

## 디스크형 진동자의 연동 운동을 이용하는 밸브리스 마이크로 압전 펌프

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### Valveless piezoelectric micro-pump exploiting two sided disk type vibrator

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**Abstract :** Existence of physical moving parts (ex. check valve) produces several problems (mechanical abrasion, deterioration of reliability, limited temperature performances etc.) in driving pumps. To overcome such problems, we proposed a valveless piezoelectric micro-pump which has new type volume transferring mechanism. The proposed micro-pump has a double faced disk type vibrator that can generate peristaltic motion formed by traveling wave in each surface of a disk. This type of micro-pump is able to apply to a fluid supply system that provides two different kinds of fluid simultaneously. In this paper, we propose a simple and novel design of piezoelectric micro-pump that is peristaltically by piezoelectric actuators and allows the removal of the need for valves of other physically moving parts. The finite elements analysis on the proposed pump model was carried out to verify its operation principle using the commercial analysis software.

**Key Words :** valveless micro-pump, peristaltic motion, piezoelectric actuator, finite element analysis