Contribution ID: **170** Type: **Poster Presentation**

Effect of Solution Electric Conductivity on Surfactant Treatment Using Nanosecond Pulsed Powers

Friday 8 July 2016 14:40 (20 minutes)

Development of the treatment technology of household effluent and industrial wastewater is imperative for environment conservation. In recent years, water treatments with electric discharges have been studied as one of the water treatment technologies. We have studied the decomposition of organic compounds, as indigo carmine and surfactant, in the water by streamer discharges generated with nanosecond pulsed powers. Streamer discharges not only generate active species such as ozone and OH radical but also effectuate direct actions such as shock waves and ultraviolet rays. Because surfactant was contained in household effluent and industrial wastewater, and was persistent, the surfactant was chosen as a treatment target.
In this study, a solution of persistent surfactant: nonylphenol ethoxylate was treated by using streamer discharges generated with nanosecond pulsed powers. The effect of electric conductivity of the surfactant solution on the treatment was investigated. The conductivity was changed by adjusting added KCl (potassium chloride) amount in the surfactant solution. The foam, which is a typical characteristic of surfactant, in water reservoir disappeared faster when the conductivity was higher. Because measured ozone concentration was approximately same after 80 minutes in all conductivities, it was considered that increase in conductivity due to addition of KCl could not affect the ozone production but surfactant degradation. In these experiments, streamer discharges might directly act on surfactant treatment or potentiate the reaction of ozone to surfactant. Increase in absorption around 200 nm with conductivity was observed by spectrophotometric analysis for the solution. It was suggested that nonylphenol was generated by decomposing nonylphenol ethoxylate.

Author: Mr SHIMIZU, Kai (Tokushima University)

Co-authors: Prof. TERANISHI, Kenji (Tokushima University); Mr MORIMOTO, Mitsuru (Tokushima University); Prof. SHIMOMURA, Naoyuki (Tokushima University)

Presenter: Mr SHIMIZU, Kai (Tokushima University)

Session Classification: Poster 3-A

Track Classification: Plasmas, Discharges, and Electromagnetic Phenomena