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Development of High-Throughput Liquid Treatment System using Slot Antenna Excited Microwave Plasma SHO TAKITOU, Ngoya Univ., MICHIKO ITO, Ngoya Univ. Plama Center for Industrial Applications, SEIGOU TAKASHIMA, Plasma Center for Industrial Applications, NORIO NOMURA, TOMINORI KITAGAWA, Sanshin Mgf. Co., Ltd, HIROTAKA TOYODA, Ngoya Univ., PLANT, Nagoya Univ. — Recently, much attention has been given to plasma production under liquid and its industrial applications as well as investigation of chemical reactions as a result of plasma-liquid interactions. In various kinds of plasma production techniques, we have proposed pulsed microwave excited plasma using slot antenna, where damage to the slot electrode can be minimized and plasma volume can be increased. Furthermore, we have proposed an in-line microwave plasma system where plasma is efficiently produced under reduced pressures using Venturi effect, and have demonstrated enhancement of organic decomposition efficiency. For practical use of the plasma liquid treatment, however, cost-effective and more efficient treatment system with high treatment capability is required. In this study, we propose further enhancement of the treatment speed by designing four-parallel-type liquid treatment device where four discharges for the treatment are performed using one microwave power source. Decomposition speed of newly-developed plasma system is investigated. Not only high decomposition rate but also enhanced energy efficiency is realized.

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