

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(24) 6417-6758 (2025)



Cover
See Christoph E. Hagemeyer and Shaun D. Gregory *et al.*, pp. 6427–6441.
Image reproduced by permission of Saeedreza Zeibi Shirejini. Image: Ella Maru Studio from *Lab Chip*, 2025, 25, 6427.



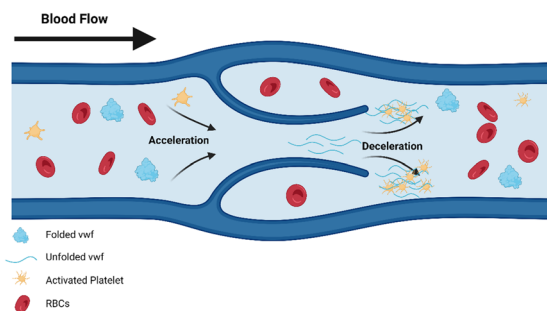
Inside cover
See Wei Qiu and Yongmao Pei *et al.*, pp. 6442–6453.
Image reproduced by permission of Duo Xu, Yongmao Pei, Wei Qiu from *Lab Chip*, 2025, 25, 6442.

PAPERS

6427

Evaluating caplacizumab's potential to mitigate thrombosis risk in aortic valve stenosis: a microfluidic and computational approach

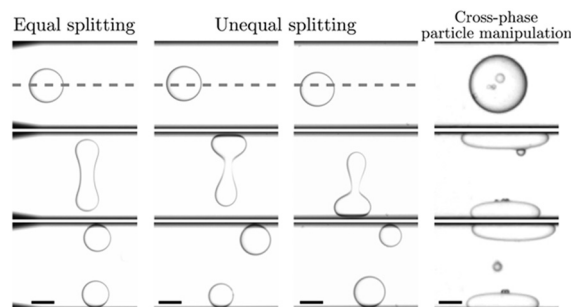
Saeedreza Zeibi Shirejini, Mehrdad Khamooshi, Damien Riska, Martin Nikolov, Marjan Azimi, Shiyen L. Perera, Josie Carberry, Karen Alt, Shaun D. Gregory* and Christoph E. Hagemeyer*



6442

Continuous and tunable droplet splitting using standing-wave acoustofluidics

Duo Xu, Yongmao Pei* and Wei Qiu*





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

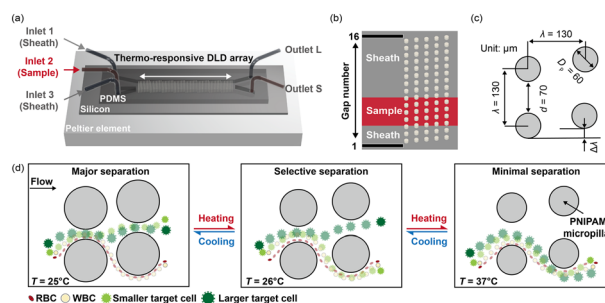
rsc.li/professional-development



6454

Tunable cell separation using a thermo-responsive deterministic lateral displacement device

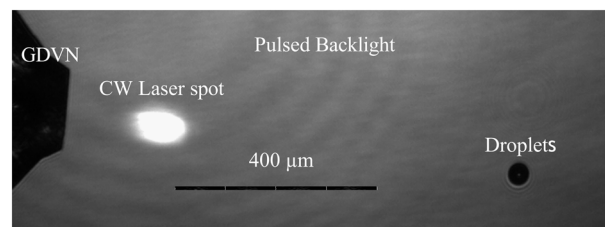
Ze Jiang, Yusuke Kanno and Takasi Nisisako*



6465

Synchronized droplet nozzle for in-vacuum X-ray scattering experiments

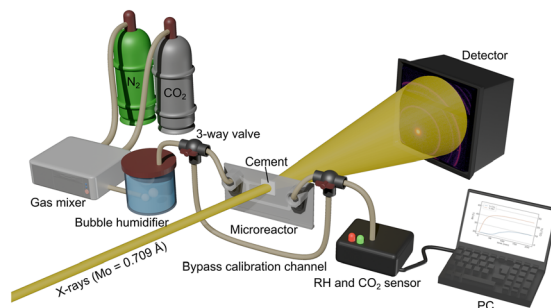
Adil Ansari,* Roberto C. Alvarez, Konstantinos Karpos, Dimitra Manatou, Garrett Nelson, Reza Nazari, Tanner Hochberg, John Tamayo, Hannah Nockideneh, Creed Hudson, Anubhav Singhal, Divyanshu Tandon, Natasha Forrand, Hao Hu, Diandra Doppler, Mukul Sonker, Alexandra Ros, Marcus Herrmann and Richard A. Kirian



6475

Cement-on-a-chip: a microreactor for *operando* studies of the carbonation curing of cementitious materials

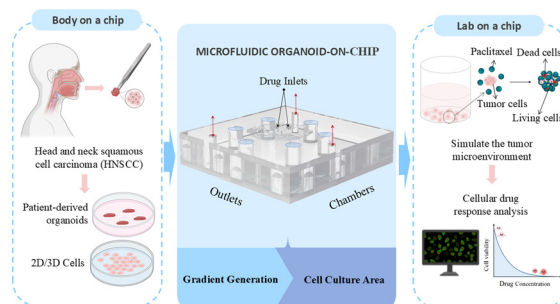
Valentin Hérault, Eddy Foy, Émeline Charon, Gaëtan Touzé, Céline Cau Dit Coumes, Stéphane Poyet, Corinne Chevillard and Mark A. Levenstein*



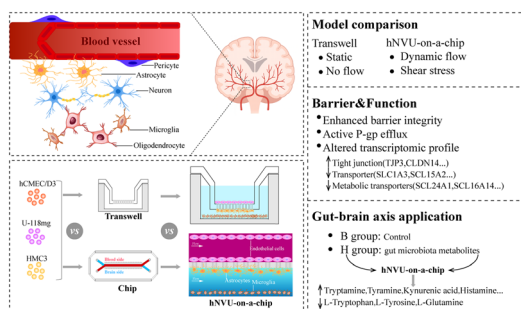
6490

Dual-channel six-step linear concentration gradient microfluidic chip for orthogonal combination drug screening in head and neck tumor cells

Jingru Liao, Zhimi Zhang, Guiquan Zhu, Dan Liu, Zhihao Tu, Wangang Zhu, Tao Dong, Ling Li* and Zhuqing Wang*



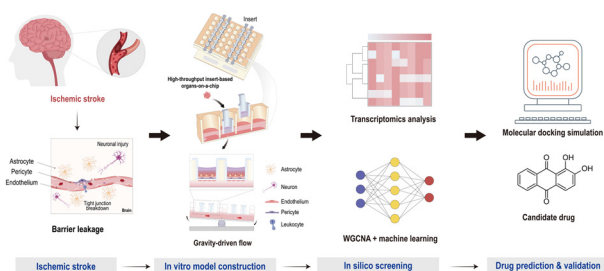
6504



A microfluidic chip recapitulating the human neurovascular unit with a functional blood–brain barrier for modeling gut–brain interactions

Wenxin Wang, Jingwei Cui, Yufei Guo, Xuesong Kang, Hong Liu* and Zikai Hao*

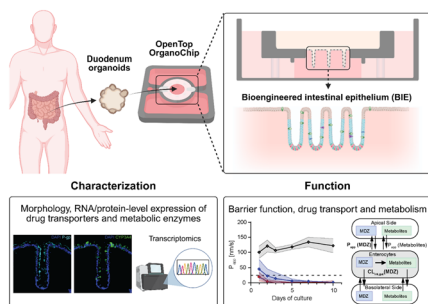
6517



An ischemic stroke-on-a-chip model integrated with machine learning for screening of drug candidates

Jiayue Liu, Peng Wang, Peihan Lian and Jianhua Qin*

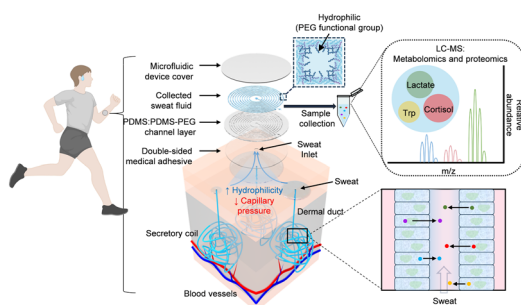
6533



Application of a bioengineered intestinal epithelium for drug permeability and metabolism studies

Elisabeth Gill, Stephanie Muenchau Schoepp, Sina Simon, Marius F. Harter, Mikhail Nikolaev, Iago Pereiro, Inês Silva, Rubén López-Sandoval, Marco Berrera, Tony Kam-Thong, Marco Michalski, Michael Zaayman, Julien Aubert, Irineja Cubela, Janneke Keemink, Cordula Stillhart, Michael Hofmann, Stephen Fowler, J. Gray Camp, Nicolo Milani* and Nikolche Gjorevski*

6550



Hydrophilic skin-interfaced microfluidic devices for comprehensive sweat collection and analysis

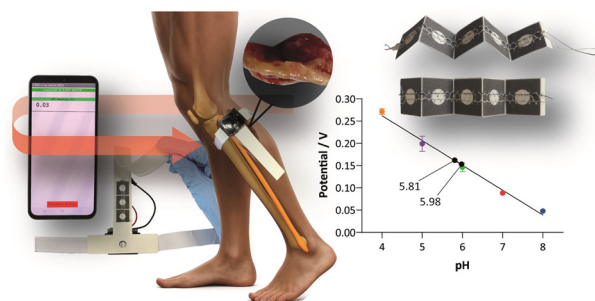
Fina Lu, Ji Hyun Yang and Ahyeon Koh*



6571

Embroidered paper-based electrochemical wearable device for pH monitoring in wounds

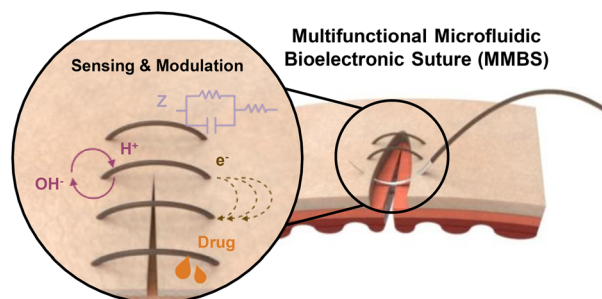
Laura Belcastro, Luca Fiore, Hima Zafar, Mitar Simić, Raffaele Vitiello, Marco Libertini, Florigio Lista, Giulio Maccauro, Goran M. Stojanović and Fabiana Arduini*



6582

Multifunctional microfluidic bioelectronic suture for accelerated healing and wound monitoring

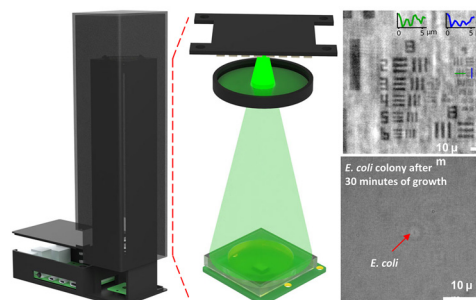
Yesol Kim, Chanhui Park, Gi Doo Cha,* Sung-Hyuk Sunwoo* and Dae-Hyeong Kim*



6593

OpenLM: an open-source pixel super-resolution platform for lens-free microscopy with applications in bacterial growth monitoring and deep learning-based bacterial detection

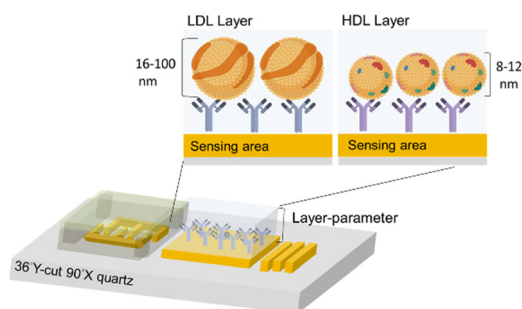
Weiming Xu, Samiha Ahmed, Majed Althumayri, Azra Yaprak Tarman, Mert Kerem Ulku, Karston Yong, Muhammed Veli* and Hatice Ceylan Koydemir*



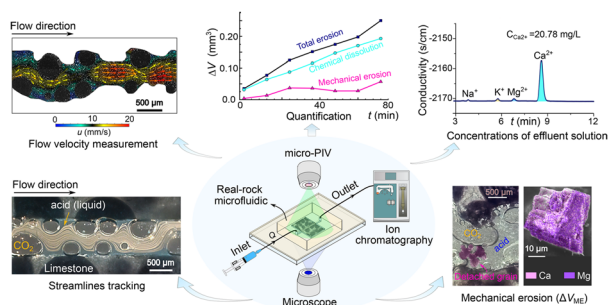
6606

Utilizing layer-parameter of shear horizontal surface acoustic wave biosensor for lipoprotein particle sizing

Chia-Hsuan Cheng, Hiromi Yatsuda and Jun Kondoh*



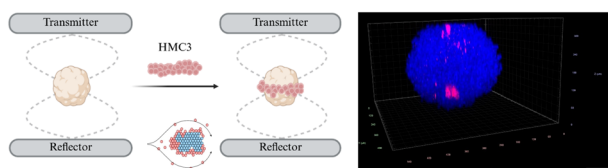
6618



Real-rock microfluidic platform for quantifying chemical dissolution and mechanical erosion in a multiphase environment

Chen-Xing Zhou, Ran Hu,* Hang Deng, Bowen Ling,* Zhibing Yang and Yi-Feng Chen

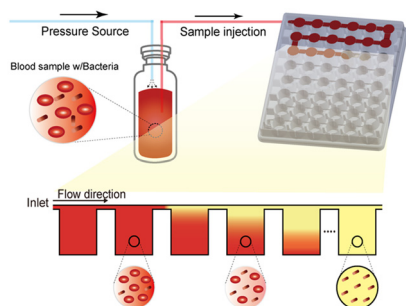
6635



Immune cell infiltration of patient derived glioblastoma cell spheroids in acoustic levitation in bulk acoustic wave devices

Xavier Mousset, Shuake Kuermanbayi, Chloé Dupuis, Nathan Jeger-Madiot, Virgile Delaunay, Ahmed Ibdaih, Elias A. El-Habr, Hervé Chneiweiss, Marie-Pierre Junier, Jean-Luc Aider and Jean-Michel Peyrin*

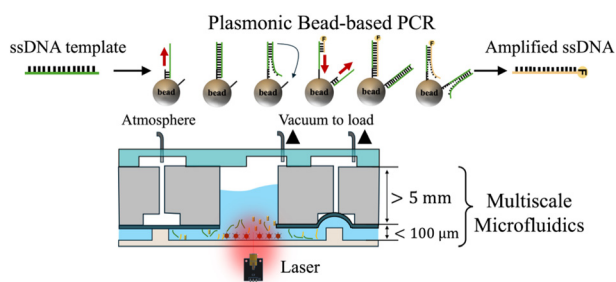
6650



Sequential trench well based microfluidic platform to isolate bacteria from whole blood with large volume processing

Cheonggyu Lee, Gi Yoon Lee, Hyerin Joo, Hamin Kim, Junwon Kang, Tae Hyun Kim, Jonghyun Ha,* Sunghoon Kwon* and Jungil Choi*

6662



Multiscale microfluidic platform with vacuum-driven chambers for automated high-volume ssDNA generation

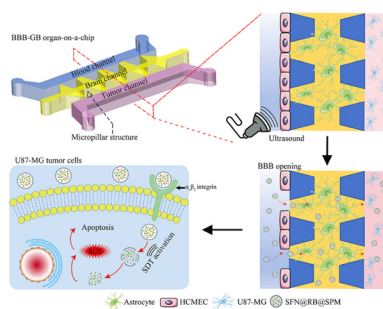
Anni Hu, Yang Bu, Yuze Liu, Yung Ching Lee, Sheng Ni and Levent Yobas*



6673

Establishment of an ultrasound-responsive microfluidic chip BBB-glioblastoma model for studying sonodynamic therapy-enhanced nanodrug delivery

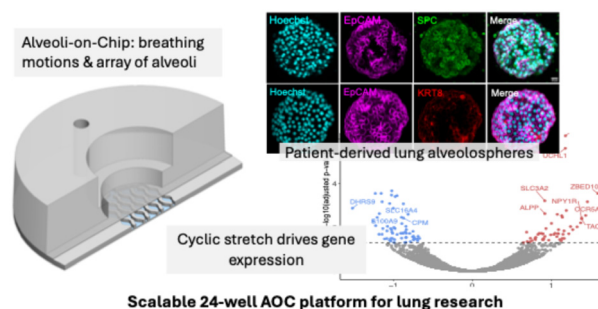
Liyang Wu, Bingcheng Lin, Huadong Fan* and Yihong Li*



6688

A novel alveoli-on-chip platform for modeling cyclic stretch in patient-derived alveolar epithelial cells cultured from organoids

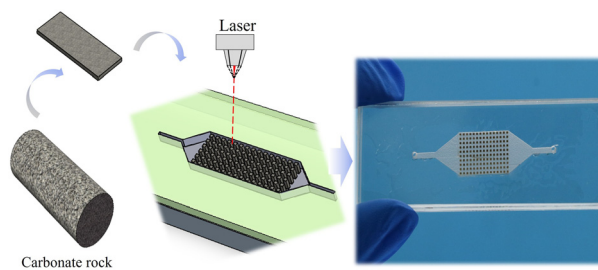
Mohammad Amin Hajari, Jan Schulte, Dario Principi, Damian Schnidrig, Sabine Schneider, Tobias Weber, Joo-Hyeon Lee, Patrick Dorn, Pauline Zamprogno, Thomas Michael Marti and Olivier T. Guenat*



6703

Natural rock-derived microfluidic chip for probing multicomponent mineral dissolution dynamics

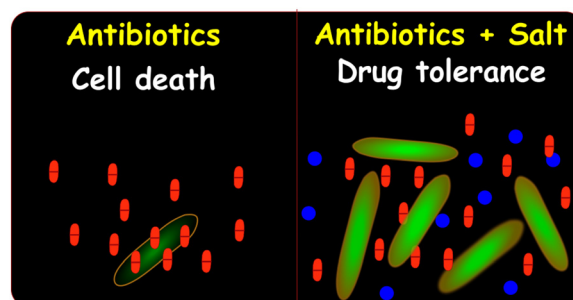
Yingxue Hu, Haozhou Wang, Wei Xu, Haifeng Liu, Lei He, Zhaolin Gu and Junwei Su*



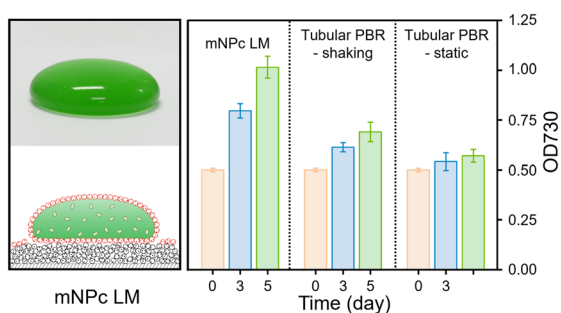
6718

Microfluidic analysis of salt-stress-mediated antibiotic tolerance in *Mycobacterium smegmatis*

Akanksha Agrawal, Dhananjay Udaya Kumar, Raju Mukherjee* and Dileep Mampallil*



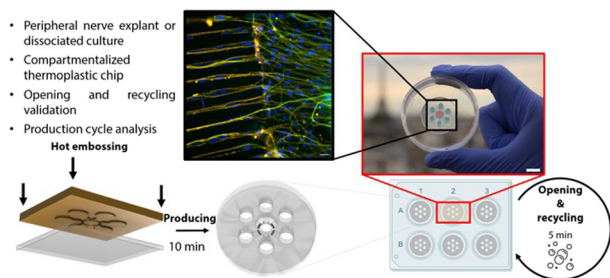
6730



Sol-gel coating-derived liquid marbles as highly efficient micro-photobioreactors for cyanobacterial cultivation

Mei Duan, Wenjun Tian, Xianglong Pang, Rongtao Li, Junjie Wang, Xinxin Cui, Lingao Yang and Xiaoguang Li*

6741



Reversible and reusable compartmentalized thermoplastic chip for coculture of dorsal root ganglion neurons

Solène Moreau, Raul Flores-Berdines, Anne Simon, Tatiana El Jalkh, Guillaume Taret, Anna Fomina, Céline Dargenet-Becker, André Estevez-Torres, Sophie Bernard* and Hugo Salmon*

