Lab on a Chip

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

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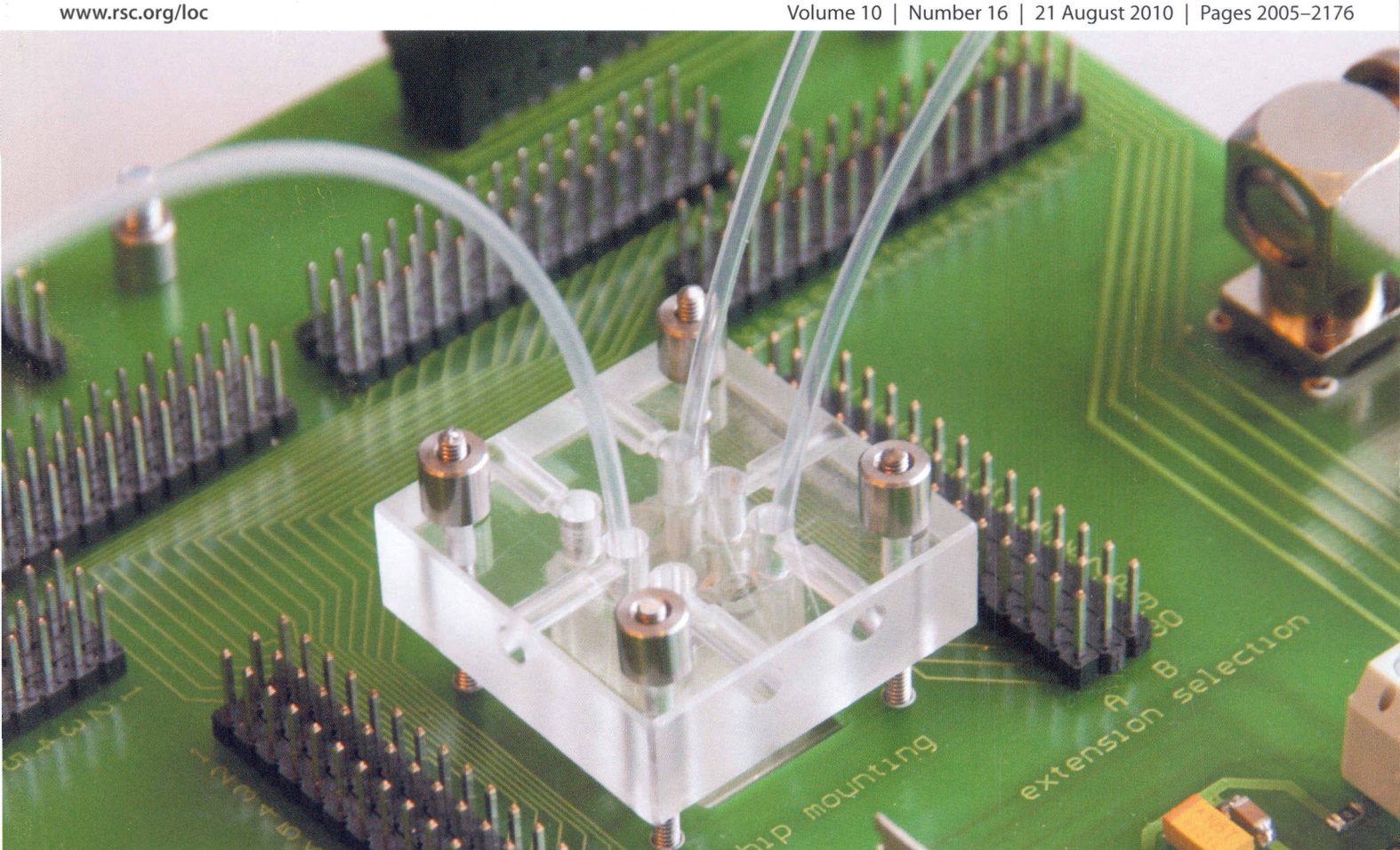

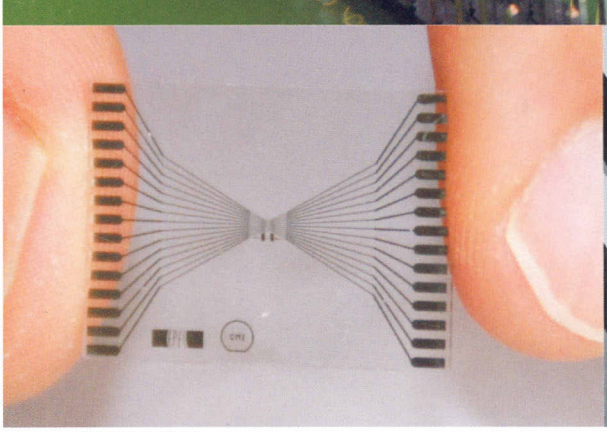

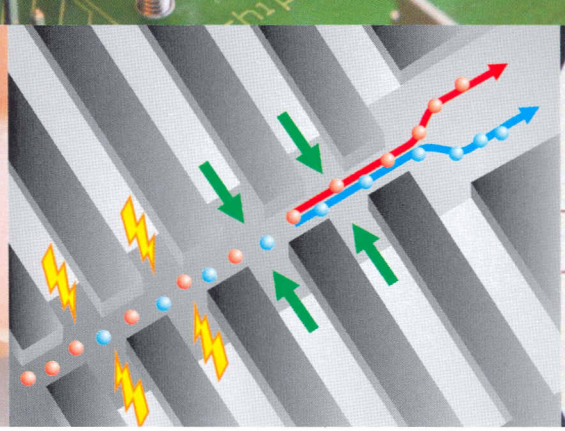

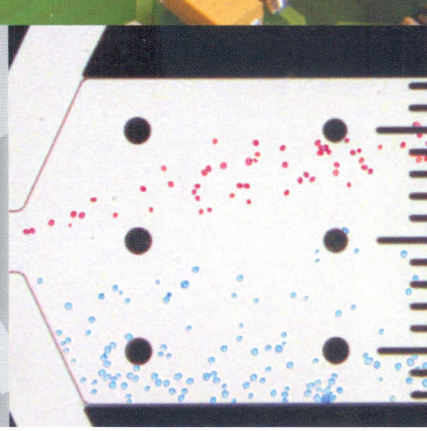

ISSN 1473-0197

RSC Publishing

Mernier
Electrical lysis device with dielectrophoretic cell sorting

Baroud
Dynamics of microfluidic droplets

Celebrating 10 Years of publishing

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IN THIS ISSUE

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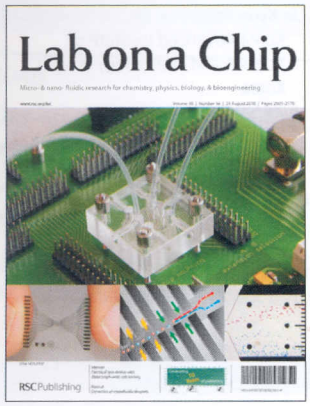
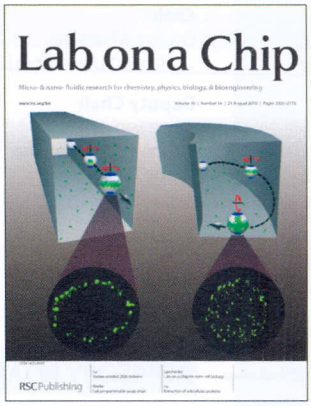


Cover

See Mernier *et al.*, pp. 2077–2082. Efficiency of yeast cell lysis assessed in continuous flow using dielectrophoretic sorting with so-called "liquid electrodes". Image reproduced by permission of Guillaume Mernier, Niccolò Piacentini, Thomas Braschler, Nicolas Demierre and Philippe Renaud from *Lab Chip*, 2010, **10**, 2077.



Inside cover

See Lu *et al.*, pp. 2057–2061. DNA delivery into cells by electroporation is greatly enhanced by curvature-induced flow effects. Image reproduced by permission of Jun Wang, Yihong Zhan, Victor M. Ugaz and Chang Lu from *Lab Chip*, 2010, **10**, 2057.

HIGHLIGHT

2017

Research Highlights

Petra S. Dittrich*

Petra Dittrich reviews the current literature in miniaturisation and related technologies.

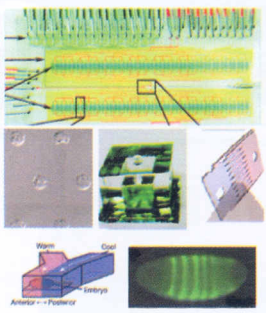
TUTORIAL REVIEW

2019

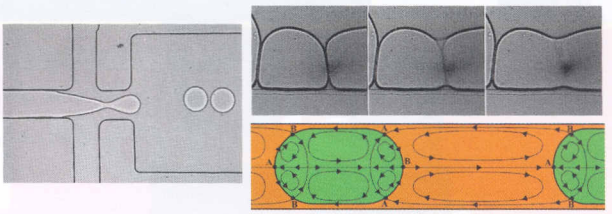
Lab-on-a-chip devices as an emerging platform for stem cell biology

Kshitiz Gupta, Deok-Ho Kim, David Ellison, Christopher Smith, Arnab Kundu, Jessica Tuan, Kahp-Yang Suh and Andre Levchenko*

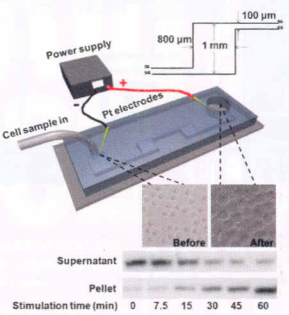
This extensive review details the progress in lab-on-a-chip experiments with stem cells. Studies and unique challenges involving biochemical, cell-cell, and biomechanical interactions of stem cells with their microenvironment are discussed.

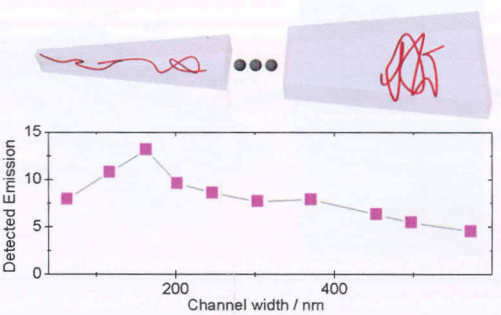


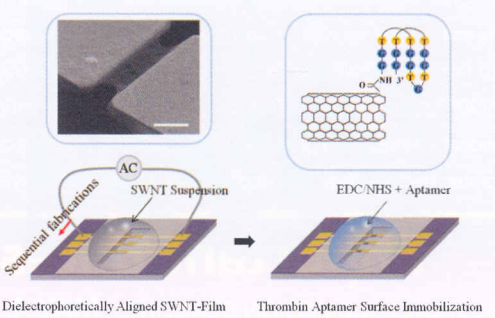
CRITICAL REVIEW

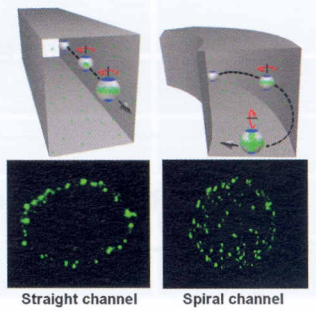


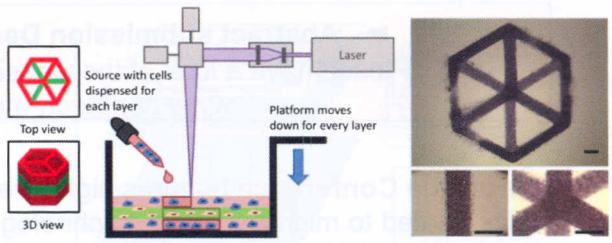
COMMUNICATIONS

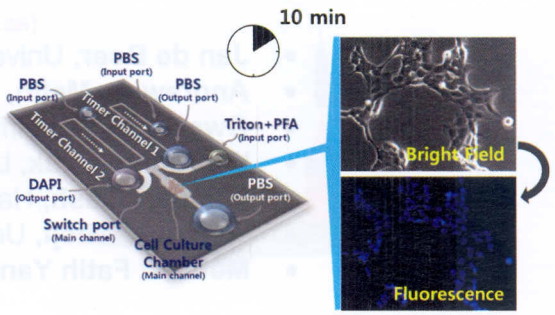


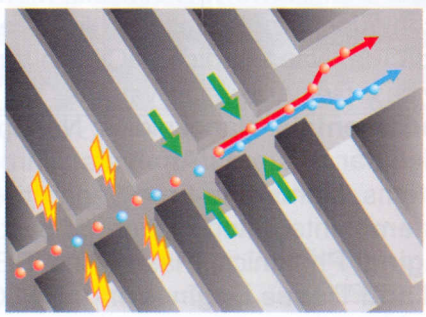


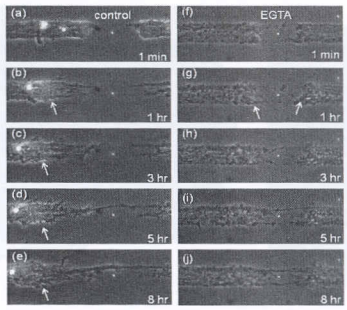


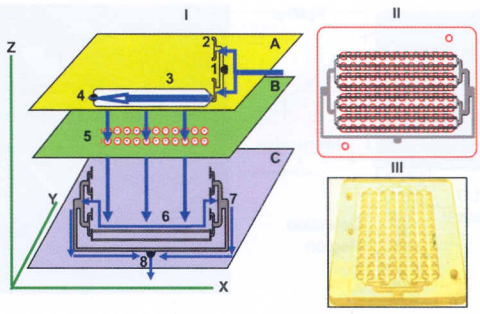


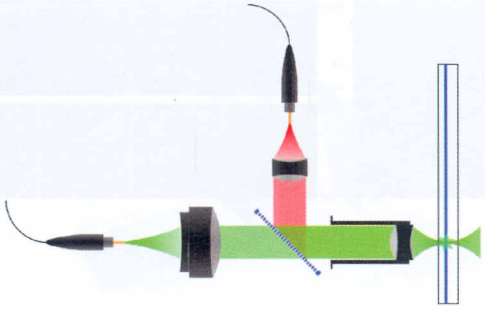


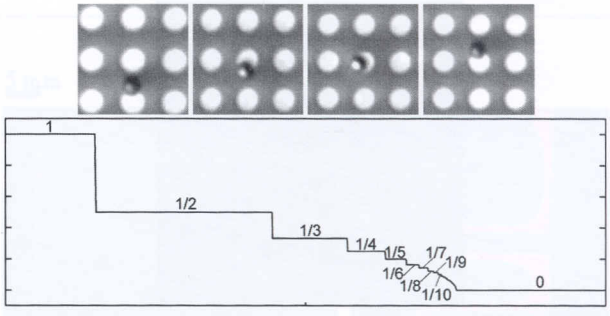












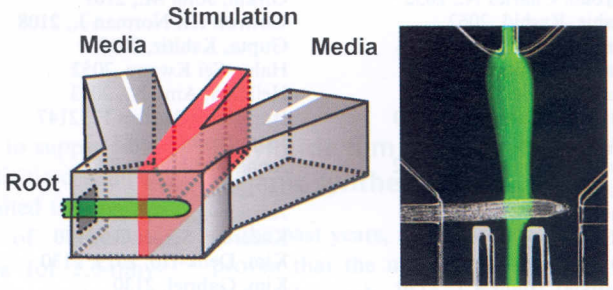
PAPERS

2147

Chemical stimulation of the *Arabidopsis thaliana* root using multi-laminar flow on a microfluidic chip

Matthias Meier,* Elena M. Lucchetta and Rustem F. Ismagilov*

In this article, we develop and characterize a microfluidic platform based on laminar flow to create environments of different local chemical concentrations around a live *Arabidopsis thaliana* root.

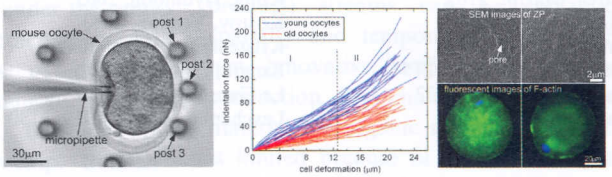


2154

In situ mechanical characterization of mouse oocytes using a cell holding device

Xinyu Liu, Roxanne Fernandes, Andrea Jurisicova, Robert F. Casper and Yu Sun*

We demonstrate a cellular force measurement technique for mechanical characterization of mouse oocytes during microinjection, which is capable of distinguishing healthy mouse oocytes from those with aging-induced cellular defects.

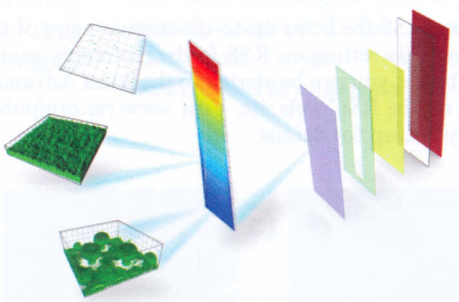


2162

Microfluidic dissolved oxygen gradient generator biochip as a useful tool in bacterial biofilm studies

Maciej Skolimowski,* Martin Weiss Nielsen, Jenny Emnéus, Søren Molin, Rafael Taboryski, Claus Sternberg, Martin Dufva and Oliver Geschke

We demonstrate a microfluidic chip for microbial culturing under different oxygen environments. The novel method for generating an oxygen gradient within culture chamber is demonstrated and applied for *P. aeruginosa* biofilm development.



TECHNICAL NOTE

2170

Rapid prototyping of microfluidic devices for integrating with FT-IR spectroscopic imaging

K. L. Andrew Chan, Xize Niu, Andrew J. de Mello and Sergei G. Kazarian*

Photograph of the microfluidic device prepared by direct wax printing (left) and the label-free FTIR image of the laminar flows selectively highlighting the fluid entering from the top.