

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 Seemesh Bhaskar, Brian T. Cunningham *et al.*, pp. 2948–3001.
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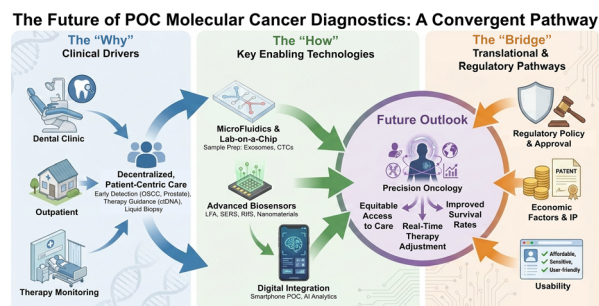
Inside cover
See Yajie Chu and Dianlei Feng, pp. 3020–3038.
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CRITICAL REVIEW

2948

Point of care molecular cancer diagnostics

Seemesh Bhaskar,* Saurabh Umrao, Han Keun Lee, Joseph Tibbs, Amanda Bacon, Skye Shepherd, Takhmina Ayupova, Fatma Uysal Ciloglu, Leyang Liu, Anqi Tan, Wang-Chien Chen, My Thi Tra Nguyen, Maria Grace Scannell, Ugur Aygün, Ugur Parlatan, Catherine Zhang, Manish Kohli, Guy R. Adami, Wali Badar, Ron C. Gaba, Aaron Mansfield, Joel Schwartz, Wang Xing, Utkan Demirci and Brian T. Cunningham*

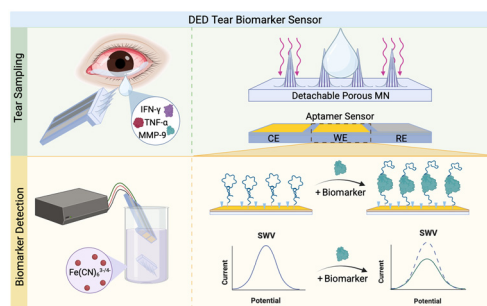


COMMUNICATIONS

3002

Porous microneedle-based electrochemical aptamer biosensor for the collection and quantitative analysis of dry eye disease biomarkers

Eira Beryle Ko, Tianli Hu, Ya Zhang, Xueyan Wang, Yu Song* and Chenjie Xu*



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Fundamental questions
Elemental answers

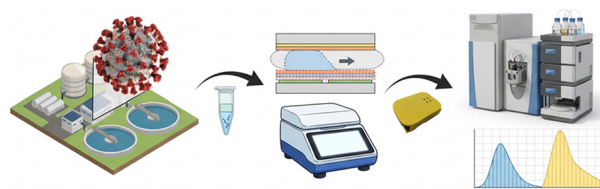


COMMUNICATIONS

3013

DROP-LCMS for wastewater surveillance of viral disease

Jiayi Peng, Vigneshwar Rajesh, Jiarui Shen, Jianxian Sun, Calvin Chan, Ye Chen Hu, Hui Peng and Aaron R. Wheeler*

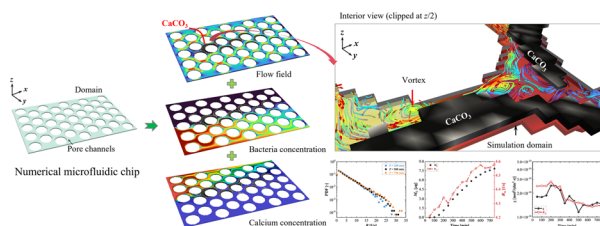


PAPERS

3020

Numerical microfluidic chip modeling of laminar vortex dynamics induced by biomineralization in evolving porous media

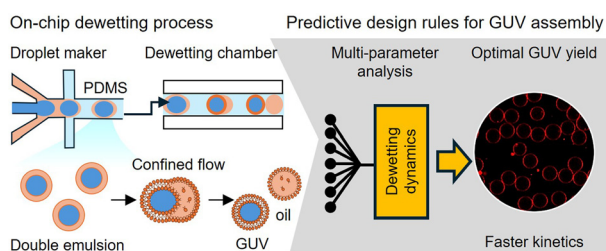
Yajie Chu and Dianlei Feng*



3039

Systematic investigation of double emulsion dewetting dynamics for the robust production of giant unilamellar vesicles

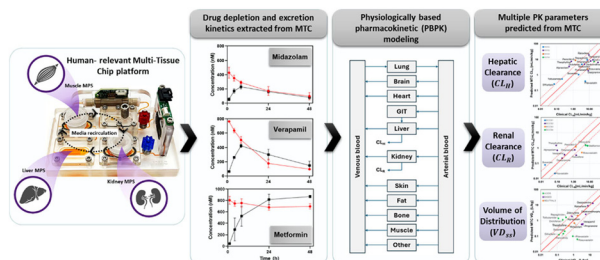
Wenyang Jing, Heewon Noh, Timothy J. C. Tan, Nicholas C. Wu and Hee-Sun Han*



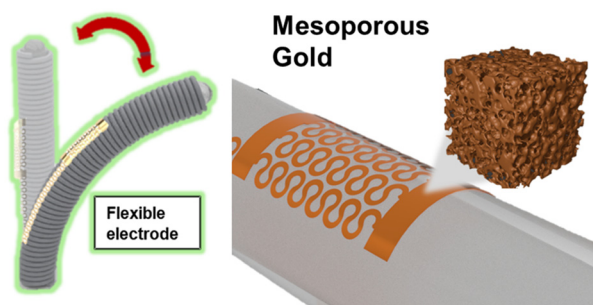
3054

Predicting human pharmacokinetic parameters of drugs using a multi-tissue chip platform integrating liver, kidney, and skeletal muscle microphysiological systems

Jason Sherfey, Shiny Amala Priya Rajan, Lauren M. Nichols, Paarth Parekh, J. Tyler Smith, Lauren Gregory, Frances Clark, Eugene P. Kadar, Shivam Ohri, Billy T. George, David Tess, James R. Gosset, Jennifer Liras, Emily Geishecker, R. Scott Obach and Murat Cirit*



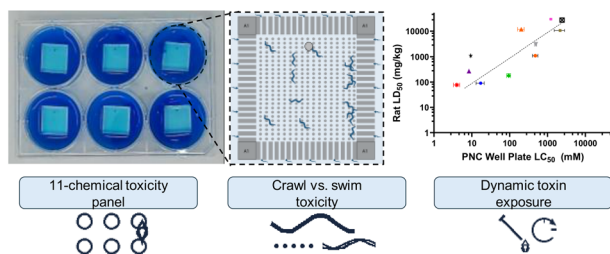
3069



Stretchable mesoporous electrodes as a versatile platform for minimally invasive surgical devices

Michael Abraham Listyawan, Chi Cong Nguyen, Tran Bach Dang, Nhat Mihn Doan, Quang Anh Nguyen, Yulin Qiu, Eva Tomaskovic-Crook, Mostafa Kamal Masud, Yusuke Yamauchi, Jeremy Micah Crook, Mohit Naresh Shivdasani, Thanh Nho Do and Hoang-Phuong Phan*

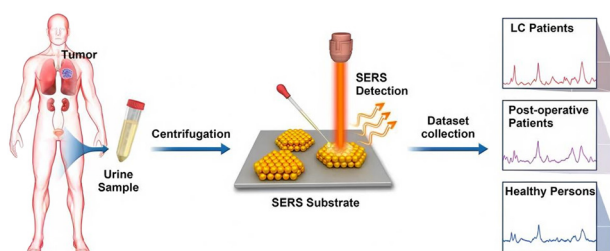
3083



Microfluidic well plates integrated with passive nematode culture chambers for multiplexed chemical toxicity assays in *C. elegans*

Bushra Rahman, Purushottam Soni, Atiyya P. Saroyia, William Schenkenfelder and Siva A. Vanapalli*

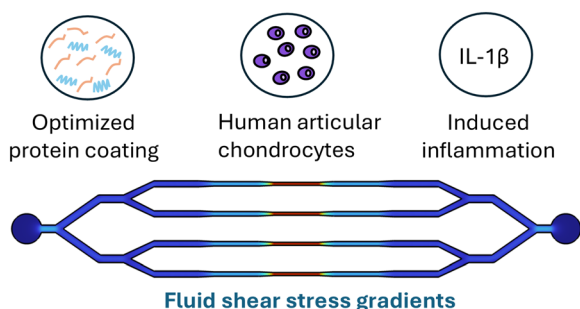
3102



A compact superlattice as a label-free surface-enhanced Raman scattering substrate for noninvasive urine testing for the diagnosis of lung cancer

Kaili Zhang, Yuancai Ge, Yi Xu, Yujie Liu, Chaoyue Cui, Yuxin Liang, Yangxuan Lin, Jungeng Zhang, Qingwen Zhang,* Yi Wang* and Xiaoming Lin*

3112



High-throughput microfluidic platform for modelling inflammatory responses of human articular chondrocytes under variable fluid shear stress

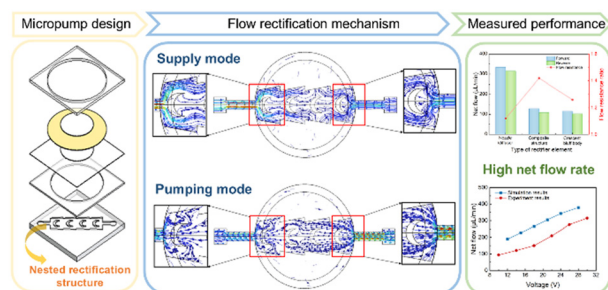
Aldeliane M. da Silva, Priscila Campioni Rodrigues, Meriem Lamghari, Hoang-Tuan Nguyen, Jere Kettunen, Sebastien Mosser, Prateek Singh, Ali Mobasheri and Gabriela S. Lorite*



3128

A compact low-power valveless piezoelectric micropump with a nested rectification structure

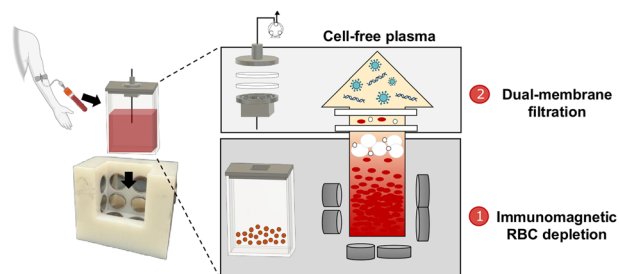
Jie Shan, Aoyu Ma, Cuixue Ren, Yuren Zhao, Lixia Yang and Jingmin Li*



3139

Centrifuge-free separation of plasma from milliliters of whole blood for point-of-care diagnostics

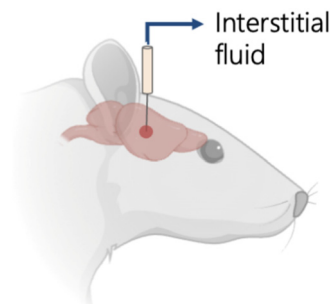
Christia M. Victoriano, Bianca Arraiza Carlo, Abigail G. Ayers, Kelia A. Human and Samuel K. Sia*



3153

Region-specific proteomic profiling of brain interstitial fluid via a micro-invasive sampling platform

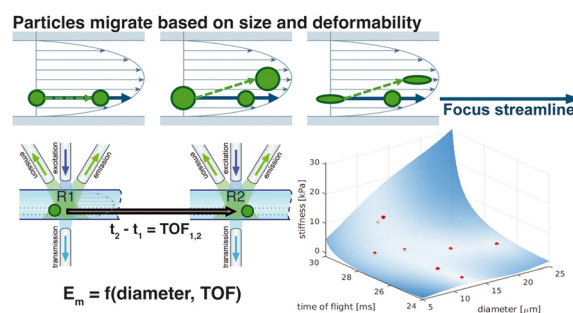
Qun Cao, Hannah D. Jackson, Aidan J. Duncan, Yufei Cui, Haley O. Higginbotham, Stella Lesnik, Yunseo Jo, Jiaquan Yu, Forest M. White and Michael J. Cima*



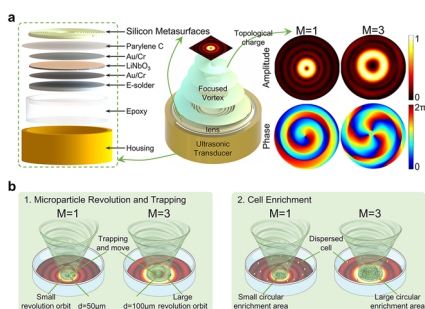
3168

Estimating single-cell elastic modulus in a serial microfluidic cytometer from time-of-flight and fluorescence signals analysis

Graylen R. Chickering, Leroy L. Jia, Matthew DiSalvo, Megan A. Catterton, Paul N. Patrone, Eric M. Darling* and Gregory A. Cooksey*



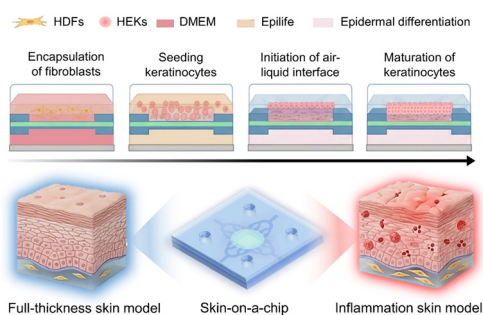
3184



A tunable 50 MHz acoustic vortex tweezer for size-selective manipulation and cell pre-concentration

Xiongwei Wei, Xin Wang, Lili Miao, Yi Quan, Chunlong Fei* and Yintang Yang

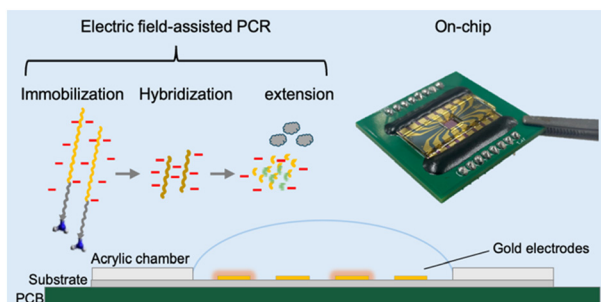
3192



A microfluidic skin-on-a-chip enabling *in situ* construction of full-thickness human skin for modeling inflammatory diseases

Linwei Sang, Ajing Liu, Junjie Zhu, Qian Yang, Zheng Liu, Shu-Wei Chen* and Jinyi Wang*

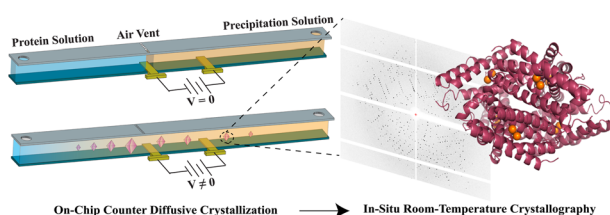
3202



Selective on-chip DNA synthesis using electric field-assisted PCR

Doyeon Lim and Youngjun Song*

3213



LEGO®-inspired electrically-actuated microfluidics for on-chip protein crystallization and *in situ* X-ray crystallography

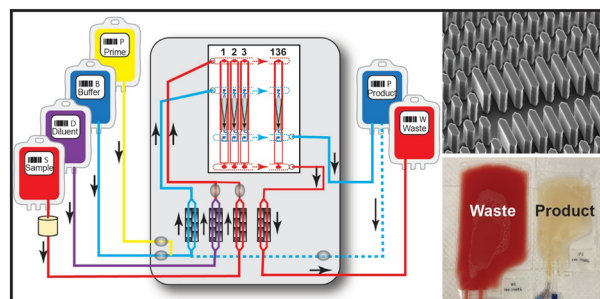
Sarthak Saha, Logan Chen, Gabrielle R. Budziszewski, Sara Koprek, Kaleb Seifert, Aina Cohen, Silvia Russi, Sarah E. J. Bowman and Sarah L. Perry*



3229

Cell therapy manufacturing at full clinical scale: enhancing the quality CAR-T cell therapy starting materials through massively parallel automated microfluidic cell sorting

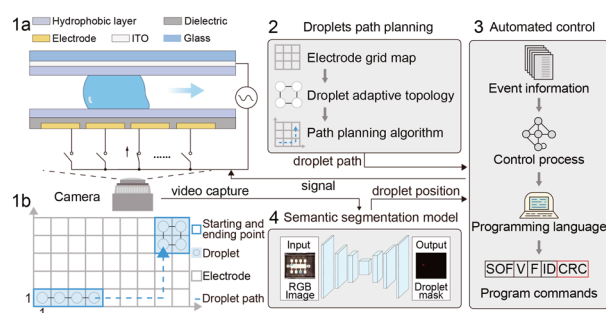
Alison M. Skelley,* Yasna Behmardi, Luke F. Peterson, David W. Inglis, Mabel Shehada, Laurissa Ouaguia, Khushroo Gandhi, Roberto Campos-González and Tony Ward



3244

Topology-based coordination control for multi-droplet tasks in autonomous digital microfluidics

Kunlun Guo, Zerui Song, Boyi Feng, Tiaofen Qiu, Jiale Zhou, Bin Shen, Bingyong Yan, Zhen Gu* and Huifeng Wang



3256

A combinatorial screening platform for *in situ* gene delivery to adherent cells *via* digital microfluidics and flexible electrodes

Yi Weng, Xiangyu Ren, Fuqiang Guo, Weichao Wu, Bin Wang and Chaobo Li*

