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A Compact Plasma Flow-Bubbler for Decomposition of Organic compounds and Sterilization HIROYUKI YOSHIKI, FUKUTO ISHIKAWA, YU IGARASHI, Tsuruoka National College of Technology, TETUYA SUGAWARA, Yamagata Research Institute of Technology — Recently, Plasma production in and in contact with liquid has attracted much attention because of their applications to degradation of organic compounds, sterilization, water purification. UV, electron, ion and radical flows originated from a plasma and also shock wave induce physical and chemical reaction in a liquid, for example oxidation-reduction, electrolysis and reactive species production in a water. In particular, various reactive oxygen/nitrogen species generated at the plasma-liquid interface play an important role in oxidation and degradation of organic pollutants and bacteria. We have proposed the mild water treatment by ejecting the atmospheric-pressure μplasma (APμP) flow into a water using a microbubble aerator or a porous ceramics bubbler. In this study, a compact plasma flow-bubbler made up of a μplasma source and a porous ceramics has been developed for the applications of water purification and sterilization. APμP is generated between a thin metal pipe electrode and a GND plate by a pulsed high voltage, so that the O_2 μplasma can be obtained without adding He and Ar gases. Plasma flow is ejected into the water through a porous ceramics. Decolorization of an indigo carmine solution strongly depended on O_2 flow rate. Chemical probe method using terephthalic acid revealed that OH radicals are produced by the O_2 plasma gas bubbling. The inactivation for *E. coli*, *Bacillus subtilis* was attained by the O_2 plasma gas bubbling.

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