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Lab on a chip overcomes splitting headache

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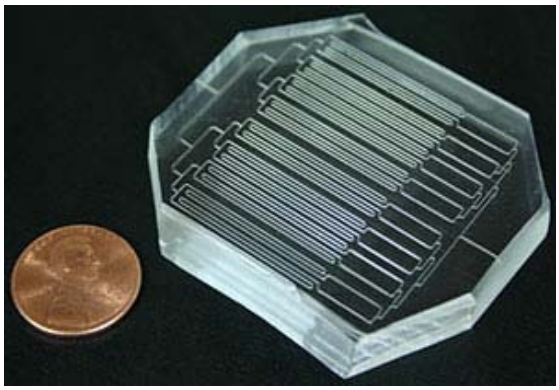
Researchers from the US have developed a microfluidic splitting technique for separating chemically distinct samples on the nanoscale.



The splitting device next to a one cent piece

Rustem Ismagilov's team at the University of Chicago split streams, or arrays, of different droplets into sixteen smaller arrays using a series of T-junctions. These smaller arrays allow a large number of reactions to take place at once and may potentially be used for high-throughput screening for biological assays and protein crystallisation trials.

David Adamson, one of the group conducting this work, said that since this method is carried out using a microfluidic platform it could minimise the 'time, manpower, expense and solution waste that is generally associated with such screening processes'.

The group have designed this microfluidic splitting platform for use for protein crystallisations and Adamson said that it has 'the potential to replace other more expensive robotic methods for running reactions in well-plates'.

"the effort the authors have gone through to control plug splitting is impressive"
- Richard Fair, Duke University, US

Richard Fair, a leading researcher in droplet-based microfluidics at Duke University, North Carolina, US, said that 'the effort the authors have gone through to control plug splitting is impressive'. But there are still many obstacles to overcome that might see a new device needed for each application: 'splitting conditions depend on liquid surface tension, viscosity, and the relation between flow-induced pressure drop and interfacial pressure,' Fair said.

Ian Gray

References

D A Adamson, D Mustafi, J X J Zhang, B Zheng and R F Ismagilov, *Lab Chip*, 2006

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