideaki (Graduate School of Science and Technology)

Session Classification: Poster - Industrial/Commercial/Medical Applications and Plasma and Pulse Power Diagnostics

Track Classification: 6.4 Environmental, Industrial, and Display Applications