Lab on a Chip

Micro- & nano- fluidic research for chemistry, physics, biology, & bioengineering

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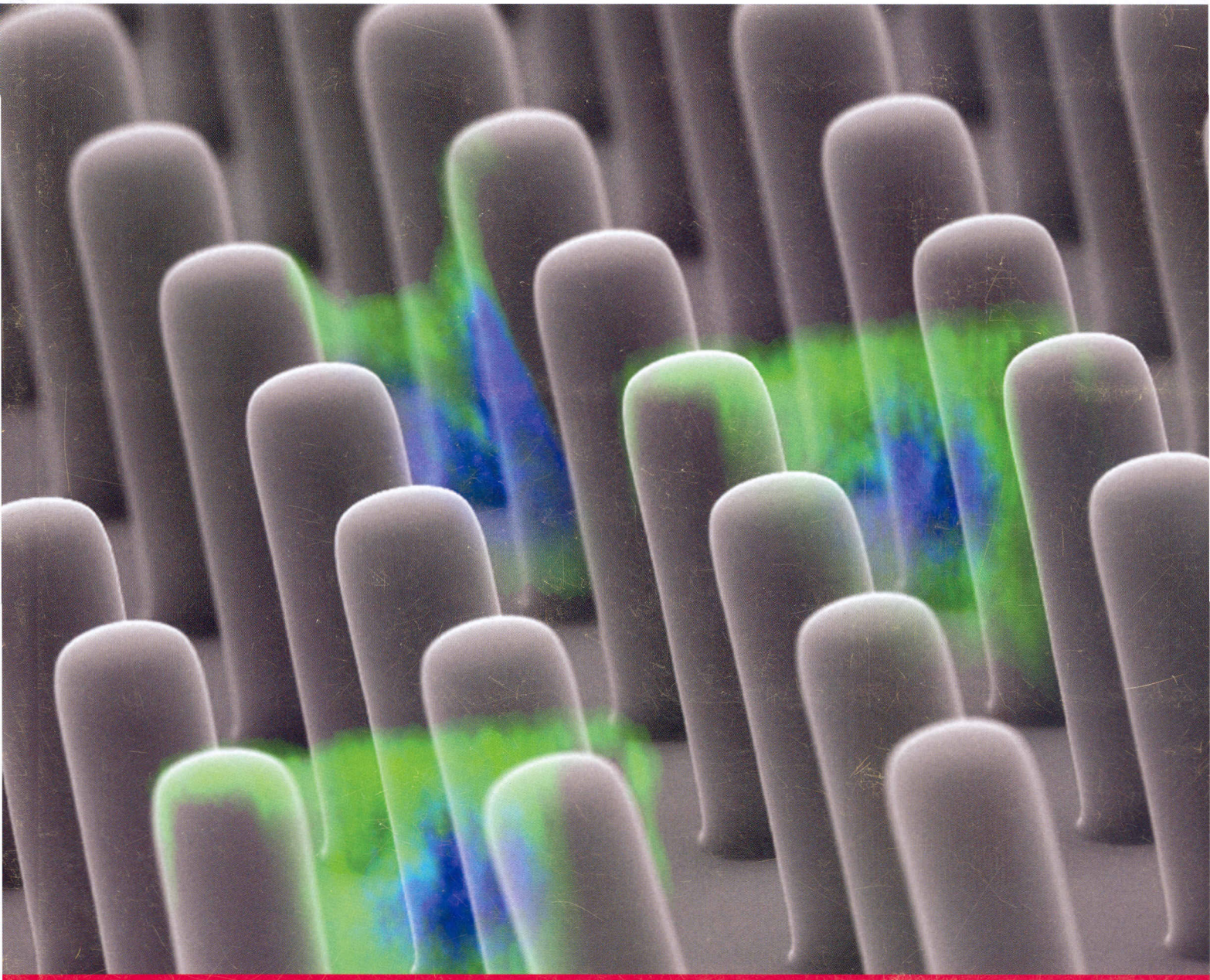

10th Anniversary: Focus on France

ISSN 1473-0197

RSC Publishing

PAPER

Ladoux *et al.*

Mechanics of cell spreading within 3D-micropatterned environments

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Cover
See Ladoux *et al.*, pp. 805–812.
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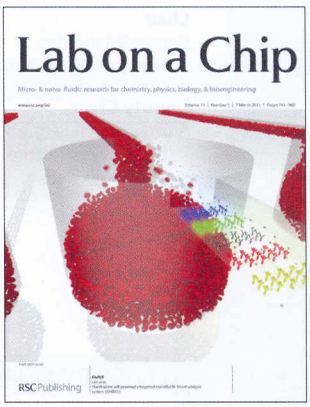

Inside cover
See Lee *et al.*, pp. 845–850.
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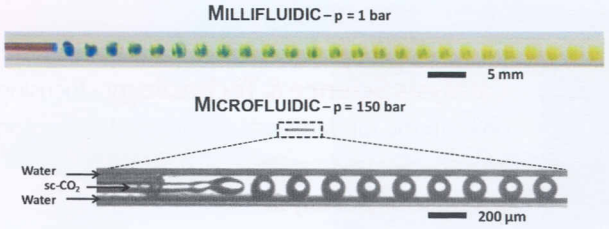
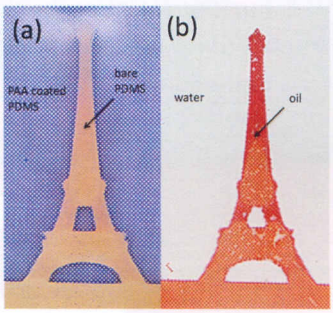
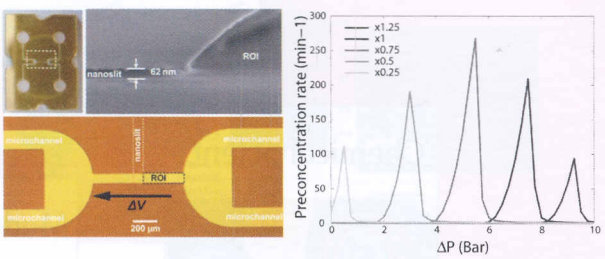
THEMED ISSUE: 10TH ANNIVERSARY FOCUS ON FRANCE

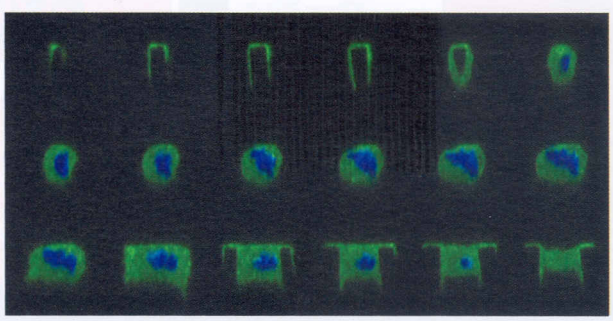
EDITORIAL

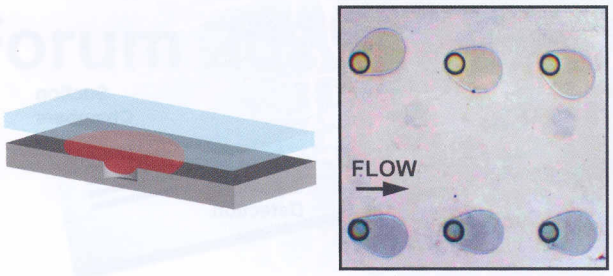
PROFILE

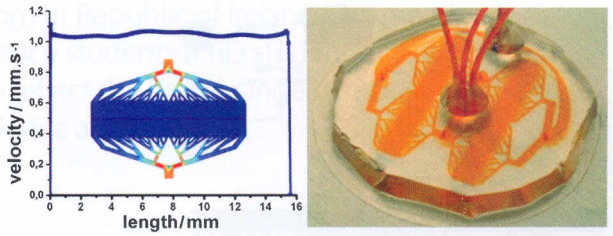


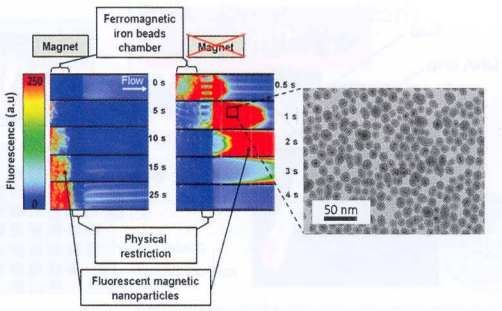






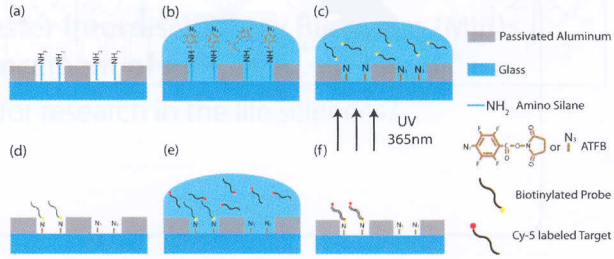






REGULAR RESEARCH ARTICLES

COMMUNICATION



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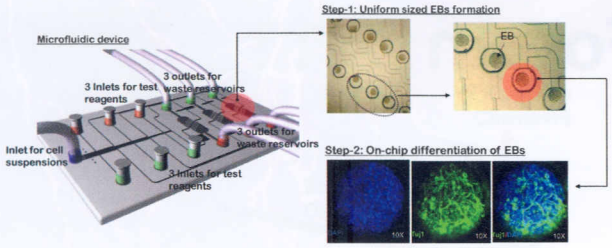
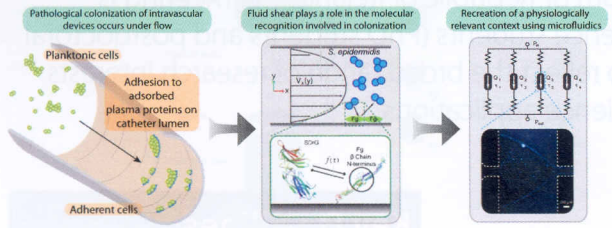


3-Dimensional cell culture for on-chip differentiation of stem cells in embryoid body

Choong Kim, Kang Sun Lee, Jae Hoon Bang, Young Eyn Kim, Min-Cheol Kim, Kwang Wook Oh, Soo Hyun Lee and Ji Yoon Kang*

This paper proposes a microfluidic device for the on-chip differentiation of an embryoid body (EB) formed in a microwe *via* 3-dimensional cultures of mouse embryonic carcinoma (EC cells. The device adjusted the size of the EB by fluid volume, differentiated the EB by chemical treatment, and evaluated its effects in EC cells by on-chip immunostaining.

883

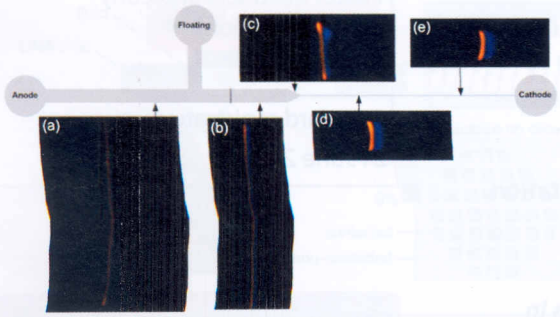


The effects of shear stress on isolated receptor–ligand interactions of *Staphylococcus epidermidis* and human plasma fibrinogen using molecularly patterned microfluidic

Westbrook M. Weaver, Shivani Dharmaraja, Vladana Milisavljevic and Dino Di Carlo

We present a simple and robust method of *in situ* channel wall patterning using flow boundaries. This technique, coupled with a parallel shear reactor channel design, allows for investigation into receptor–ligand interactions on the whole cell scale in a physiologically relevant context.

890

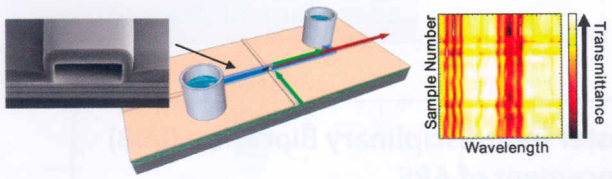


10 000-fold concentration increase of the biomarker cardiac troponin I in a reducing union microfluidic chip using cationic isotachophoresis

Danny Bottenus, Talukder Zaki Jubery, Yexin Ouyang, Wen-Ji Dong, Prashanta Dutta and Cornelius F. Ivory*

This paper presents the concentration of cardiac troponin I in a 3-D microfluidic chip platform with reductions in the cross-sectional area.

899



Tailorable integrated optofluidic filters for biomolecular detection

Philip Measor, Brian S. Phillips, Aiqing Chen, Aaron R. Hawkins and Holger Schmidt*

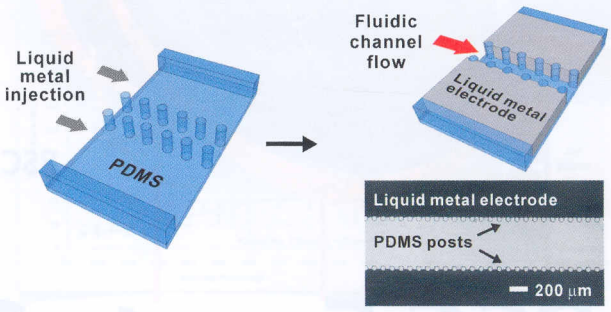
An ultrasensitive optofluidic chip that combines analyte transport and tailorable spectral filtering is introduced for biomolecular detection.

905

Inherently aligned microfluidic electrodes composed of liquid metal

Ju-Hee So and Michael D. Dickey*

Injecting liquid metal into specially designed microchannels produces correctly aligned microelectrodes that are stabilized mechanically by a thin oxide skin that forms on the liquid.

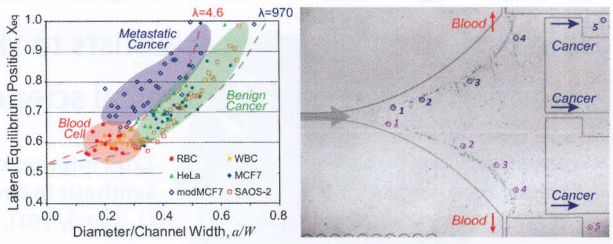


912

Deformability-based cell classification and enrichment using inertial microfluidics

Soojung Claire Hur, Nicole K. Henderson-MacLennan, Edward R. B. McCabe and Dino Di Carlo*

Inertial-focusing combined with deformability-induced migration is utilized for passive, label-free, target cell classification and isolation.

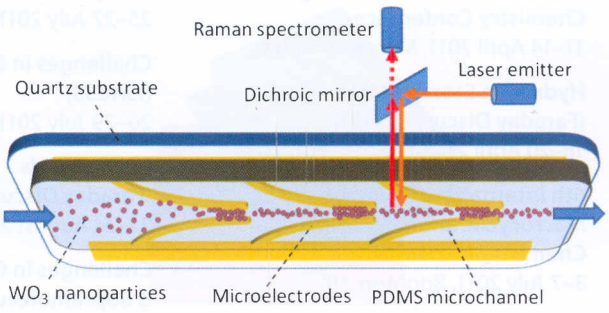


921

Dielectrophoresis–Raman spectroscopy system for analysing suspended nanoparticles

Adam F. Chrimes,* Aminuddin A. Kayani, Khashayar Khoshmanesh, Paul R. Stoddart, Paul Mulvaney, Arnan Mitchell and Kourosh Kalantar-zadeh

We report a novel method for *in situ* Raman measurements combined with dielectrophoresis, used for the manipulation, spatial mapping and selective determination of suspended nanoparticles.

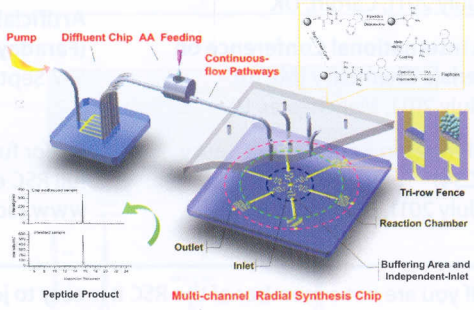


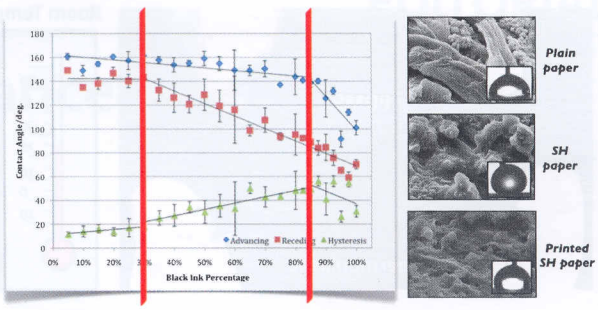
929

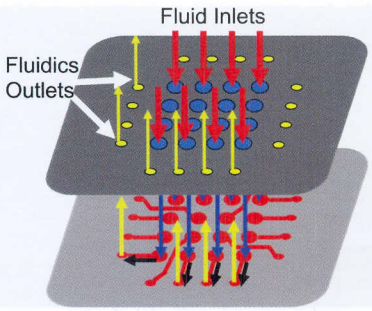
Integrated SPPS on continuous-flow radial microfluidic chip

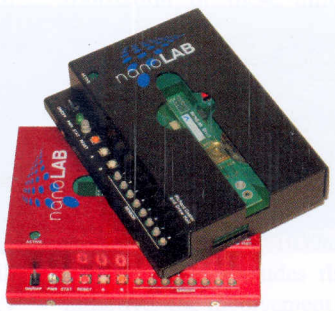
Weizhi Wang, Yanyan Huang, Jizhong Liu, Yunfeng Xie, Rui Zhao,* Shaoxiang Xiong, Guoquan Liu, Yi Chen and Huimin Ma

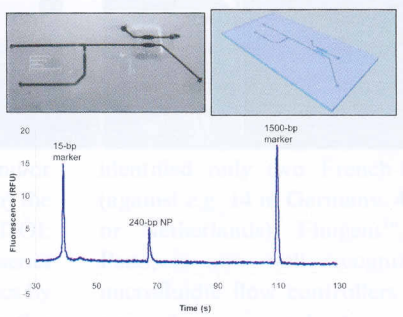
An integrated radial microfluidic system featuring continuous-flow pathways, novel solid-phase supports and on-chip cleavage was developed for SPPS.











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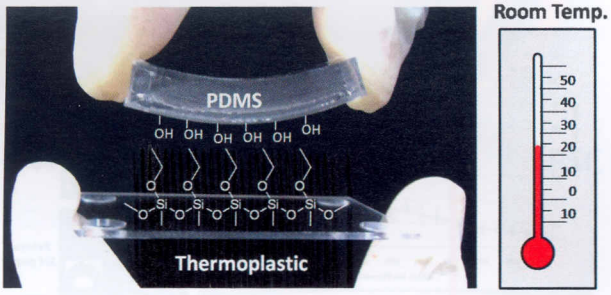
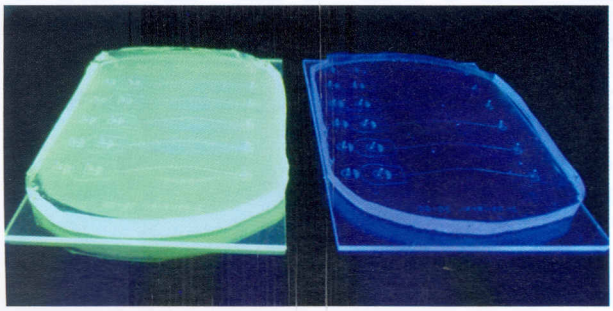


Simple room temperature bonding of thermoplastics and poly(dimethylsiloxane)

Vijaya Sunkara, Dong-Kyu Park, Hyundoo Hwang, Rattikan Chantiwas, Steven A. Soper and Yoon-Kyoung Cho*

We report a simple, versatile, instantaneous and irreversible method for bonding thermoplastics to elastomeric polydimethylsiloxane (PDMS) at room temperature.

966



Reduced UV light scattering in PDMS microfluidic devices

Sebastian Seiffert,* Janine Dubbert, Walter Richtering and David A. Weitz

Fluorescent nanoparticles in PDMS microfluidic devices reduce UV light scattering in the elastomer, enhancing the spatial confinement of on-chip photoreactions.

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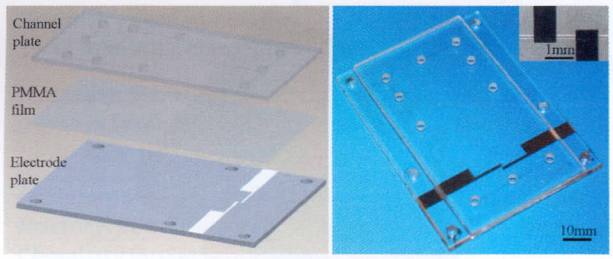
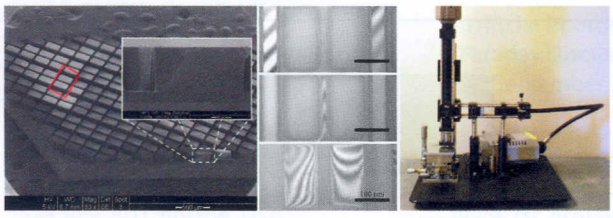


A three-layer PMMA electrophoresis microchip with Pt microelectrodes insulated by a thin film for contactless conductivity detection

Junshan Liu,* Junyao Wang, Zuanguang Chen, Yong Yu, Xiujuan Yang, Xianbin Zhang, Zheng Xu and Chong Liu

We propose a three-layer PMMA electrophoresis microchip with Pt microelectrodes insulated by a thin film for contactless conductivity detection.

974



A rapid and economical method for profiling feature heights during microfabrication

Gloria S. Yen, Bryant S. Fujimoto, Thomas Schneider, Desmond T.K. Huynh, Gavin D.M. Jeffries and Daniel T. Chiu*

A low-cost, rapid, and accurate method for measuring the heights of microfabricated structures by white-light interferometry.