Lab on a Chip

Micro- & nano- fluidic research for chemistry, physics, biology, & bioengineering

www.rsc.org/loc

Volume 10 | Number 14 | 21 July 2010 | Pages 1741–1880

ISSN 1473-0197

RSC Publishing

Ozcan *et al.*
Lensfree microscopy

van den Berg *et al.*
Lithium in blood

Celebrating 10 Years of publishing

1473-0197(2010)10:14;1-6

Lab on a Chip

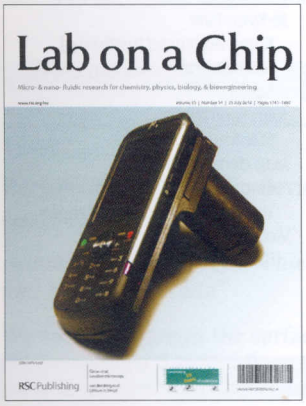
Micro- & nano- fluidic research for chemistry, physics, biology, & bioengineering

www.rsc.org/loc

RSC Publishing is a not-for-profit publisher and a division of the Royal Society of Chemistry. Any surplus made is used to support charitable activities aimed at advancing the chemical sciences. Full details are available from www.rsc.org

IN THIS ISSUE

ISSN 1473-0197 CODEN LCAHAM 10(14) 1741–1880 (2010)

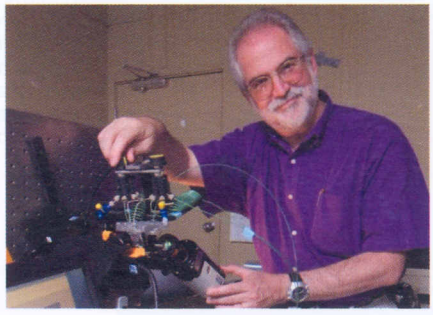


Cover
See Ozcan *et al.*, pp. 1787–1792.
A compact and cost-effective lensless digital microscope installed on a regular cellphone is illustrated.
Image reproduced by permission of Derek Tseng, Onur Mudanyali, Cetin Oztoprak, Serhan O. Isikman, Ikbal Sencan, Oguzhan Yaglidere and Aydogan Ozcan from *Lab Chip*, 2010, **10**, 1787.

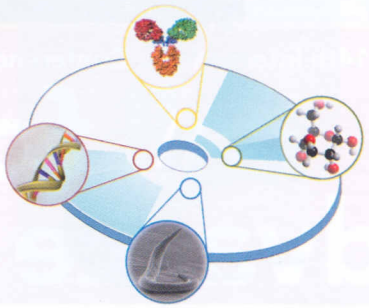
Inside cover
See Takei *et al.*, pp. 1781–1786.
A plate floating on a droplet is rotated at 720 rpm by changing the droplet shape continuously by electrowetting.
Image reproduced by permission of Atsushi Takei, Kiyoshi Matsumoto and Isao Shomoyama from *Lab Chip*, 2010, **10**, 1781.

HIGHLIGHT

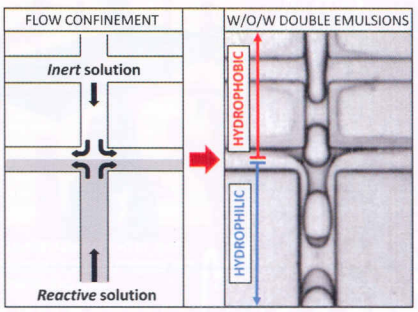
VIEWPOINT

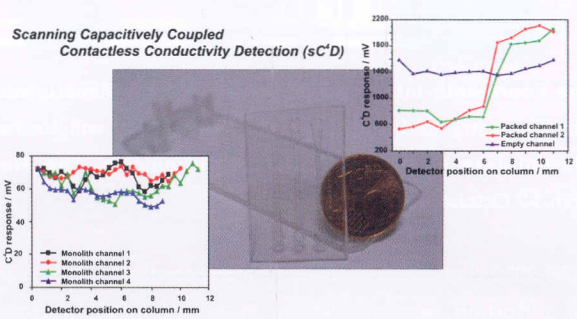


CRITICAL REVIEW

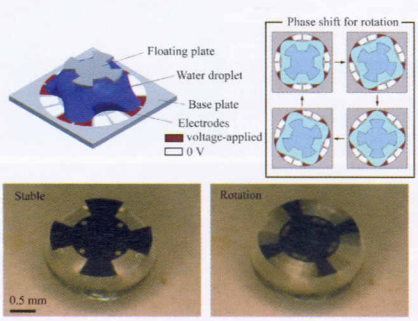


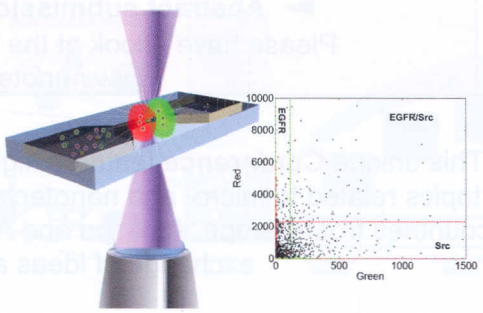
COMMUNICATIONS

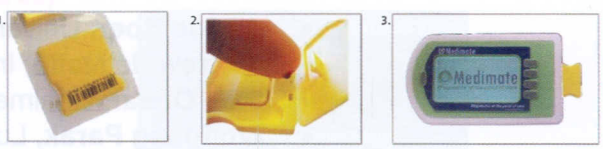


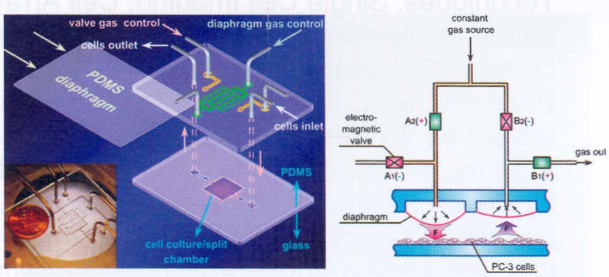


PAPERS







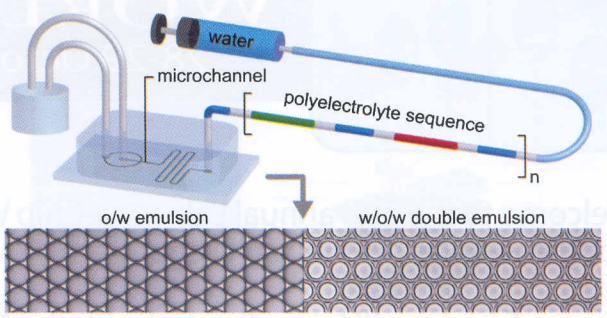


1814

Hydrophilic PDMS microchannels for high-throughput formation of oil-in-water microdroplets and water-in-oil-in-water double emulsions

Wolfgang-Andreas C. Bauer, Martin Fischlechner, Chris Abell and Wilhelm T. S. Huck*

We developed an extremely convenient, largely automated surface modification technique for the production of long-term stable hydrophilic channel walls inside PDMS-based microfluidic devices and applied it successfully for the high-throughput generation of highly monodisperse o/w droplets and w/o/w double emulsions.

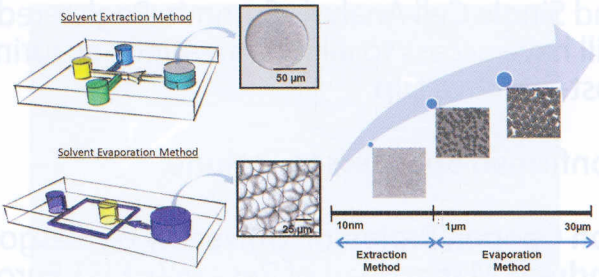


1820

PLGA micro/nanosphere synthesis by droplet microfluidic solvent evaporation and extraction approaches

Lung-Hsin Hung, Shia-Yen Teh, James Jester and Abraham P. Lee*

We present microfluidic solvent extraction and evaporation methods for the formation of biodegradable polymer particles of tunable nanometre to micrometre sizes. Release profile analysis and imaging was conducted through the encapsulation of a model drug within these particles.

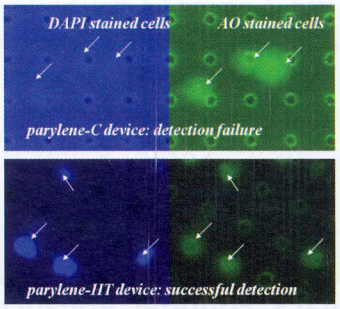


1826

A study of the autofluorescence of parylene materials for μTAS applications

Bo Lu,* Siyang Zheng, Brandon Quoc Quach and Yu-Chong Tai

We report a study of the autofluorescence behaviors and mechanisms of parylene materials (parylene-C, -D, -N, -HT) for μTAS applications. Given its better autofluorescence performance, parylene-HT can be a useful alternative to the widely used parylene-C if low autofluorescence is required.

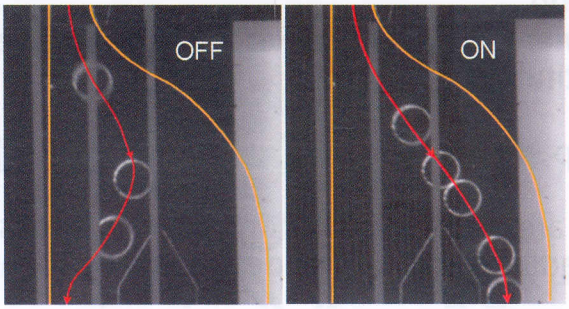


1835

Thermocapillary actuation by optimized resistor pattern: bubbles and droplets displacing, switching and trapping

Bertrand Selva,* Vincent Miralles, Isabelle Cantat* and Marie-Caroline Jullien*

We report a novel method for bubble or droplet displacement, capture and switching within a bifurcation channel for applications in digital microfluidics based on the Marangoni effect.

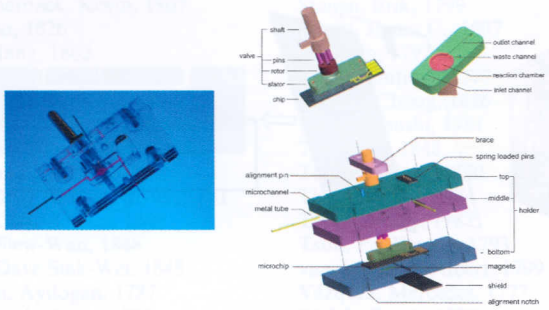


1841

Integration of a zero dead-volume PDMS rotary switch valve in a miniaturised (bio)electroanalytical system

Neus Godino, Francisco Javier del Campo, Francesc Xavier Muñoz, Mikkel Fougt Hansen, Jörg P. Kutter and Detlef Snakenborg*

The integration of a reaction chamber in the valve brings important benefits: it allows the performance of complete bioassays, and it makes the assays more efficient by eliminating dead volume.

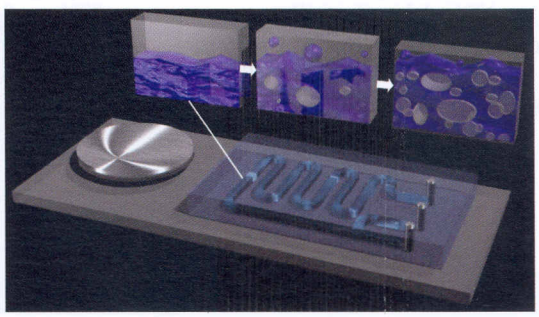


1848

Creation of cavitation activity in a microfluidic device through acoustically driven capillary waves

Tandiono, Siew-Wan Ohl, Dave Siak-Wei Ow, Evert Klaseboer, Victor V. T. Wong, Andrea Camattari and Claus-Dieter Ohl*

Intense inertial cavitation in PDMS based microfluidics is achieved from gas bubble entrapment of strongly driven capillary waves.

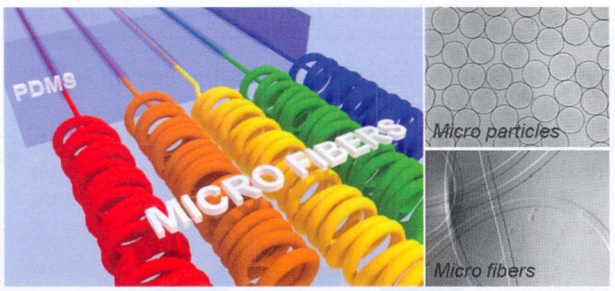


1856

Novel PDMS cylindrical channels that generate coaxial flow, and application to fabrication of microfibers and particles

Edward Kang, Su-Jung Shin, Kwang Ho Lee and Sang-Hoon Lee*

We demonstrate a novel method for fabrication of a coaxial microchannel to produce microparticles and microfibers, and integration of a coaxial flow channel with pseudo rectangular microfluidic mixing channel.

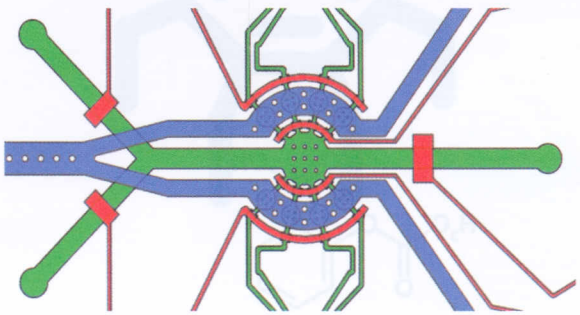


1862

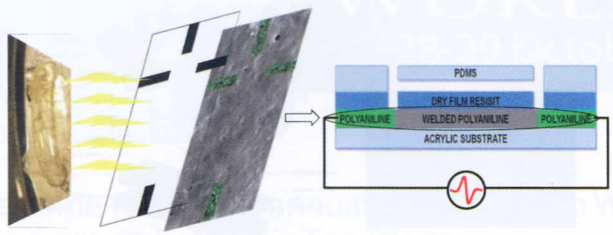
Long-term high-resolution imaging and culture of *C. elegans* in chip-gel hybrid microfluidic device for developmental studies

Jan Krajniak and Hang Lu*

We present a novel method to repeatedly immobilize *C. elegans* at physiological conditions. The microfluidic device also allows for long term culture and facilitates many long-term developmental studies.



1869

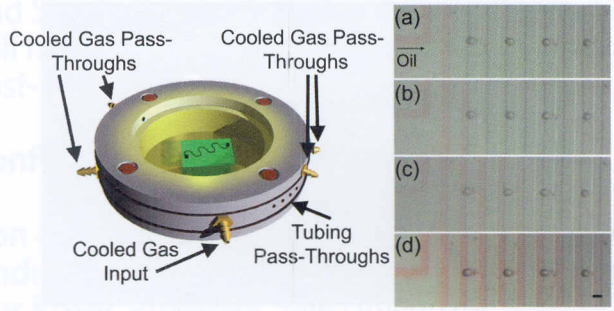


Manufacturing and application of a fully polymeric electrophoresis chip with integrated polyaniline electrodes

Rowan D. Henderson, Rosanne M. Guijt, Paul R. Haddad, Emily F. Hilder, Trevor W. Lewis and Michael C. Breadmore*

This communication describes a new, simple, rapid and inexpensive manufacturing technique for the fabrication of polymer devices with integrated polyaniline electrodes and their application in electrophoretic separation.

1873



Droplet freezing, docking, and the exchange of immiscible phase and surfactant around frozen droplets

Allyson E. Sgro and Daniel T. Chiu*

We describe a platform for cooling microfluidic chips so as to freeze aqueous droplets flowing in oil. Droplet docking and immiscible phase exchange are also demonstrated.