Ma Bo PhD

Professor, Microfluidic Systems Group Leader
Single Cell Center
Qingdao Institute of Bioenergy and
Bioprocess Technology (QIBEBT), Chinese Academy of Sciences

Contact Information

Rm 120, Biology Building
189 Songling Road, Qingdao, 266101 Shandong, China
Phone: (+86)-532- 80662657, (+86) 13863982923
Email: mabo@qibebt.ac.cn

General Research Interests

Microfluidic (lab on a chip) single cell technologies

Single cell level industrial microorganism sorting, high throughput culture, gene sequencing and functional genomics

high throughput analysis and screening of rare microorganism(deep sea…)

Optofluidics for bioenergy application

Optofluidics photobioreactors

Optofluidics photocatalytic systems

Biosensor, Portable analytical system

Education

Ph.D 2003.9-2008.5 Analytical Chemistry, Dalian Institute of Chemical Physics, CAS, China,

Advisor: Prof. Bingcheng Lin,Thesis: Microfluidic UV detection system and application on drug metabolism

M.Sc. 1998.9-2001.7 Analytical Chemistry, Sichuan University, China,

Advisor: Prof. Li Menglong, Thesis: QSAR study on traditional Chinese medicine

B.Sc. 1994.9-1998.7 Chemistry, China West Normal University, China

Work experiences

2012.8-present Microfluidic System Group Leader, Single cell center,

Qingdao Bioenergy & Process Institute, CAS

2010.12-2012.7 Postdoctorate Research associate, Department of Biochemistry & Cell Biology, Rice University

Microfluidic device based bacteria drug resistance mechanism study and drug screening funded by NI

A novel platform was developed to study bacteria cell-cell communication and quorum sensing

Potential application for antibody drug screening

Single cells system & synthetic biology on microfluidic device

Single cells level gene expression dynamics

Single cell genomics

2009.6-2010.11 Postdoctorate research associate, NanoBio systems lab, Department of Electrical & Computer Engineering, Department of Biomedical Engineering.
Texas A&M University.

Development of prototype Pathogen Detection Lab-On-a-Chip system for real-time on-field plant disease diagnostics funded by USDA

A portable real-time PCR microsystem integrated with PCR temperature control module and minimized fluorescent detector was developed for in field plant pathogen detection

2008.6-2009.6 Postdoctorate research associate, Crump Institute for Molecular imaging, University of California, Los Angeles

Real Time Plasma Separation from small Animal for quantities microPET imaging study on A Microfluidic Chip funded by NIH

A highly integrated microfluidic device was developed for minim blood plasma separation &collection from small animal for quantitative microPET

2001.9-2003.7 Lecturer, Chemistry Department, Western China Normal University

Publication list

1) Qiang Zhang,Tingting Wang, Yetian Su,Menglong Yang, Jian Xu, **Bo Ma**, A droplet sorting based single-cell isolation and dispensing platform with a chip-to-world interface, InPrep
2) Peiran Zhang Lihui Ren Xu Zhang Yufei Shan Yun Wang Yuetong Ji, Huabing Yin, Wei E. Huang,

Jian Xu, **Bo Ma**, Raman Activated Cell Sorting Based on Dielectrophoretic Single-cell Trap and Release, Anal Chem, accepted

3）Qiang Zhang,Peiran Zhang, Yetian Su,….**Bo Ma**, (2014), On-demand control of microfluidic flow via apillary-tuned solenoid microvalve suction, Lab Chip, 2014, 14 (24), 4599 - 46031, **(cover page)**

4）Chunyu Li, Jian Xu, **Bo Ma**, (2014) A self-powered microfluidic monodispersed droplet generatorwith capability of multi-sample introduction Microfluid Nanofluid DOI 10.1007/s10404-014-1497-5

5）Chunyu Li, Jian Xu, **Bo Ma**, (2014) Precise quantitative addition of multiple reagents into droplets in sequence using glass fiber-induced droplet coalescence, DOI: 10.1039/C4AN01852D

6) **Bo Ma**, Guohao Zhang, Jianhua Qin and Bingcheng Lin, Characterization of drug metabolites and cytotoxicity assay simultaneously using an integrated microfluidic device, Lab Chip, 2009, 9, 232–238 **(cover page)**

7), **Bo Ma**, Sima Ghavim, Richard L Sutton, Neil G Harris, Michael Phelps and Hsiao-Ming Wu, Real time blood plasma separation in a microfluidic chip, J Nucl Med. 2009; 50:473

8), **Bo Ma**, Dai,Jianhua Qin,Bingcheng Lin, Integrated isotachophoretic preconcentration with zone electrophoresis separation on a quartz microchip for UV detection of flavonoids, Electrophoresis 2006, 27,4904–4909

9), **Bo Ma**, Xiaomian Zhou, Gang Wang, Jianhua Qin, Bingcheng Lin, A hybrid microdevice with a thin PDMS membrane on the detection window for UV absorbance detection, electrophoresis, 2007, 28, 2474-2477

10), Guohao Zhang, **Bo Ma**, Jianhua Qin and Bingcheng Lin, A metabolism microfluidic chip, Chemical Research In Chinese Universities, 2008, 12, 646-651

11), Hui Wang, Huaiqing Huang, Zhongpeng Dai, Yan Gao, **Bo Ma**, Li Wang, Jiling Bai, Bingcheng Lin, Performance Evaluation of Home-made Glass Microfluidic Glass Chips, Chemical Research In Chinese Universities, 2005, 11, 578-582

12), **Bo Ma**, Menglong Li , Zaide Zhou , Fang Cheng, Quantum chemistry study on the anti-tumor activity of flavonoids compounds, Chemical Research and Application, 2002, Vol. 14, 2,149-152

13), **Bo Ma**, Menglong Li , Fang Cheng, Zaide Zhou ,The construction of Sichuan University botanical specimen database, Journal of Sichuan University (Natural Science Edition), 2001, vol 38, 6,839-843

14), **Bo Ma**, Zaide Zhou, Menglong Li, The application of the artificial neural networks in the chromatography, Chemical Research and Application, 2000, Vol. 12 , 4, 375-378

Refereed Conference Talks

1, Q. Zhang, P.R. Zhang, Y.T. Su, M.L. Yang and **B. Ma**, ON-DEMAND CONTROL OF MICROFLUIDIC FLOW VIA SOLENOID MICROVALVE SUCTION, uTAS 2014, Oct26-31, San Antonio,(Oral)

2, Peiran Zhang Lihui Ren, **Bo Ma**, Raman Activated Cell Sorting Based on Dielectrophoretic Single-cell Trap and Release, Optofluidics 2014, Aug28-30, Guangzhou,(Invited talk)

3, Microfluidic based real time PCR for plant pathogen detection, 2010,4, *American Phytopathologica*l *Society*, Charlotte, NC (2010) （Oral）

4, Real time blood plasma separation in a microfluidic chip, SNM annual meeting. June13-17, 2009,Toronto, Cananda（Oral）

Book Chapters

1, Bo Ma, Microdroplet: enabling technology for ultra-high throughput biology assay, 2013 annual reporting of industry biology, science press, P 268-277
2, Small molecules analysis on microfluidic device, Microfluidics Lab on Chip, science press, 2006

Key Patents

1, A trap/release based Raman signal acquisition method and related microfluidic device, 201310613921.0
2, A suction based droplet/particle/cell sorting method, 201310612205.0
3, A facile and low cost single-cell isolation method and device, 201410069484.5
4. A droplet culture based rapid pathogen assay method and related device, 201410071473.0