

Lab on a Chip

Devices and applications at the micro- and nanoscale
rsc.li/loc

The Royal Society of Chemistry is the world's leading chemistry community. Through our high impact journals and publications we connect the world with the chemical sciences and invest the profits back into the chemistry community.

IN THIS ISSUE

ISSN 1473-0197 CODEN LCAHAM 25(16) 3871-4152 (2025)



Cover
See Shinji Sakai, Satoshi Fujita *et al.*, pp. 3971–3978.
Image reproduced by permission of Shinji Sakai from *Lab Chip*, 2025, 25, 3971.



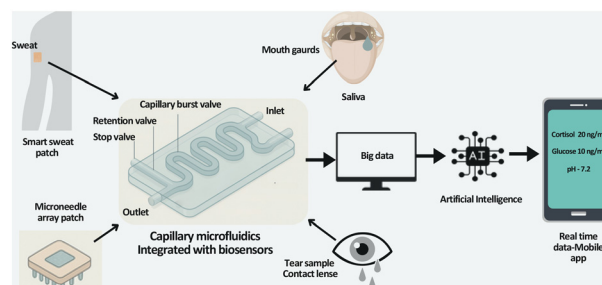
Inside cover
See Ye Wang *et al.*, pp. 3979–3992.
Image reproduced by permission of Ye Wang from *Lab Chip*, 2025, 25, 3979.

CRITICAL REVIEWS

3879

Autonomous wearable sensing enabled by capillary microfluidics: a review

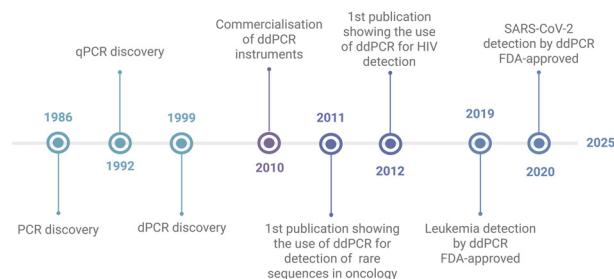
Kiran Kuruvnashetti, Amin Komeili* and Amir Sanati Nezhad*



3921

Digital PCR: from early developments to its future application in clinics

Amandine Trouchet, Guillaume Gines, Leonor Benhaim and Valerie Taly*





Royal Society of Chemistry approved training courses

Explore your options.
Develop your skills.
Discover learning
that suits you.

**Courses in the classroom,
the lab, or online**

Find something for every
stage of your professional
development. Search our
database by:

- subject area
- location
- event type
- skill level

Members get at least 10% off

Visit rsc.li/cpd-training

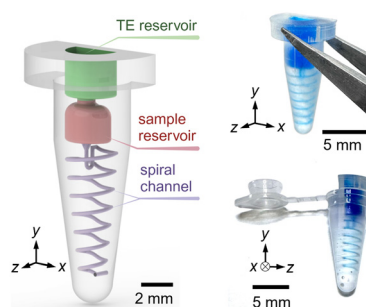
**SAVE
10%**



3962

A three-dimensional microfluidic device embedded within a thermal cycler tube for electrokinetic DNA extraction

Qi Jiang, Xuehao Zang, Yilu Wang, Alexandre S. Avaro, Diego A. Huyke and Juan G. Santiago*



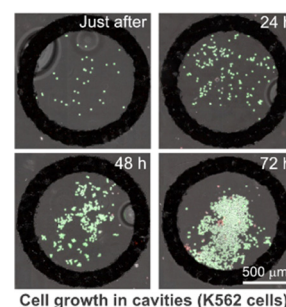
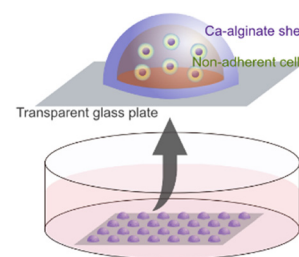
PAPERS

3971

Development of on-chip cell domes using Ca-alginate hydrogel shells for non-adherent cell studies

Shinji Sakai,* Hiroyuki Fujiwara, Ryotaro Kazama, Riki Toita and Satoshi Fujita*

On-Chip Cell Domes

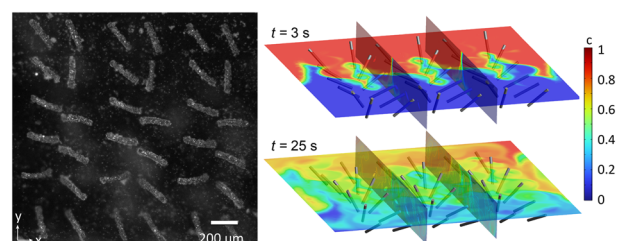


Cell growth in cavities (K562 cells)

3979

Designing enhanced mixing in stagnant microfluidic environments: an artificial cilia approach

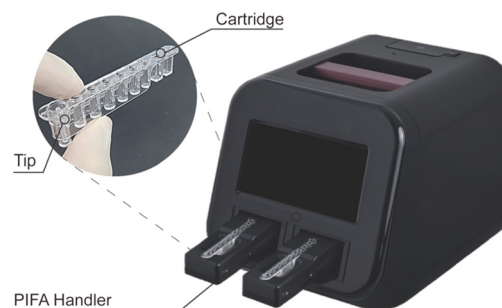
Tongsheng Wang, Ishu Aggarwal, Erik Steur, Tess Homan, Patrick R. Onck, Jaap M. J. den Toonder and Ye Wang*



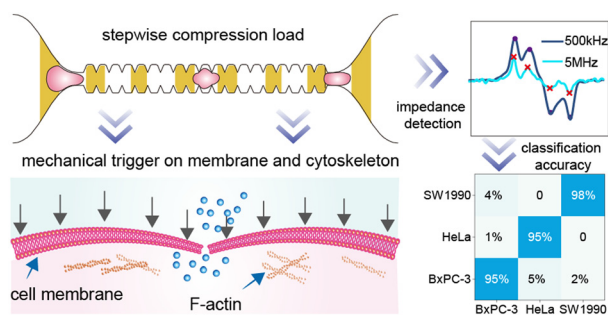
3993

Portable platform for measuring amyloid beta 42/40 ratio *via* photooxidation-induced fluorescence amplification

Sanghag Ko, Hyunjun Bae, Daewon Kim, Yeonju Lee, Isaac Choi, Dain Lee, Dong hwan Choi, Hyung Chul Kim, Seo Young Sohn, Yohan Jeong,* Seok Chung* and Young Hee Jung*



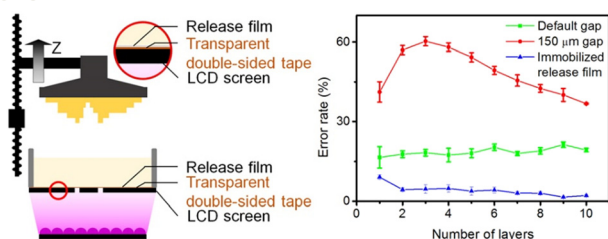
4002



Quantifying mechanical opacity as a novel indicator for single-cell phenotyping *via* integrated dynamic mechanical compression and impedance flow cytometry

Shan-Shan Li, Chun-Dong Xue,* Si-Yu Hu, Yong-Jiang Li, Xu-Qu Hu, Zhuo Yang and Kai-Rong Qin*

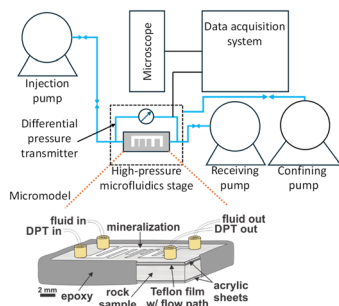
4013



Enhancing microscale printing accuracy in LCD-based 3D printing using an immobilized release film

Chang Tian,* Chaojie Shao, Tiantian Li, Wenya Tang, Peiqi Wu, Qian Xu, Wei Li* and Fen Zhang*

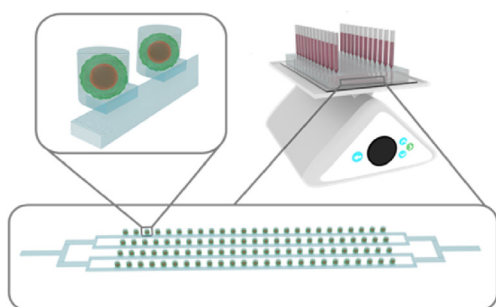
4024



Mechanistic understanding of carbon mineralization in fracture systems using microfluidics

Haylea Nisbet, Ruoyu Li, Prakash Purswani,* Michael Chen, Weipeng Yang, Chelsea Neil, Qinjun Kang, Kishore Mohanty, Peter K. Kang and Hari Viswanathan

4038



Spheroid-based skin-on-a-chip platform for the evaluation of the toxicity of small molecules and nanoparticles

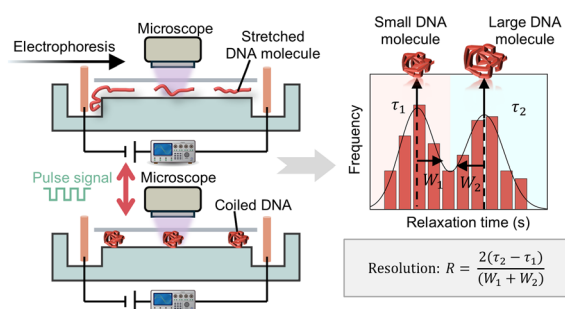
Dianoosh Kalhori, Faeze Rakhshani, Yingshan Ma, Ilya Yakavets, Sina Kheiri, Ophelie Zeyons, Susanne N. Kolle, Ted Deisenroth, Liangliang Qu, Zhengkun Chen* and Eugenia Kumacheva*



4048

Size analysis of large DNA molecules by relaxation time measurement using a nanoslit channel

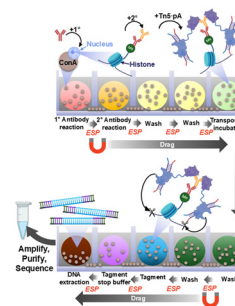
Hongdong Yi, Shintaro Itoh,* Kenji Fukuzawa, Hedong Zhang and Naoki Azuma



4059

Lossless Altered Histone Modification Analysis System (LAHMAS)

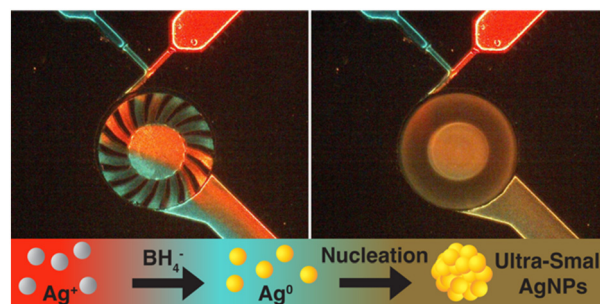
Zachary J. Kauffman, Kevin Koesser, Kyle T. Helzer, Marina N. Sharifi, Erika Heninger, Chao Li, Duane S. Juang, David F. Jarrard, Shuang G. Zhao, Michael C. Haffner, David J. Beebe, Joshua M. Lang and Jamie M. Sperger*



4071

High speed microturbine mixer for kinetically controlled synthesis

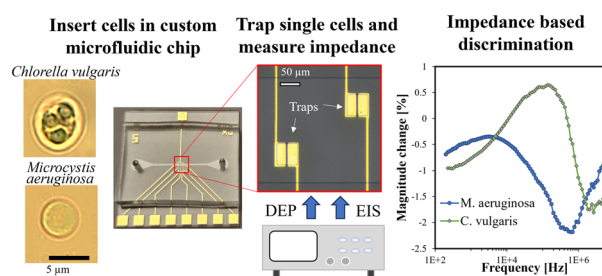
Avery E. England,* Scott D. Collins, Christopher L. Emmerling, Michael D. Mason and Rosemary L. Smith*



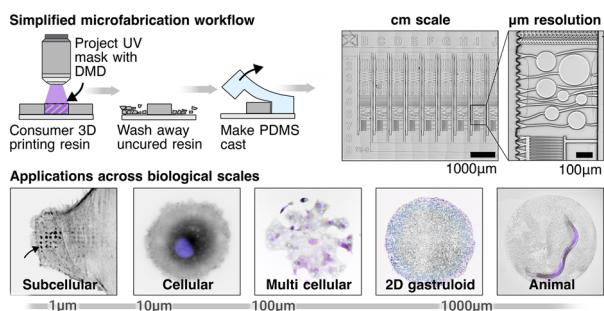
4081

Harnessing intrinsic biophysical cellular properties for identification of algae and cyanobacteria via impedance spectroscopy

Ruben Van den Eeckhoudt,* Naras R. H. Rao, Koenraad Muylaert, Filip Tavernier, Michael Kraft and Irene Taurino



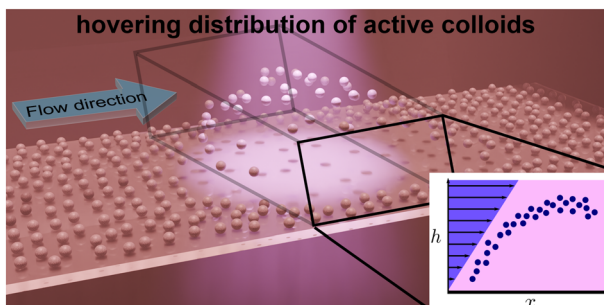
4091



Teach your microscope how to print: low-cost and rapid-iteration microfabrication for biology

Lucien Hinderling,* Remo Hadorn, Moritz Kwasny, Joël Frei, Benjamin Grädel, Sacha Psalmon, Yannick Blum, Rémi Berthoz, Alex E. Landolt, Benjamin D. Towbin, Daniel Riveline and Olivier Pertz*

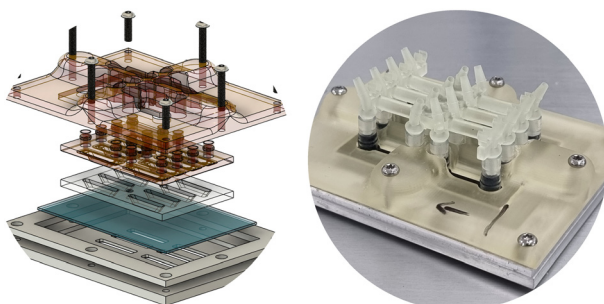
4106



Statistical distribution of elevation from a planar interface of phoretically active microparticles

Fabian Rohne, Daniela Vasquez Muñoz, Isabel Meier, Nino Lomadze, Svetlana Santer and Marek Bekir*

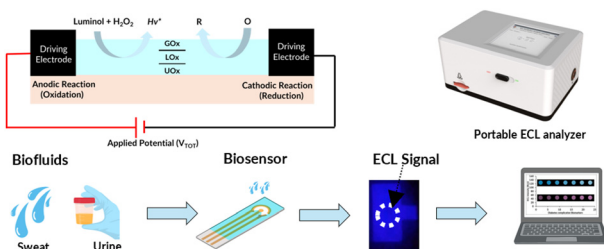
4119



Fabrication of a bioreactor combining soft lithography and vat photopolymerisation to study tissues and multicellular organisms under dynamic culture conditions

Thomas Meynard, Félix Royer, Robin Houssier, Orégane Bajeux, Sonia Paget, Fatima Lahdaoui, Alejandra Mogrovejo Valdivia, Nathalie Maubon, Jérôme Vicogne, Isabelle Van Seuningen and Vincent Senez*

4138



Fully automated standalone microfluidic integrated electrochemiluminescence platform for sample-to-answer detection of diabetes complication markers

Abhishek Kumar and Sanket Goel*

