

Digital Microfluidics

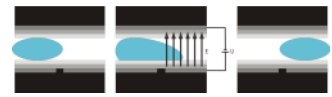
Lab-on-a-Chip systems are based on the reliable handling of micro to nanoliter reaction volumes and parallel sample processing. In digital microfluidics small droplets can be flexibly manipulated electrically under software control to perform even the most complex liquid handling routines. Highly complex microfluidic systems can be designed in a compact, easy to use and highly flexible manner. Valves, pumps or micro structured surfaces are not required when this unique technology is applied.

The phenomenon behind 'digital microfluidics' is electrowetting. The wetting behavior of a droplet in contact with an insulated electrode is altered when an electrical field is applied. If the electrical field is applied non-uniformly a surface energy gradient is created which can be used to manipulate – transport – a droplet. The droplet can be moved from one electrode position with frequencies up to 200 Hz. Depending on the electrode design this allows free movement of a droplet under full control. Even a number of droplets can be controlled independently or in parallel. Next to pure transportation routines merging, mixing and splitting of droplets as well as droplet generation is possible. Therefore the routines required in lab-on-a-chip operation can be realized in a flexible way. It is even possible to configure assay routines according to the requirements via programmable electrodes. The direct control of fluid handling offered by digital microfluidics is a key driver for the future development of microfluidic diagnostic systems. The company offer customer specific adaptation development of such systems in its business unit microEngineering.

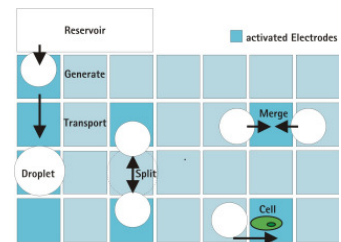
About Bartels Mikrotechnik

Ever since its foundation in 1996 Bartels Mikrotechnik GmbH has been a synonym for great innovative power and microtechnological know-how.

Bartels specializes in innovative applications of micro systems technology (MST) in the branches of classical consumer goods, mechanical engineering and medical technology. Microfluidics, microactuation and micromechanics constitute the company's technological focus. The international activities of Bartels Mikrotechnik subdivide into two business segments: Bartels microEngineering and Bartels microComponents.



Electrowetting: A droplet is moved from one position to another when voltage is applied.



Creating, transporting, cutting and merging liquid droplets by electrowetting-based actuation for digital microfluidic circuits

Bartels Mikrotechnik at Medical
Design & Manufacturing West
Hall E, lower level, booth 812

Press contact

Dr. Ulrike Michelsen, presse@bartels-mikrotechnik.de,
Tel. +49-(0)231-9742-500