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**Diagnostics of Microwave Bubble Plasma in Liquid** HIROTAKA TOYODA, HIROYASU SUGIURA, RYOTA SAITO, TATSUO ISHIJIMA, Nagoya University — Plasma production in the liquid phase has attracted much attention due to its potential applications such as biomedical or environmental processes. As a new technique, we have developed bubble plasma production in liquid with use of pulsed microwave from a slot antenna, and have succeeded in decomposing harmful chemicals such as trichloroethylene (TCE). In this work, optical emission and absorption spectroscopies were adopted to diagnose the microwave bubble plasma. OES result indicated strong OH emission from the plasma, suggesting production of reactive OH radical in the bubble plasma from water vapor. Furthermore, plasma density of the bubble plasma was investigated by time-resolved Stark broadening spectroscopy. To give insight into the reactive species in the liquid phase, plasma-treated water was investigated with UV/VIS optical absorption spectroscopy and a chemical reagent that is sensitive to hydrogen peroxide. From these measurements, existence of hydrogen peroxide in the liquid phase was confirmed.

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