

# Lab on a Chip

Devices and applications at the micro- and nanoscale  
[rsc.li/loc](https://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 24(9) 2363–2592 (2024)



### Cover

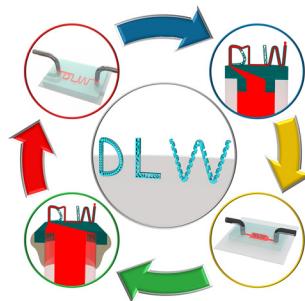
See Lei Zhang *et al.*,  
pp. 2418–2427.  
Image reproduced by  
permission of Lei Zhang from  
*Lab Chip*, 2024, 24, 2418.

## TUTORIAL REVIEW

2371

### Direct laser writing-enabled 3D printing strategies for microfluidic applications

Olivia M. Young, Xin Xu, Sunandita Sarker  
and Ryan D. Sochol\*

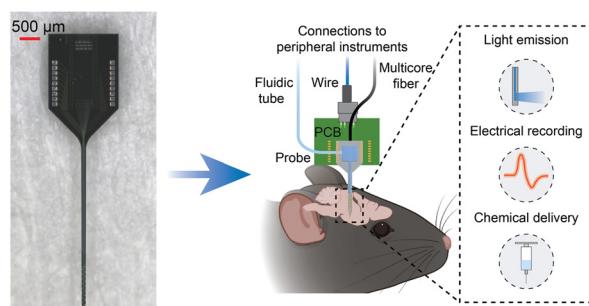


## PERSPECTIVE

2397

### Development of wafer-scale multifunctional nanophotonic neural probes for brain activity mapping

Fu Der Chen,\* Ankita Sharma, David A. Roszko,  
Tianyuan Xue, Xin Mu, Xianshu Luo, Hongyao Chua,  
Patrick Guo-Qiang Lo, Wesley D. Sacher  
and Joyce K. S. Poon\*



# Advance your career in science

with professional recognition that showcases your **experience, expertise and dedication**

## Stand out from the crowd

Prove your commitment to attaining excellence in your field

## Gain the recognition you deserve

Achieve a professional qualification that inspires confidence and trust

## Unlock your career potential

Apply for our professional registers (RSci, RSciTech) or chartered status (CChem, CSci, CEnv)

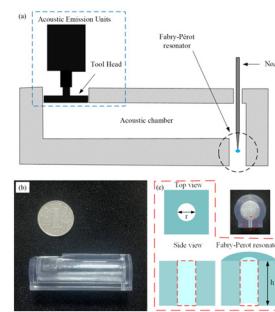
## Apply now

[rsc.li/professional-development](https://rsc.li/professional-development)

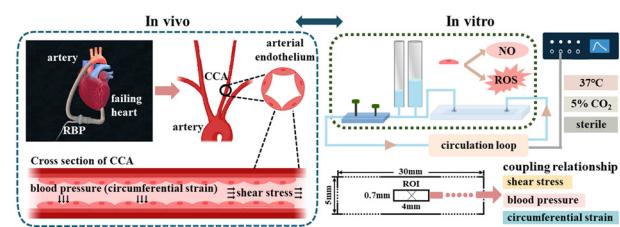


## PAPERS

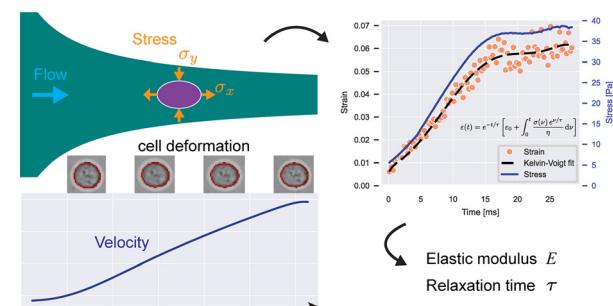
2418

**Acoustic modulation and non-contact atomization of droplets based on the Fabry-Pérot resonator**Jingjun Li, Xiukun Wang, Fan Yang, Yadong Sun  
and Lei Zhang\*

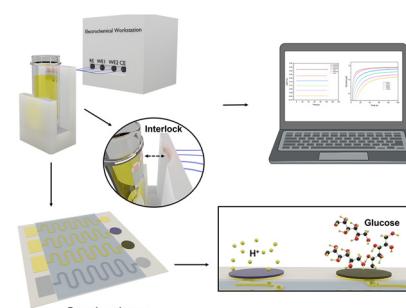
2428

**Study on the hemodynamic effects of different pulsatile working modes of a rotary blood pump using a microfluidic platform that realizes *in vitro* cell culture effectively**Lixue Liang, Xueying Wang, Dong Chen,  
Palaniappan Sethu, Guruprasad A. Giridharan,  
Yanxia Wang, Yu Wang\* and Kai-Rong Qin\*

2440

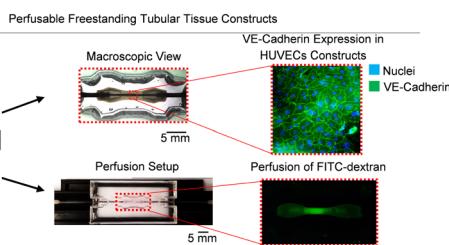
**High-throughput viscoelastic characterization of cells in hyperbolic microchannels**Felix Reichel, Ruchi Goswami, Salvatore Girardo  
and Jochen Guck\*

2454

**A paper-based dual functional biosensor for safe and user-friendly point-of-care urine analysis**Yujia Li, Yingqi Kong, Yubing Hu, Yixuan Li, Rica Asrosa,  
Wenyu Zhang, Buddha Deka Boruah, Ali K. Yetisen,  
Andrew Davenport, Tung-Chun Lee and Bing Li\*

## PAPERS

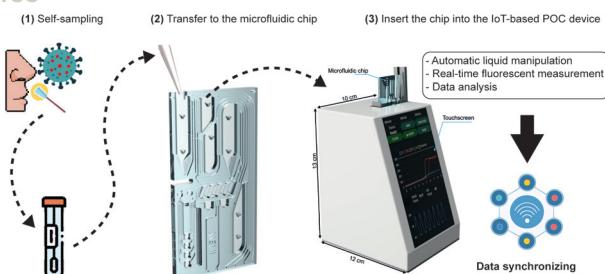
2468



**A self-assembly and cellular migration based fabrication of high-density 3D tubular constructs of barrier forming membranes**

Seyedaydin Jalali  
and Ponnambalam Ravi Selvaganapathy\*

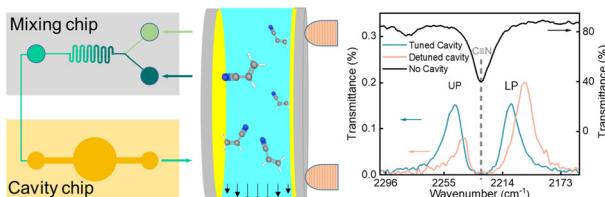
2485



**Development of a self-contained microfluidic chip and an internet-of-things-based point-of-care device for automated identification of respiratory viruses**

Huynh Quoc Nguyen, Van Dan Nguyen, Vu Minh Phan and Tae Seok Seo\*

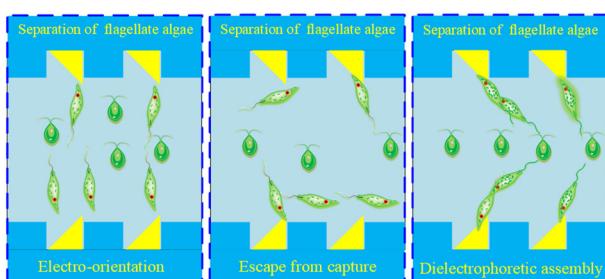
2497



**Piezoelectric and microfluidic tuning of an infrared cavity for vibrational polariton studies**

Wei Wang, Jaime de la Fuente Diez, Nicolas Delsuc, Juan Peng, Riccardo Spezia, Rodolphe Vuilleumier and Yong Chen\*

2506



**Dielectrophoretic characterization and selection of non-spherical flagellate algae in parallel channels with right-angle bipolar electrodes**

Xiaoming Chen,\* Shun Liu, Mo Shen, Jishun Shi, Chungang Wu, Zhipeng Song and Yong Zhao\*

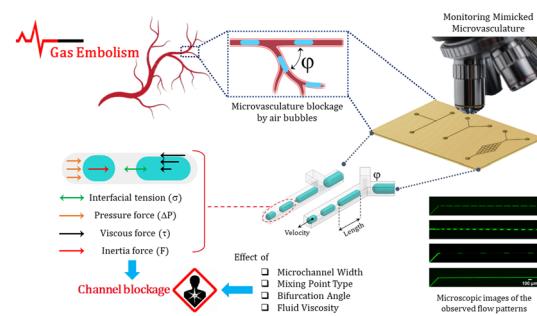


## PAPERS

2518

## Investigation of air bubble behaviour after gas embolism events induced in a microfluidic network mimicking microvasculature

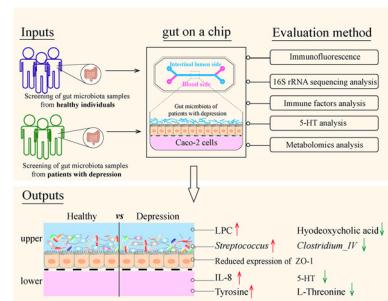
Mohammad Mahdi Mardanpour,  
Ayyappasamy Sudalaiyadum Perumal, Zahra Mahmoodi,  
Karine Baassiri, Gala Montiel-Rubies, Kenneth M. LeDuz  
and Dan V. Nicolau\*



2537

## A microfluidic-based gut-on-a-chip model containing the gut microbiota of patients with depression reveals physiological characteristics similar to depression

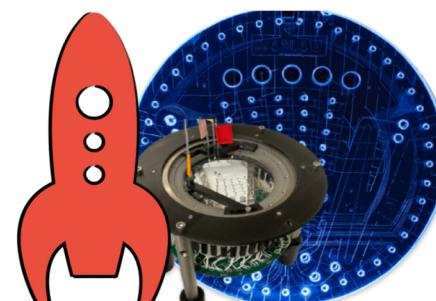
Wenxin Wang, Yiyuan Liu, Zhiyai Yao, Dengbo Chen,  
Yue Tang, Jingwei Cui, Jiangjiang Zhang, Hong Liu\*  
and Zikai Hao\*



2551

## Integrated high performance microfluidic organic analysis instrument for planetary and space exploration

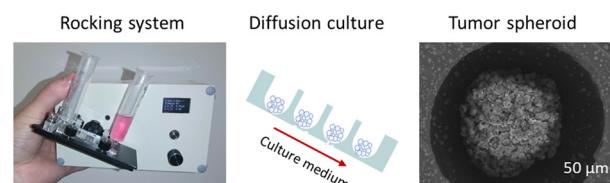
Anna L. Butterworth,\* Matin Golozar, Zachary Estlack,  
Jeremy McCauley, Richard A. Mathies and Jungkyu Kim\*



2561

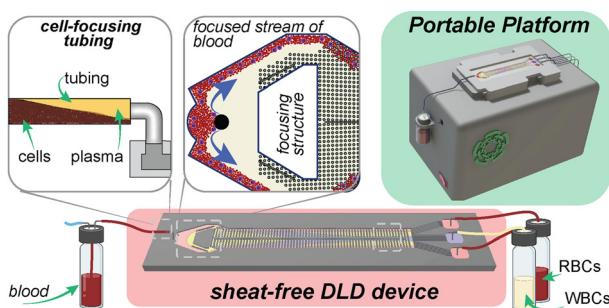
## Rocking- and diffusion-based culture of tumor spheroids-on-a-chip

Duomei Tian, Zheng Mao, Li Wang, Xiaochen Huang,  
Wei Wang, Haoyue Luo, Juan Peng\* and Yong Chen\*



## PAPERS

2575



### Portable platform for leukocyte extraction from blood using sheath-free microfluidic DLD

Oriana G. Chavez-Pineda, Roberto Rodriguez-Moncayo, Alan M. Gonzalez-Suarez, Pablo E. Guevara-Pantoja, Jose L. Maravillas-Montero and Jose L. Garcia-Cordero\*

## CORRECTION

2590

### Correction: Direct laser writing-enabled 3D printing strategies for microfluidic applications

Olivia M. Young, Xin Xu, Sunandita Sarker and Ryan D. Sochol\*

