

2D Array Device (#8253)

An open-surface 2D array device for high-throughput screening and selection of biosystems

Inventors at Georgia Tech have developed a technology that includes a 2D open-surface fluidic device and a dynamic contact line loading method. Patterned hydrophilic polyethylene glycol (PEG) hydrogel micro-patches surrounded by a hydrophobic plastic domain make up the fluidic device. These micro-gel pads provide a precisely controlled, hydrated environment for cultures, live imaging, and screening of biological systems. The dynamic contact line driven loading utilizes a combing technique to isolate individual biological systems into a deterministic array on the device.

Benefits/Advantages

- **Simple** – does not require microstructure fabrication or periphery equipment, such as pressure-driven pumps to operate
- **Unique** – loading method enables rapid sample loading and high-percentage sample isolation simultaneously
- **Cheaper** – improvements in efficiency and robustness reduce complexity and overhead expenses
- **Versatile** – can be applied to a wide range of samples, including multi-cellular organisms

Potential Commercial Applications

- Tool for studying biological questions in academic research
- High-throughput platform for drug and genetic screenings

Background/Context for This Invention

Microfluidic devices deal with the flow of liquids inside micrometer-sized channels. These devices have a significant impact in the chemistry and biology fields where humans gain the ability to visualize and characterize small objects. Often, making these devices requires sophisticated micro fabrication and surface modification and operating requires bulky periphery equipment, resulting in high complexities and costs. There is a growing need for a simple, cost efficient, and user-friendly microfluidic device.

Dr. Hang Lu

Assistant Professor - Georgia Tech School of Chemical and Biomolecular Engineering

Dr. Gongchen Sun

Postdoctoral Fellow - Georgia Tech School of Chemical and Biomolecular Engineering

More Information

Publications

For more information about this technology, please visit:

<https://licensing.research.gatech.edu/technology/2d-array-device>

Images: