High Precision and Fast Dispensing Digital Microfluidic Device

INVENTORS: Dr. Hyejin Moon

TECHNOLOGY NEED
Microfluidic devices with precise and accurate dispensing of liquids can be used in in-vitro diagnostics, drug discovery, biological analysis, and protein crystallization. Small amounts of liquid from digital microfluidics devices must often be dispensed in particular location to perform various analyses. Therefore, precision and consistency of a unit nano droplet and its dispensing frequency, as well as motion speed are extremely important. However there is a less control over the amount of liquid dispensed and there is a need to enhance the volume precision and consistency of electro wetting on dielectric.

INVENTION DESCRIPTION/SOLUTION
Researchers at UTA have designed a high precision and fast dispensing of liquid digital microfluidic device suitable for any aqueous solutions. The novel reservoir electrode design is developed to enhance the volume precision and consistency of the droplets. The volume error is cut down to less than 1% from 34% and the dispensing rate is at least 25 times faster than the conventional design. Hence, the rate of dispensing and splitting the droplet, and the volume of the droplet can be adjusted according to the need.

APPLICATIONS
- Biological Analysis
- Drug Discovery
- In-vitro Diagnostics

KEY BENEFITS
- High volume precision
- Fast droplet dispensing and splitting
- Adjustable flow rate and droplet volume

STAGE OF DEVELOPMENT
Prototyped and tested

INTELLECTUAL PROPERTY STATUS
Patent Pending

PUBLICATIONS
Droplet dispensing and splitting by electro wetting on dielectric digital microfluidics