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Development of Plasma Fine Bubbles Generator to Improve Water Quality Utilized by Barrier Discharge. WATARU TAKAHASHI, SATOSHI KURUMI, KEN-ICHI MATSUDA, KAORU SUZUKI, Nihon University — Techniques for generating nano-, micro-scale bubbles (or fine bubbles) have been attracted for improving water quality as an environmentally-conscious method. Natural bubbles in water are affected by their own buoyant forces, so they behave to be floated toward the water surfaces. For the case of fine bubbles (FBs, for short), they have been affected by surface charges on the bubbles in addition to the buoyant force. Therefore, the FBs repulse each other like electrostatic forces, and they also stable in water when the forces are much greater than the buoyant one. In our previous study, homemade generators of FBs have been developed to the application for decomposing hazardous contaminations in polluted waters by FB's negative charges. However, we are incapable of obtaining good effects for water quality improvement utilizing this system so far. In order to progress our research, we have tried to install barrier discharge systems into the FB generators so as to let the bubble have plasma particles and ozone. The plasma FBs (p-FBs) containing ozone would be expected to enhance the ability for water-quality improvement. In this study, we have investigated a new equipment of the p-FBs generator and behaviors of the FBs in water.

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