

# Lab on a Chip

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

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### IN THIS ISSUE

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#### Cover

See André Bégin-Drolet, Jesse Greener *et al.*, pp. 3561–3570.  
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#### Inside cover

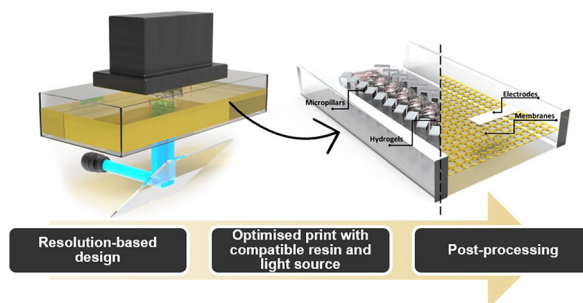
See Yaxiaer Yalikun, Cheng Lei *et al.*, pp. 3571–3580.  
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### CRITICAL REVIEW

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#### Vat photopolymerization 3D printed microfluidic devices for organ-on-a-chip applications

Laura A. Milton, Matthew S. Viglione, Louis Jun Ye Ong, Gregory P. Nordin\* and Yi-Chin Toh\*

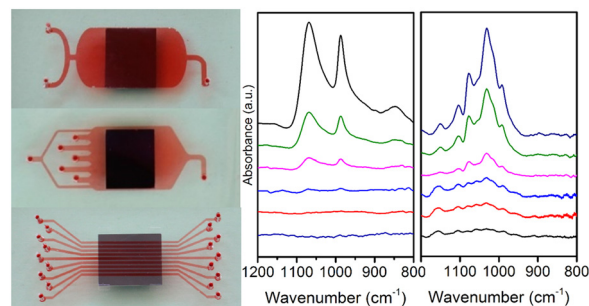


### PAPERS

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#### SpectIR-fluidics: completely customizable microfluidic cartridges for high sensitivity on-chip infrared spectroscopy with point-of-application studies on bacterial biofilms

Nan Jia, Arthur Daignault-Bouchard, Tianyang Deng, Thomas G. Mayerhöfer, André Bégin-Drolet\* and Jesse Greener\*



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Devices and applications at the micro- and nanoscale

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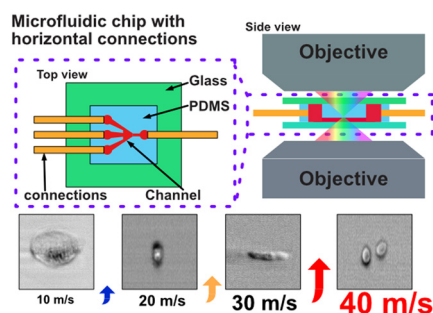


## PAPERS

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### An optimized PDMS microfluidic device for ultra-fast and high-throughput imaging flow cytometry

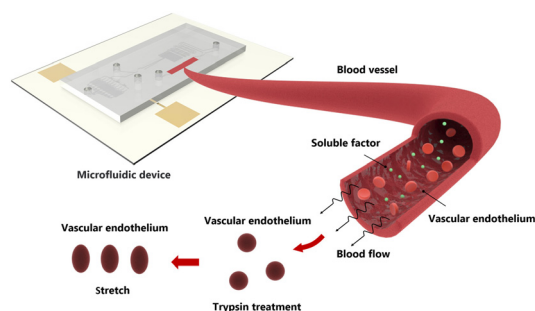
Xun Liu, Jiehua Zhou, Ruopeng Yan, Tao Tang, Shubin Wei, Rubing Li, Dan Hou, Yueyun Weng, Du Wang, Hui Shen, Fuling Zhou, Yo Tanaka, Ming Li, Yoichiro Hosokawa, Yaxiaer Yalikun\* and Cheng Lei\*



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### A microfluidic platform integrating dynamic cell culture and dielectrophoretic manipulation for *in situ* assessment of endothelial cell mechanics

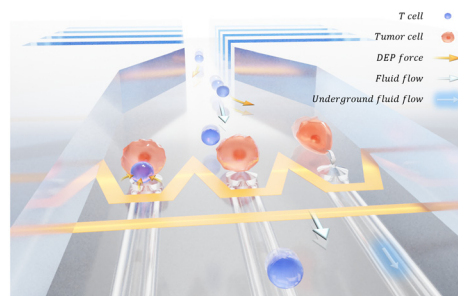
Hao Yang,\* Tao Chen, Yichong Hu, Fuzhou Niu, Xinyu Zheng, Haizhen Sun,\* Liang Cheng and Lining Sun\*



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### Microfluidic device combining hydrodynamic and dielectrophoretic trapping for the controlled contact between single micro-sized objects and application to adhesion assays

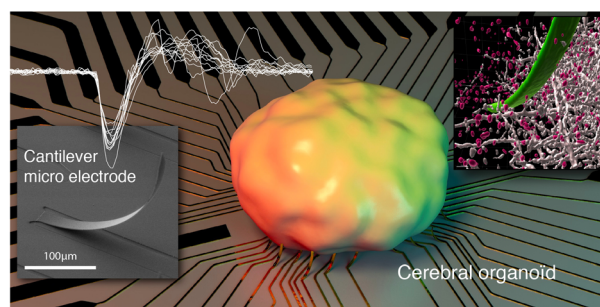
Clémentine Lipp, Laure Koebel, Romain Loyon, Aude Bolopion, Laurie Spehner, Michaël Gauthier, Christophe Borg, Arnaud Bertsch and Philippe Renaud\*



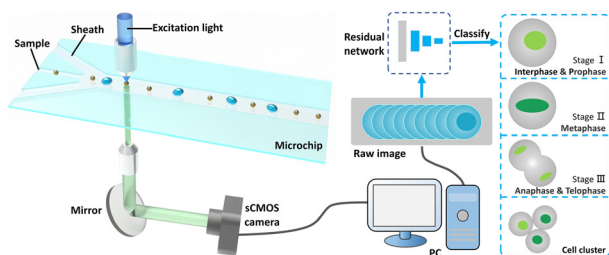
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### Protruding cantilever microelectrode array to monitor the inner electrical activity of cerebral organoids

Oramany Phouphetlinthong, Emma Partiot, Corentin Bernou, Audrey Sebban, Raphael Gaudin\* and Benoit Charlot\*



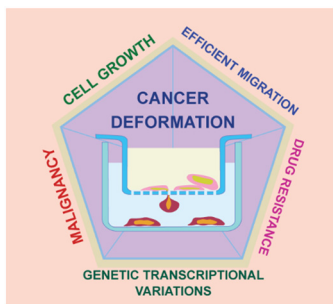
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### Real-time fluorescence imaging flow cytometry enabled by motion deblurring and deep learning algorithms

Yiming Wang, Ziwei Huang, Xiaojie Wang, Fengrui Yang, Xuebiao Yao, Tingrui Pan, Baoqing Li\* and Jiaru Chu

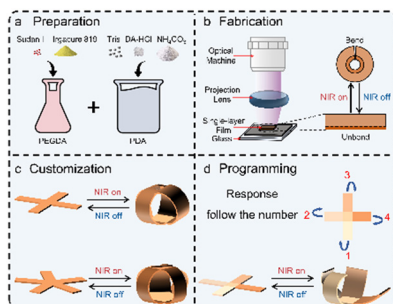
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### The deformation of cancer cells through narrow micropores holds the potential to regulate genes that impact cancer malignancy

Jong Seob Choi, Su Han Lee, Hye Bin Park, Changho Chun, Yeseul Kim, Kyung Hoon Kim, Byung Mook Weon, Deok-Ho Kim,\* Hyung Jin Kim\* and Jung Hyun Lee\*

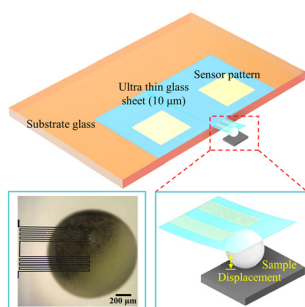
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### Customizable single-layer hydrogel robot with programmable NIR-triggered responsiveness

Kun Wei, Xingmiao Fang, Chenlong Tang, Ling Zhu, Yuqiang Fang, Ke Yang\* and Runhuai Yang\*

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### 10 $\mu\text{m}$ thick ultrathin glass sheet to realize a highly sensitive cantilever for precise cell stiffness measurement

Yapeng Yuan, Doudou Ma, Xun Liu, Tao Tang, Ming Li, Yang Yang, Yaxiaer Yalikun\* and Yo Tanaka\*



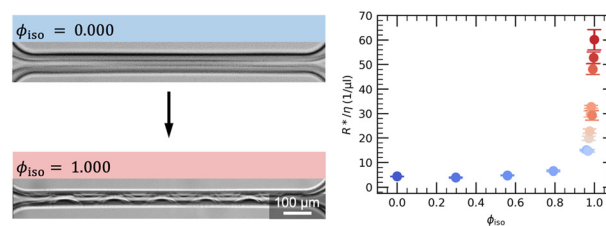


## PAPERS

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### Tuning the hydraulic resistance by swelling-induced buckling of membranes in high-aspect-ratio microfluidic devices

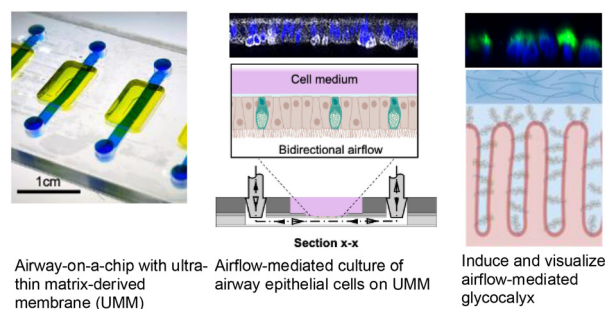
Claas-Hendrik Stamp, Binyam Solomon, Friederike Lang, Efsthios Mitropoulos and Thomas Pfohl\*



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### Bidirectional airflow in lung airway-on-a-chip with matrix-derived membrane elicits epithelial glycocalyx formation

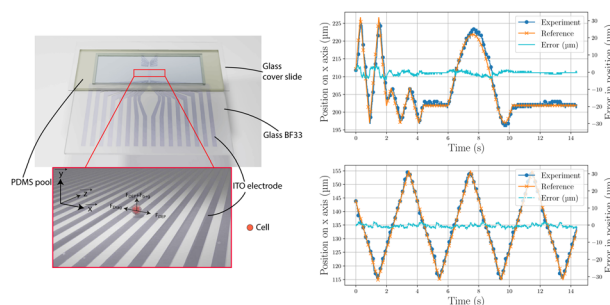
Siwan Park, Jeremy Newton, Tesnime Hidjir and Edmond W. K. Young\*



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### Automatic trajectory control of single cells using dielectrophoresis based on visual feedback

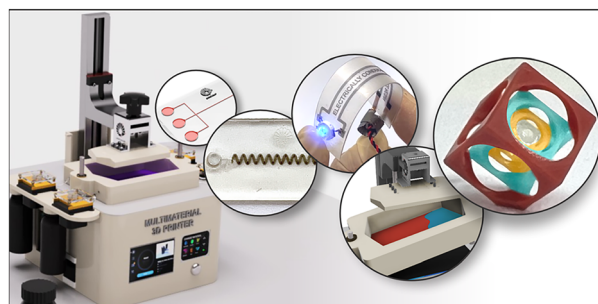
Alexis Lefevre, Michaël Gauthier, Pauline Bourgeois, Annie Frelet-Barrand and Aude Bolopion\*



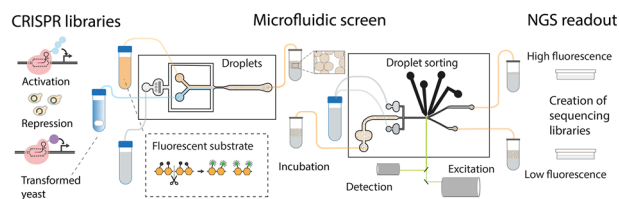
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### Simple modification to allow high-efficiency and high-resolution multi-material 3D-printing fabrication of microfluidic devices

Reverson Fernandes Quero, Dosil Pereira de Jesus and José Alberto Fracassi da Silva\*



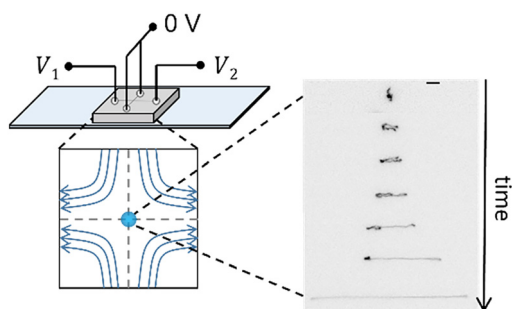
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### Large scale microfluidic CRISPR screening for increased amylase secretion in yeast

S. Andreas Johansson, Thierry Dulermo, Cosimo Jann, Justin D. Smith, Anna Pryszlak, Georges Pignede, Daniel Schraivogel, Didier Colavizza, Thomas Desfougères, Christophe Rave, Alexander Farwick, Christoph A. Merten, Kevin R. Roy, Wu Wei and Lars M. Steinmetz\*

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### Automated electrokinetic stretcher for manipulating nanomaterials

Beatrice W. Soh,\* Zi-En Ooi, Eleonore Vissol-Gaudin, Chang Jie Leong and Kedar Hippalgaonkar\*

