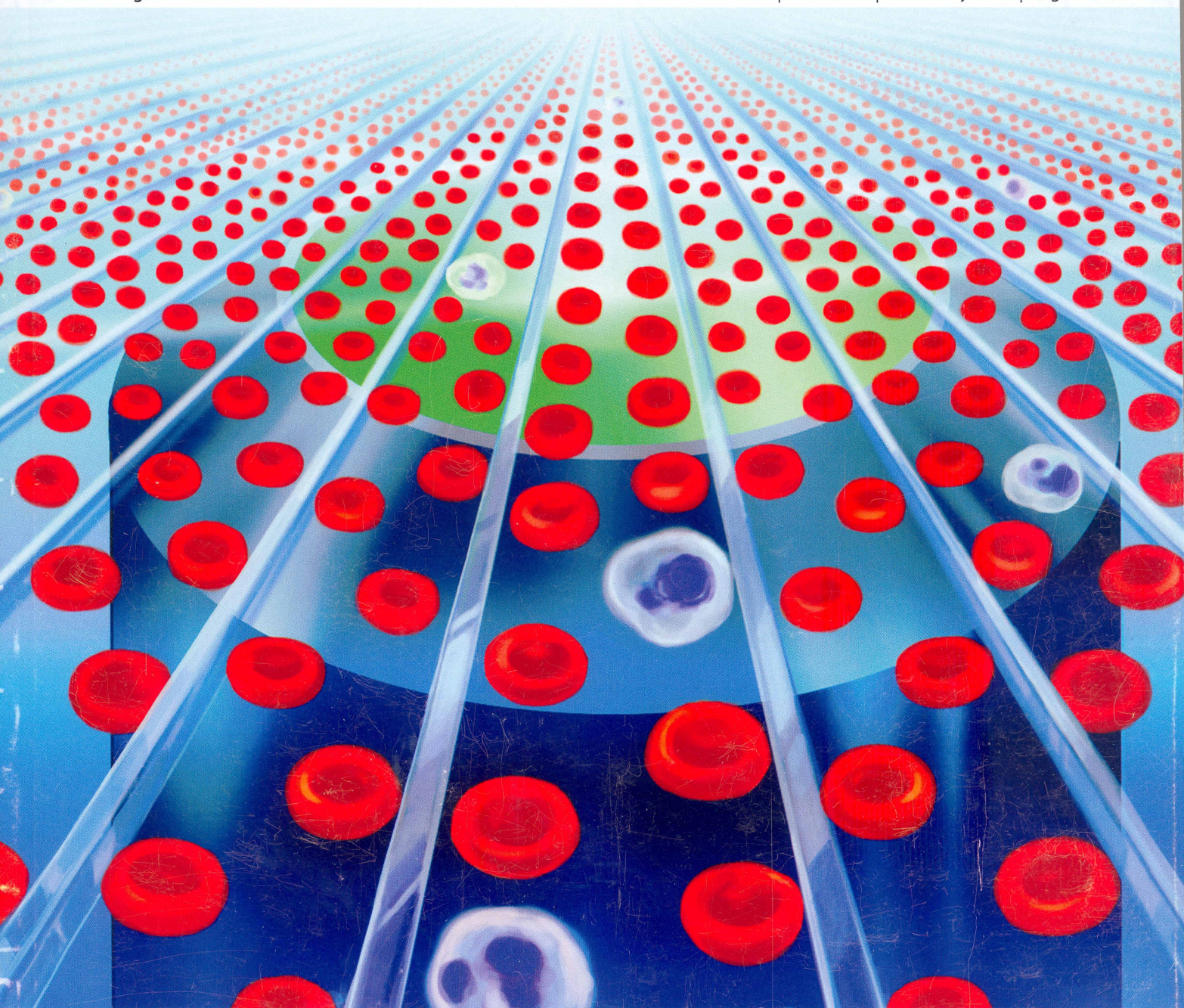


Lab on a Chip

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

www.rsc.org/loc

Volume 10 | Number 3 | 7 February 2010 | Pages 257–396



ISSN 1473-0197

RSC Publishing

Di Carlo
Extreme throughput cytometry

Tovar-Lopez and Nesbitt
Platelet aggregation dynamics

Celebrating
10
Years of publishing



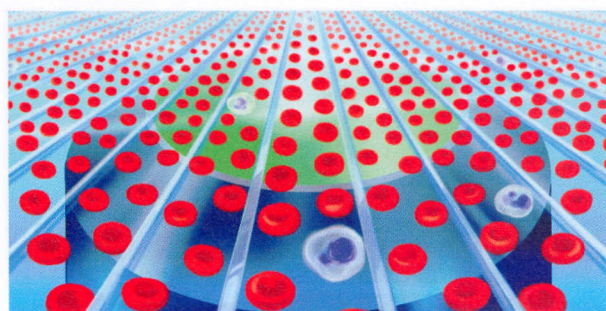
1473-0197(2010)10:3;1-E

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Sheathless inertial cell ordering for extreme throughput flow cytometry

Soojung Claire Hur, Henry Tat Kwong Tse and Dino Di Carlo*

Massively parallel inertial focusing of blood cells allows for sheathless flow cytometry at 1 million cells s^{-1} .

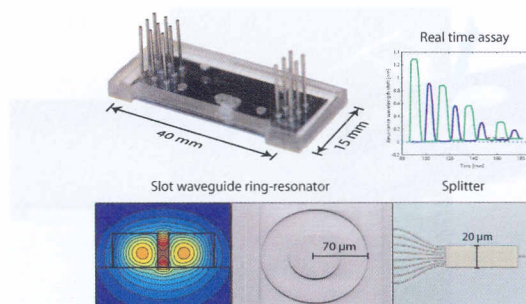


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A packaged optical slot-waveguide ring resonator sensor array for multiplex label-free assays in labs-on-chips

C. F. Carlborg,* K. B. Gylfason, A. Kaźmierczak, F. Dortu, M. J. Bañuls Polo, A. Maquieira Catala, G. M. Kresbach, H. Sohlström, T. Moh, L. Vivien, J. Popplewell, G. Ronan, C. A. Barrios, G. Stemme and W. van der Wijngaart

We present the design, fabrication, and characterisation of an array of optical slot-waveguide ring resonator sensors, integrated with microfluidic sample handling in a compact cartridge, for multiplexed real-time label-free biosensing.

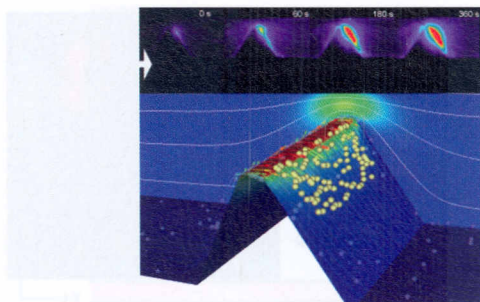


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A microfluidics device to monitor platelet aggregation dynamics in response to strain rate micro-gradients in flowing blood

Francisco Javier Tovar-Lopez,* Gary Rosengarten, Erik Westein, Khashayar Khoshmanesh, Shaun P. Jackson, Arnan Mitchell and Warwick S. Nesbitt*

We present a microfluidics device that is able to focally trigger initial recruitment and subsequent aggregation of discoid platelets by mimicking the effects of pathological changes in blood vessel geometry.

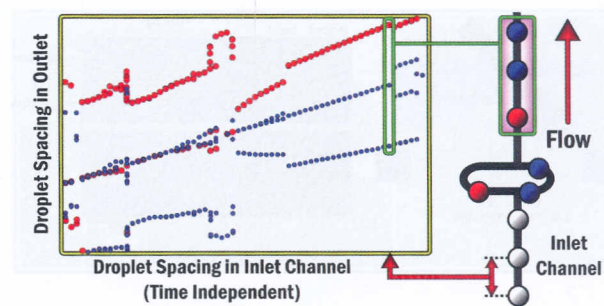


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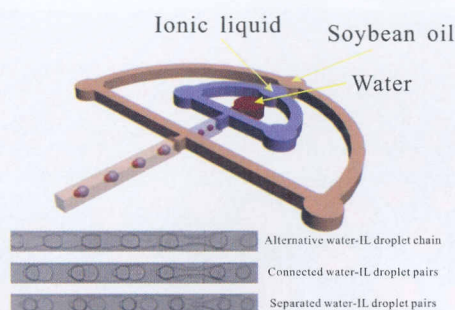
Agent-based simulations of complex droplet pattern formation in a two-branch microfluidic network

Bradford J. Smith and Donald P. Gaver III*

We develop a continuous and spatially explicit agent-based model with mobility to investigate the effects of parameter variation on droplet pattern formation in a two-branch microfluidic network.



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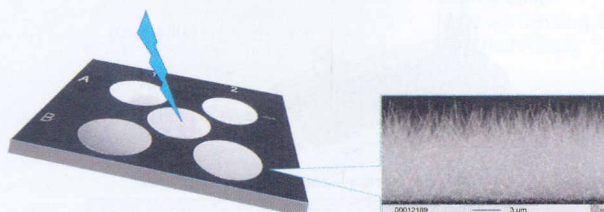


Generation of water–ionic liquid droplet pairs in soybean oil on microfluidic chip

Xuan Feng, Ying Yi, Xu Yu, Dai-Wen Pang and Zhi-Ling Zhang*

Generation of an alternating water–IL droplet chain, connected water–IL droplet pairs and separated water–IL droplet pairs at different flow rates of soybean oil.

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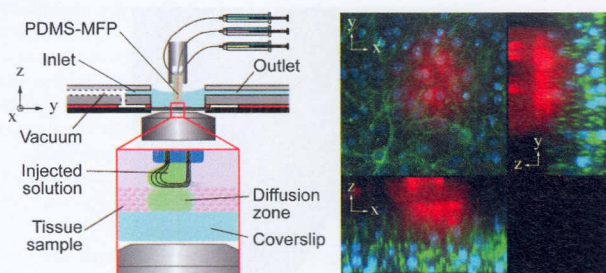


Lithographically patterned silicon nanowire arrays for matrix free LDI-TOF/MS analysis of lipids

Alexander Muck, Thomas Stelzner, Uwe Hübner, Silke Christiansen and Aleš Svatoš*

Lithium-doped silicon nanowires (SiNW) have been used for sensitive detection of neutral lipids by laser-assisted desorption/ionization mass spectrometry (LDI-TOF/MS) for the first time. Those micro-fabricated SiNW chips should find wide application in food control and medicine.

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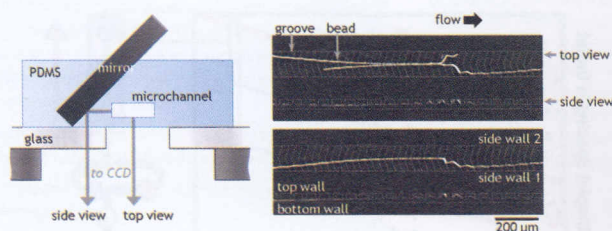


Chamber and microfluidic probe for microperfusion of organotypic brain slices

Arthur Queval, Nageswara R. Ghattamaneni, Cécile M. Perrault, Raminder Gill, Maryam Mirzaei, R. Anne McKinney* and David Juncker*

We present a perfusion chamber and a novel microfluidic probe with 6 apertures made of PDMS for local perfusion of organotypic brain slices with simultaneous confocal imaging.

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Optical path-length modulation for three-dimensional particle measurement in mirror-embedded microchannels

Sungyoung Choi, Seung-Hoon Kim and Je-Kyun Park*

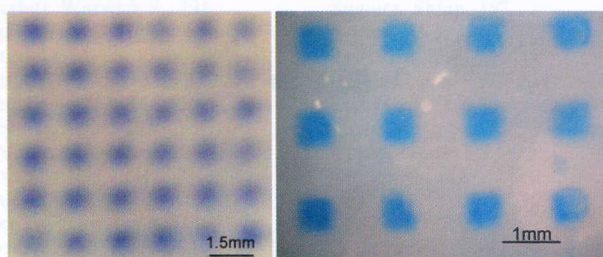
This paper demonstrates a method of optical path-length modulation for mirror-embedded microchannels that ensures imaging of in-focus side view as well as top view for three-dimensional particle measurement.

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Microfluidic devices for cell based high throughput screening

Sarvesh Upadhyaya and P. Ravi Selvaganapathy*

Precise electrically controlled drug dosing in micro array format in a non-compartmentalized traditional cell culture substrate for High Throughput Screening application.

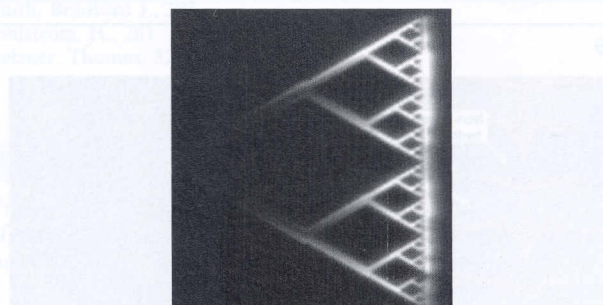


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Design and evaluation of flow distributors for microfabricated pillar array columns

Joris Vangeloooven, Wim De Malsche, Jeff Op De Beeck, Hamed Eghbali, Han Gardeniers and Gert Desmet*

Five different flow distributors have been compared for their ability to distribute small sample volumes over the entire width of flat rectangular microfabricated pillar array columns.

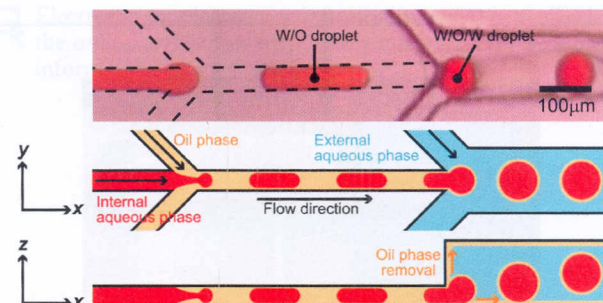


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Microfluidic preparation of water-in-oil-in-water emulsions with an ultra-thin oil phase layer

Daisuke Saeki, Shinji Sugiura,* Toshiyuki Kanamori, Seigo Sato and Sosaku Ichikawa

We report a novel microfluidic device consisting of two microfluidic junctions, one of which had a step structure, and a uniformly hydrophobic surface. This microfluidic device was successfully applied to the preparation of W/O/W emulsions with an ultra-thin ($<1\ \mu\text{m}$) oil phase layer.

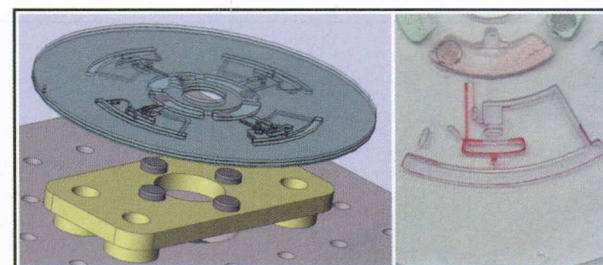


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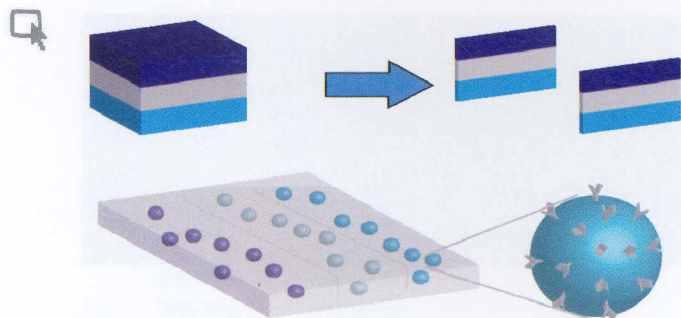
Validation of a centrifugal microfluidic sample lysis and homogenization platform for nucleic acid extraction with clinical samples

Jonathan Siegrist,* Robert Gorkin, Martine Bastien, Gale Stewart, Régis Peytavi, Horacio Kido, Michel Bergeron and Marc Madou

A mechanical sample lysis system based on a centrifugal microfluidic platform is presented. Magnetic actuation is used to perform bead-beating lysis, and the system is validated with both bacterial spores and viral respiratory samples.



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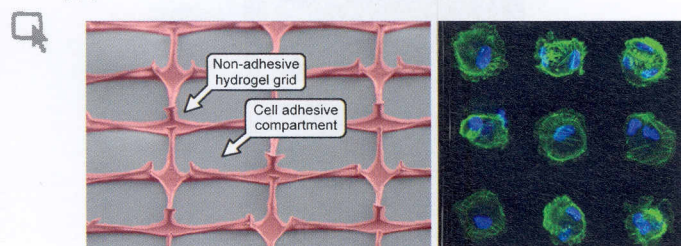
Multilayers of hydrogels loaded with microparticles: a fast and simple approach for microarray manufacturing

Marta Bally, Janos Vörös* and Shoji Takeuchi

Protein microarrays are obtained by slicing multilayered stacks of a permeable hydrogel matrix with embedded biofunctional particles.

TECHNICAL NOTES

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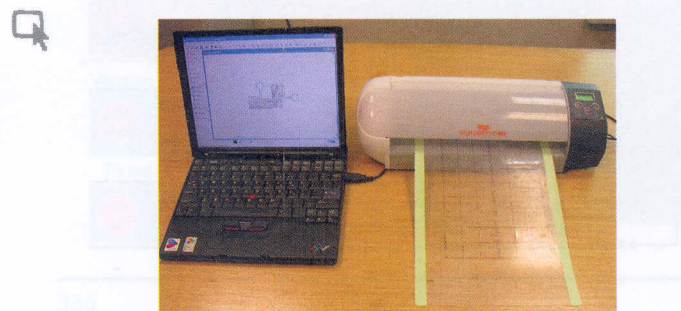


Simple benchtop patterning of hydrogel grids for living cell microarrays

Scott A. Zawko and Christine E. Schmidt*

We demonstrate a simple benchtop method for creating living cell microarrays within hydrogel grids using only off-the-shelf materials.

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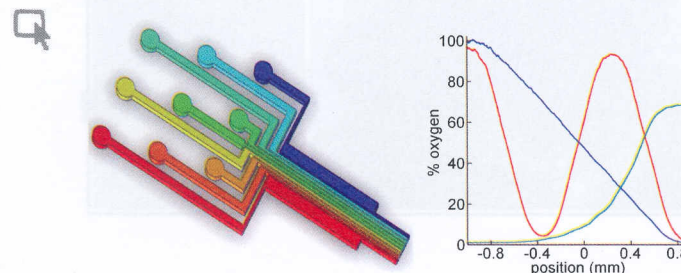


Low-cost rapid prototyping of flexible microfluidic devices using a desktop digital craft cutter

Po Ki Yuen* and Vasiliy N. Goral

We present a low-cost and straight forward rapid prototyping method for fabricating flexible microfluidic devices using a desktop digital craft cutter, double-sided pressure sensitive adhesive tape and laser printer transparency film.

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Generation of oxygen gradients with arbitrary shapes in a microfluidic device

Micha Adler, Mark Polinkovsky, Edgar Gutierrez and Alex Groisman*

We present a computer-controlled multi-channel gas mixer and a microfluidic device generating reconfigurable gradients of oxygen in liquid media and demonstrate linear, exponential, and non-monotonic gradient profiles.