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Analysis of cavitation effect for water purifier using electrolysis¹

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— Water is a limited and vital resource, so it should not be wasted by pollution. A development of new water purification technology is urgent nowadays since the original and biological treatments are not sufficient. The microbubble-aided method was investigated for removal of algal in this study since it overcomes demerits of the existing purification technologies. Thus, the cavitation effect in a venturi-type tube using the electrolysis was analyzed. Ruthenium-coated titanium plates were used as electrodes. Optimum electrode interval and applied power were determined for the electrolysis. Then, the optimized electrodes were installed in the venturi-type tube for generating cavitation. The cavitation effect could be enhanced without any byproduct by the bubbly flow induced by the electrolysis. The optimum mass flow rate and current were determined for the cavitation with the electrolysis. Finally, the visualization techniques were used to count the cell number of algal and microbubbles for the confirmation of the performance. As a result, the energy saving and high efficient water purifier was fabricated in this study.

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