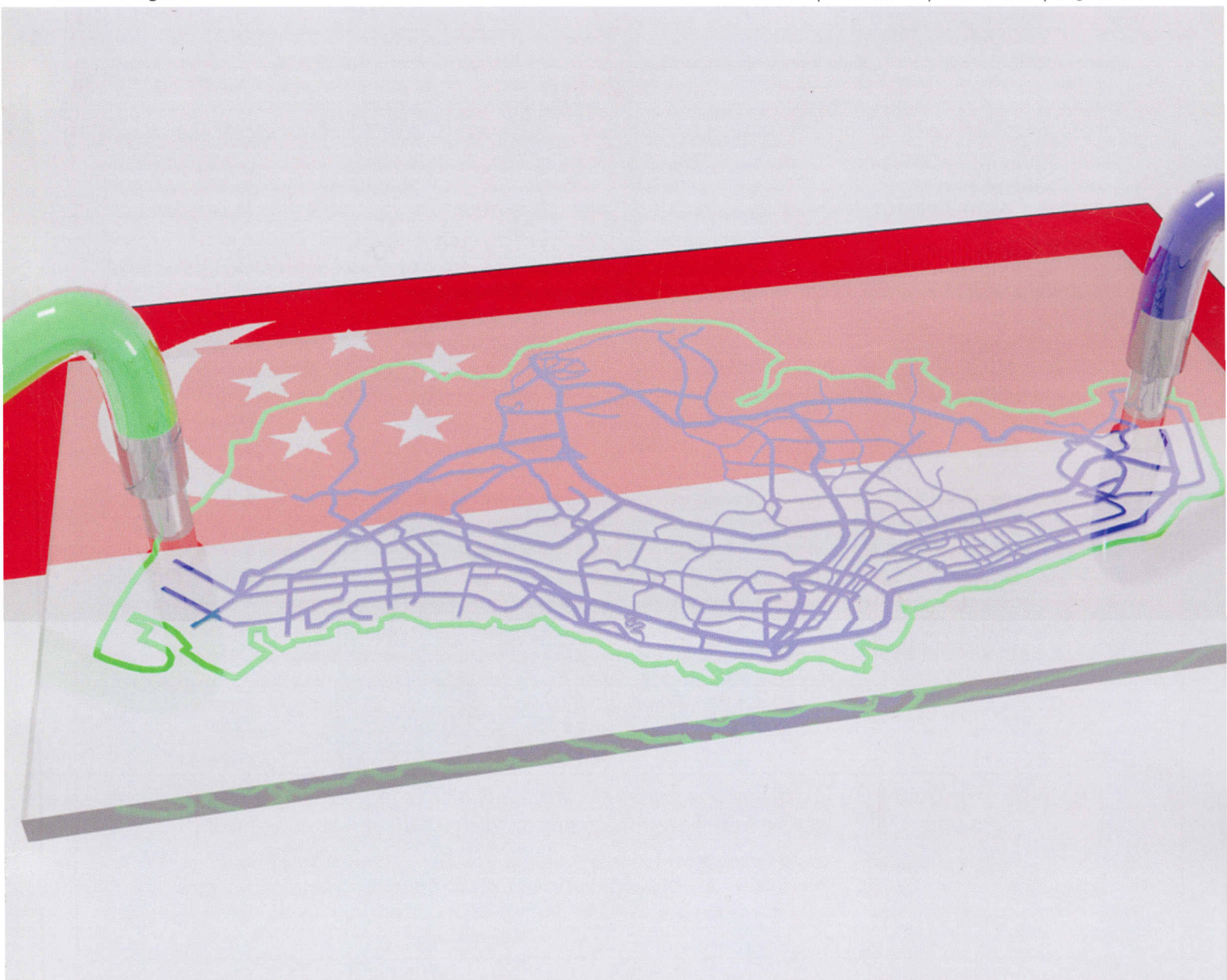


Lab on a Chip

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10th Anniversary: Focus on Singapore

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EDITORIAL
Ai-Qun Liu
10th Anniversary issue: Singapore



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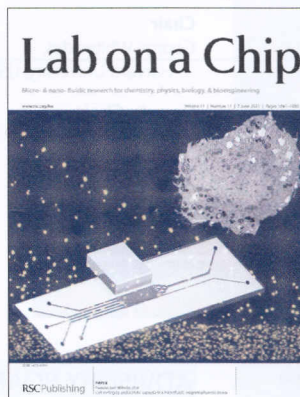
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Cover

See Ai-Qun Liu, pp. 1851–1852.
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2011, **11**, 1851.



Inside cover

Pamme and Wilhelm *et al.*,
pp. 1902–1910.
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of Claire Wilhelm from *Lab Chip*,
2011, **11**, 1902.

THEMED ISSUE: 10TH ANNIVERSARY FOCUS ON SINGAPORE

EDITORIAL

1851

10th Anniversary issue: Singapore

Ai-Qun Liu*

Professor Ai-Qun Liu introduces this themed issue dedicated to the memory of Professor Zhao-Lun Fang, formerly of the Zhe Jiang University.



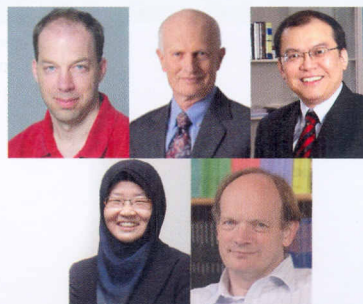
PROFILE

1853

Leveraging on being small—Singapore's strategy to catalyze integrative innovations

Yi-Chin Toh, Tae Goo Kang, Danny van Noort,
Bill Burkholder and Jing Bo Zhang

Yi-Chin Toh, Tae Goo Kang, Danny van Noort, Bill Burkholder and Jing Bo Zhang introduce brief profiles of significant institutes and their research activities in Singapore.

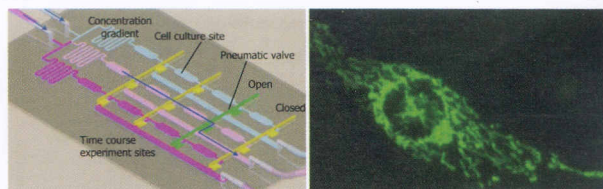


1856

Production of reactive oxygen species in endothelial cells under different pulsatile shear stresses and glucose concentrations

L. K. Chin, J. Q. Yu, Y. Fu, T. Yu, A. Q. Liu and K. Q. Luo*

The study of ROS production and mitochondrial morphology of the endothelial cells using the hemodynamic Lab-on-a-chip system.

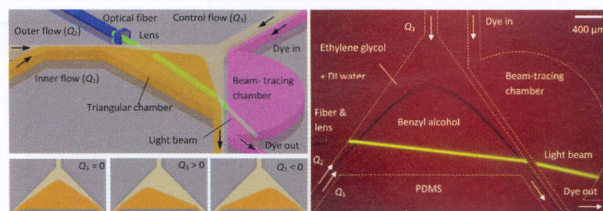


1864

An optofluidic prism tuned by two laminar flows

S. Xiong, A. Q. Liu,* L. K. Chin and Y. Yang

A tunable optofluidic prism is realized using the laminar flow of two liquid streams in a triangular microchamber.

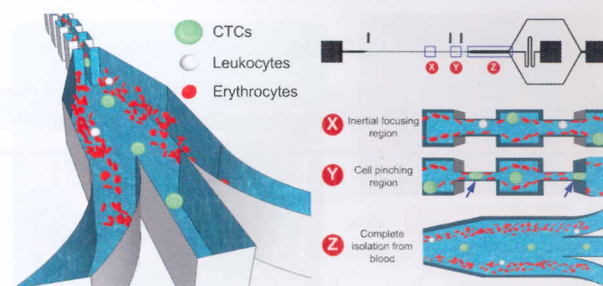


1870

Pinched flow coupled shear-modulated inertial microfluidics for high-throughput rare blood cell separation

Ali Asgar S. Bhagat, Han Wei Hou, Leon D. Li, Chwee Teck Lim* and Jongyoon Han*

In this work, we introduce a high-throughput size-based separation method for processing blood using inertial microfluidics.

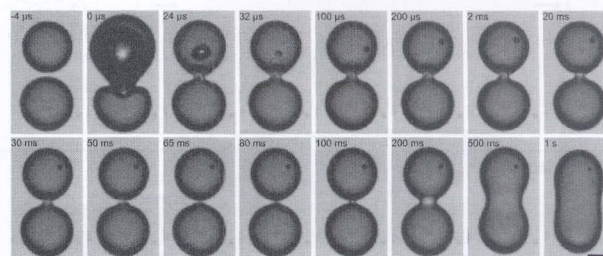


1879

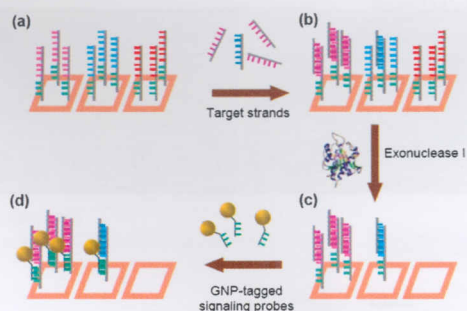
Fast on-demand droplet fusion using transient cavitation bubbles

Z. G. Li, K. Ando, J. Q. Yu, A. Q. Liu, J. B. Zhang and C. D. Ohl*

On-demand droplet fusion in a microfluidic channel with a laser-induced cavitation bubble.



1886



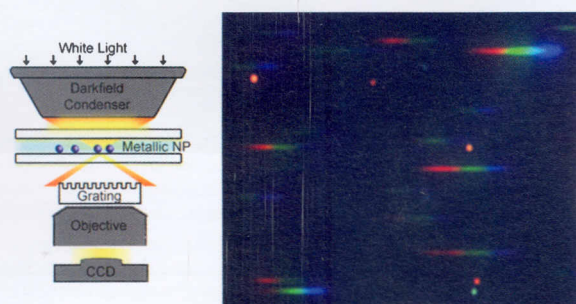
A microfluidic-assisted microarray for ultrasensitive detection of miRNA under an optical microscope

Somenath Roy, Jun Hui Soh and Zhiqiang Gao*

Direct profile microRNA expressions in total RNA by differential interference contrast imaging under an optical microscope.

TECHNICAL NOTE

1895



Wide-field single metal nanoparticle spectroscopy for high throughput localized surface plasmon resonance sensing

Kok Hao Chen, Jonathan Hobley, Yong Lim Foo and Xiaodi Su*

We introduce Single-particle LSPR Imaging (SLI), a wide-field method that is capable of simultaneously imaging and tracking the spectral changes of metal nanoparticles in high-throughput.

REGULAR RESEARCH ARTICLES

PAPERS

1902

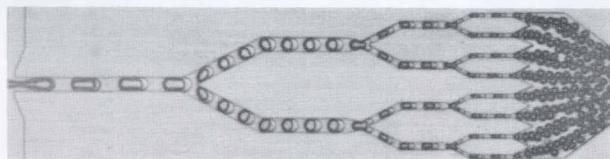


Cell sorting by endocytotic capacity in a microfluidic magnetophoresis device

Damien Robert, Nicole Pamme,* Hélène Conjeaud, Florence Gazeau, Alexander Iles and Claire Wilhelm*

Microfluidic cell sorting based on endocytotic capacity—macrophages and monocytes incubated with magnetic iron oxide nanoparticles and sorted *via* on-chip free-flow magnetophoresis.

1911



Faster multiple emulsification with drop splitting

Adam R. Abate and David A. Weitz*

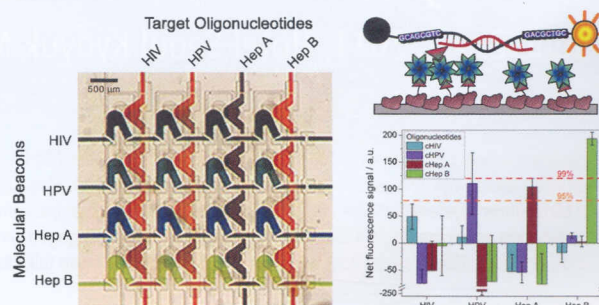
The throughput of multiple emulsion formation in a microfluidic device is increased by using a splitting approach to parallelize the drop formation.

1916

Multiplexed detection of nucleic acids in a combinatorial screening chip

Benjamin R. Schudel, Melikhan Tanyeri, Arnab Mukherjee, Charles M. Schroeder* and Paul J. A. Kenis*

A combinatorial screening chip has been developed for multiplexed detection of viral nucleic acid markers for the diagnosis of infectious disease.

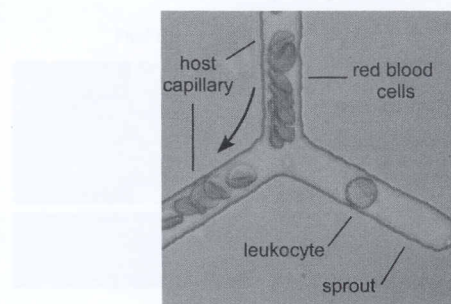


1924

Passive recruitment of circulating leukocytes into capillary sprouts from existing capillaries in a microfluidic system

Omid Forouzan, Jennie M. Burns, Jennifer L. Robichaux, Walter L. Murfee and Sergey S. Shevkopyas*

This study demonstrates that mechanical interactions between red blood cells and leukocytes at the sprouting bifurcation enable passive entry of leukocytes into the blind-ended capillary sprouts in a microfabricated model system *in vitro*. Our observations suggest a new possible mechanism for leukocyte trafficking during angiogenesis *in vivo*.

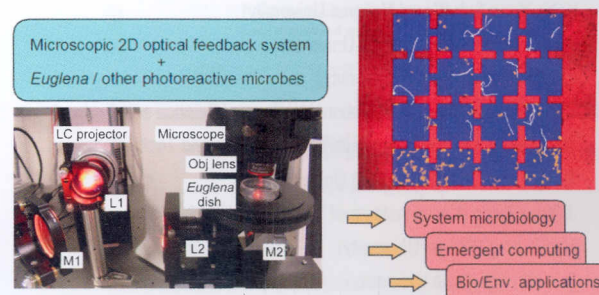


1933

Two-dimensional optical feedback control of *Euglena* confined in closed-type microfluidic channels

Kazunari Ozasa,* Jeesoo Lee, Simon Song, Masahiko Hara and Mizuo Maeda

We developed and demonstrated 2D optical feedback control of the density and position of *Euglena* cells swimming in microaquariums.

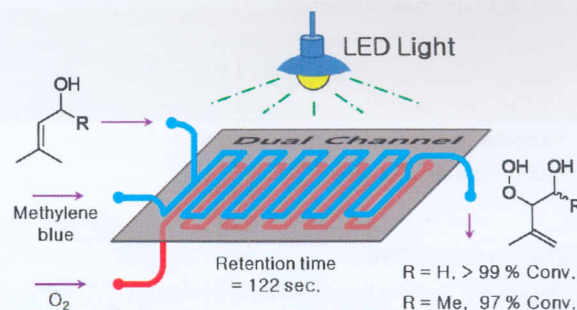


1941

Efficient photosensitized oxygenations in phase contact enhanced microreactors

Chan Pil Park, Ram Awatar Maurya, Jang Han Lee and Dong-Pyo Kim*

Transparent dual-channel microreactor shielded with polyvinylsilazane (PVSZ) was fabricated for photosensitized oxygenation conducted with light and O₂ gas.

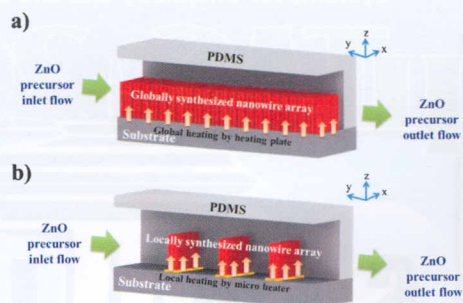


1946

Direct synthesis and integration of functional nanostructures in microfluidic devices

Jung Kim, Zhiyong Li and Inkyu Park*

In this paper, we report a novel and simple method for the *in situ* synthesis and integration of ZnO nanowires by controlled hydrothermal reaction within microfluidic devices.

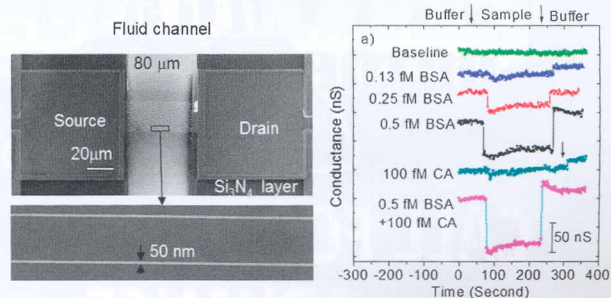


1952

Ultrasensitive protein detection using lithographically defined Si multi-nanowire field effect transistors

Ruhai Tian, Suresh Regonda, Jinming Gao, Yaling Liu and Walter Hu*

We present the lithographic silicon multi-nanowire FETs with improved uniformity and stability for protein sensing at sub-femtomolar limit of detection.

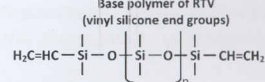
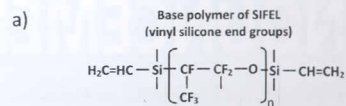


1962

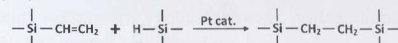
Multilayer soft lithography of perfluoropolyether based elastomer for microfluidic device fabrication

Naga Sai Gopi Krishna Devaraju* and Marc Alexander Unger

We report successful fabrication of microfluidic devices from a novel perfluoropolyether based polymer utilizing the Multilayer Soft Lithography™ technique (MSL) with simple, straightforward processing.



b) Hydrosilation



1968

Pressure drop of slug flow in microchannels with increasing void fraction: experiment and modeling

Shahnawaz Molla, Dmitry Eskin and Farshid Mostowfi*

Constant pressure gradient was observed for gas-liquid slug flow along a microchannel where gas bubbles progressively expanded and flow velocity increased due to significant pressure drop.

