

# Lab on a Chip

Devices and applications at the micro- and nanoscale  
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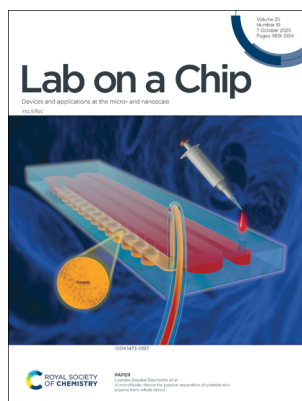
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## IN THIS ISSUE

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**Cover**  
See Manuel Schröter, Andreas Hierlemann *et al.*, pp. 4844–4885.  
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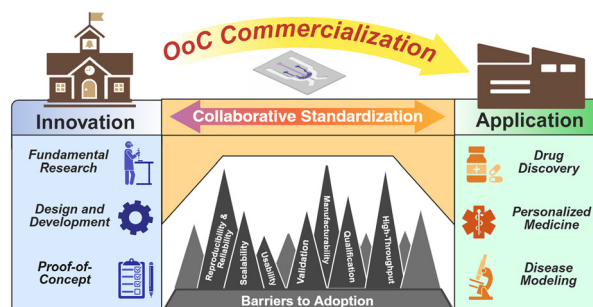
**Inside cover**  
See Lourdes Basabe-Desmonts *et al.*, pp. 4886–4897.  
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## PERSPECTIVE

4828

### Organ-on-a-chip: key industry insights, challenges, and opportunities from 100+ NSF I-Corps interviews

Ronin-Mae Komarnisky, Shaun Wootten, Nathan Friedman and Mehdi Nikkhah\*

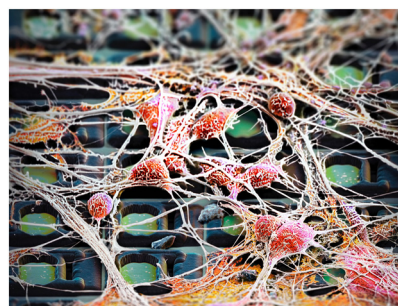


## TUTORIAL REVIEW

4844

### Advances in large-scale electrophysiology with high-density microelectrode arrays

Manuel Schröter,\* Fernando Cardes, Cat-Vu H. Bui, Lorenzo Davide Dodi, Tobias Gänswain, Julian Bartram, Lorenca Sadiraj, Philipp Hornauer, Sreedhar Kumar, Maria Pascual-Garcia and Andreas Hierlemann\*



# Environmental Science: Atmospheres

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Elemental answers



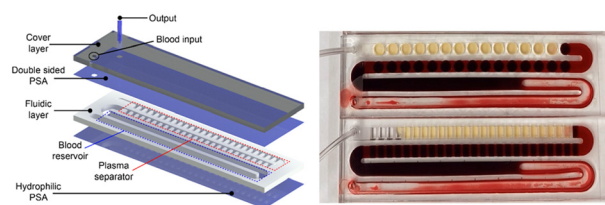
Registered charity number: 207890



4886

### A microfluidic device for passive separation of platelet-rich plasma from whole blood

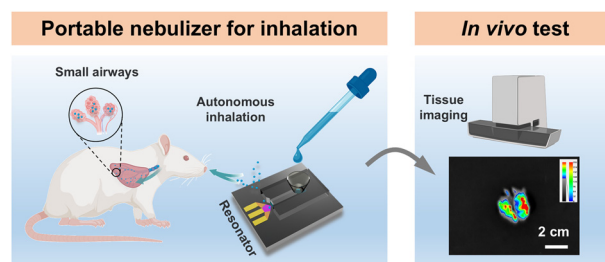
Pablo E. Guevara-Pantoja, Yara Alvarez-Braña, Jon Mercader-Ruiz, Fernando Benito-Lopez and Lourdes Basabe-Desmonts\*



4898

### High frequency capillary wave-enabled ultra-small droplets for inhaled drug delivery

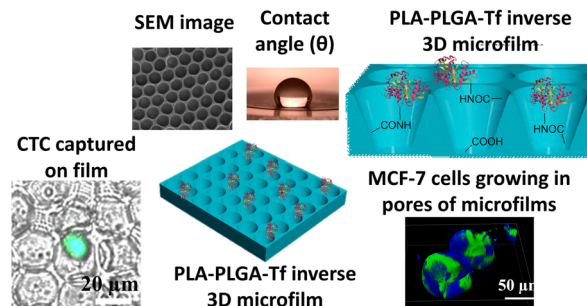
Haitao Zhang, Zirui Zhao, Yangchao Zhou, Zaoxian Mei and Xuexin Duan\*



4909

### Inverse 3D 'lab-on-a-chip' polymeric microfilms for selective capture of circulating tumor cells from patients' blood

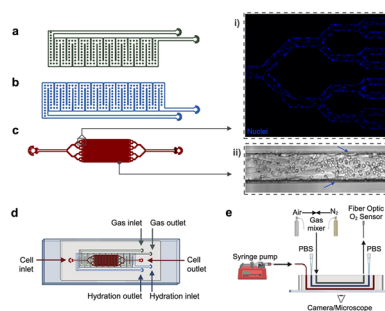
Rituja Gupta, Saloni Andhari, Semonti Nandi, Tanvi Deshpande, Narendra Kale, Chandrashekhar Bobade, Gourishankar Aland, Sreeja Jayant, Atul Bharde, Aravindan Vasudevan, Pankaj Chaturvedi, Kumar Prabhaskar, Yuvraj Patil\* and Jayant Khandare\*



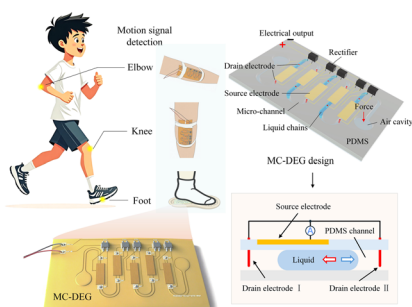
4920

### Oxygen-tunable endothelialized microvascular chip to assess hypoxia-reperfusion in sickle cell disease

Samantha R. Schad, Joan D. Beckman, Wilbur A. Lam and David K. Wood\*



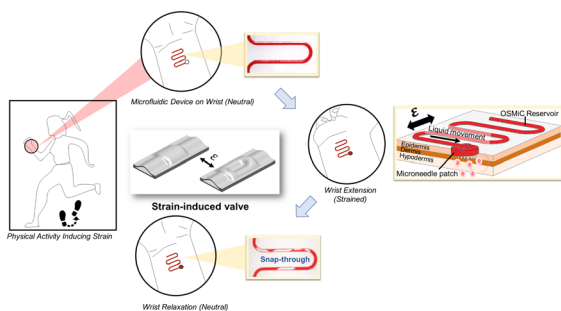
4934



### Microchannel-confined droplet-based electricity generator for biomechanical energy conversion and sensing

Jianwu Wang, Yonghui Zhang, Xiaokai Li, Zhengyu Li, Yuheng Li, Jiahao Zhang, Xin Liu, Jing Sun\* and Huanxi Zheng\*

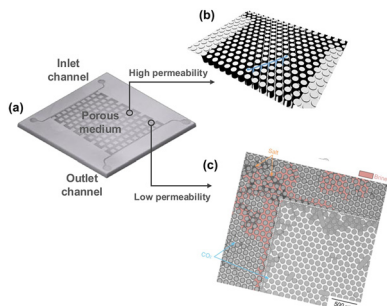
4943



### Morphing out-of-surface channels enable strain-based control over fluid flow in skin-mountable patches

Rana Altay, Hudson Gasvoda, Max Mailloux-Beauchemin, Johanna Brown, Kari Olson and I. Emre Araci\*

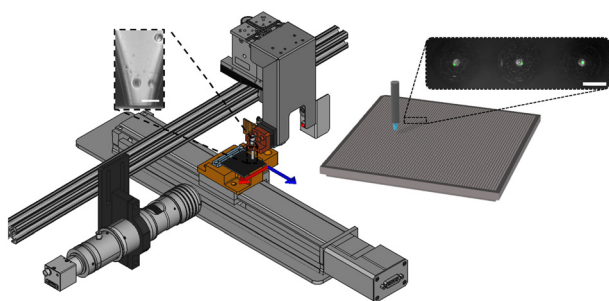
4957



### Pore-scale mechanisms of salt precipitation in heterogeneous media under geological carbon storage conditions

Ge Zhang, Jon Burger, Josephina Schembre-McCabe and Anthony R. Kovscek\*

4972



### High-speed cell partitioning through reactive machine learning-guided inkjet printing

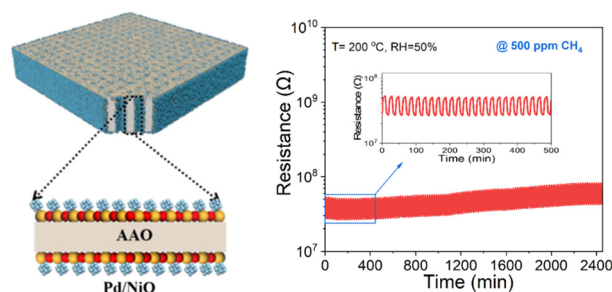
Eric Cheng, Glenn Chang, Haley MacDonald, Miguel Ramirez, Pamela A. Hoodless, Robin Coope, Adi Steif\* and Karen C. Cheung\*



4986

### Fingertip-chip sensor based on Pd nanocluster sensitized 3D NiO nanotube arrays for real-time, selective methane detection

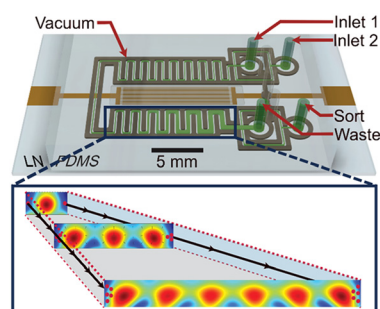
Kunmei Yang, Yue Kang, Jia Yan,\* Weihao Fang, Jiazhen Zhang and Zhilong Song\*



4994

### Expanding channels enhanced diffractive SAW actuated particle enrichment in vacuum-sealed microfluidic channels

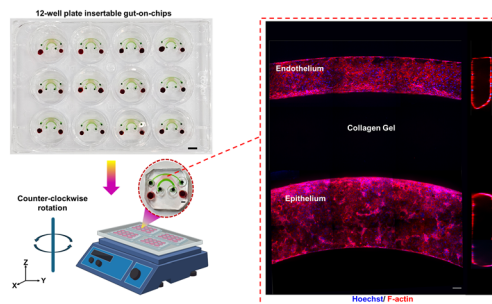
David J. Bryan, Kirill Kolesnik, Crispin Szydzik, Arnan Mitchell, Kelly L. Rogers and David J. Collins\*



5005

### Orbital shaker-driven gut-on-a-chip platform for drug-induced permeability and microenvironment studies

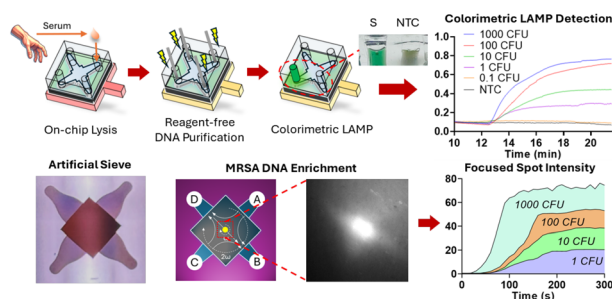
Nishanth Venugopal Menon, Jeeyeon Lee, Hung Dong Truong, Sriram Bharathkumar and Chwee Teck Lim\*



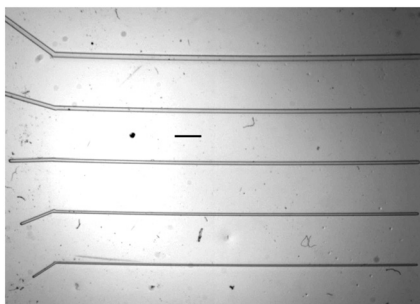
5019

### A compact sample-to-answer system for rapid MRSA detection in serum based on reagent-free electrophoretic purification of nucleic acids and colorimetric LAMP

Yung Ching Lee, Yang Bu, Sheng Ni, Yuze Liu, Anni Hu and Levent Yobas\*



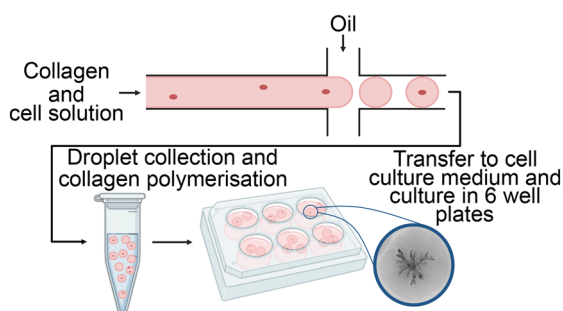
5030



### Bubble removal in microfluidic channels surrounded by gas-permeable media: experiments and a predictive model

Ludovic Keiser, Loukas Stamoulis, Baptiste Georjon, Philippe Marmottant and Benjamin Dollet\*

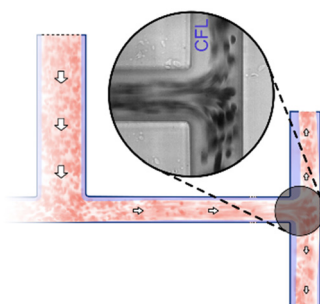
5043



### Accelerated maturation of branched organoids confined in collagen droplets

Iris Ruider, Anna Pastucha, Marion K. Raich, Wentao Xu, Yan Liu, Maximilian Reichert, David Weitz and Andreas R. Bausch\*

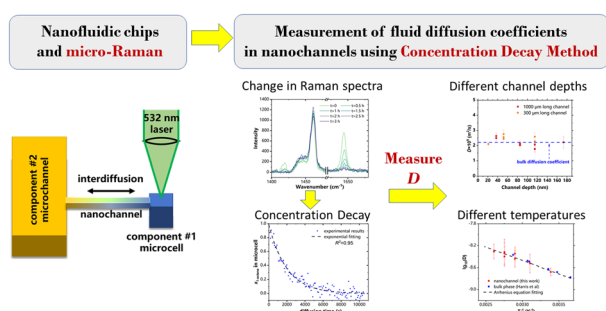
5055



### Impact of sequential bifurcations on the cell-free layer of healthy and rigid red blood cells

Yazdan Rashidi,\* Christian Wagner and Steffen M. Recktenwald

5065



### Investigation of fluid diffusion kinetics in nanochannels using micro-Raman spectrometry

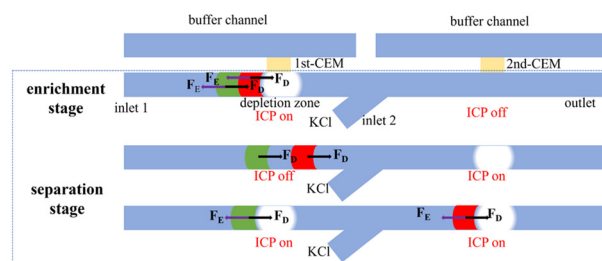
Jingyu Chen, Haowei Lu, Kecheng Zeng, Haidong Ji, Peixue Jiang and Ruina Xu\*



5079

## Multi-CEM-embedded microfluidic system for simultaneous molecular enrichment and separation by multi-stage ion concentration polarization

Yixing Gou,\* Guowei Sun, Runze Sun, Jun Huang and Zirui Li\*



5093

## Disruption and nebulization of lipid vesicles using surface acoustic waves for direct mass spectrometry

Yuqi Huang, Qian Ma, Ashton Taylor, Lucas Lienard, Theresa Evans-Nguyen and Venkat Bhethanabotla\*

