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The purification mechanism of wastewater by underwater discharge KANGIL KIM, SUK HWAL MA, JIN YOUNG HUH, YONG CHEOL HONG, National Fusion Research Institute, NATIONAL FUSION RESEARCH INSTITUTE TEAM, CHONBUK NATIONAL UNIVERSITY TEAM, KWANGWOON UNIVERSITY TEAM, NPAC TEAM — There is a continuing need for development of effective, cheap and environmentally friendly processes for purification of wastewater. In this regard, the plasmas can be a promising candidate for next-generation method to purify the wastewater. It is well known that the plasmas generate many reactive species and thus they are predominant for degradation of organic pollutants from water. In order to generate plasma in wastewater, the capillary electrodes are used with ac power supply. After plasma treatment, the coagulants are added to purify the wastewater. The efficiency of coagulation is significantly improved by plasma treatment of wastewater. These results may come from the reactions among radicals of plasma-treated water, electron reduction and oxidation of ions in waste water, and coagulant. In order to verify the hypothesis, we measured characteristics changes of water by underwater discharge. In this study, we propose the purification mechanism of wastewater by underwater discharge. We expect that the underwater discharge can be applied to purify wastewater in near future.

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