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| |  |  |  | | --- | --- | --- | | **Name** | **I-Fang Cheng** | fjjf1 | | **Title** | Associate Professor | | **Office** | K315-2, K313 | | **Phone** | 886-6-2533131 Ext. 3543 | | **Email** | [ifcheng@stust.edu.tw](mailto:ifcheng@stust.edu.tw) | | **Webpage** |  | | **Education** | Ph.D., Institute of Nanotechnology and Microsystem Engineering, National Cheng Kung University | | **Research Interests** | Biomicrofluidic chips, Bio-MEMs/NEMs, Micro/Nano-Electrokinetics, Biosensors, Research-Product transformation | | | **Laboratory** | Biomicrofluidics and Bio-Sensing System Lab. (K313) | |     **Publications**   |  | | --- | | **Journal Papers** | | 1. E Iswardy, T-C Tsai, **I-F Cheng**, T-C Ho, G-C Perng, H-C Chang, A bead-based immunofluorescence-assay on a microfluidic dielectrophoresis platform for rapid dengue virus detection, *Biosens. Bioelectron.*, **95**, 174-181 (2017). 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(SCI, **IF= 4.91, Ranking: 24 /143= 16.7 %**) (**Cited by** **52 times**)  5. **I-F Cheng**, S-C Chiang, C-C Chung, T-M Yeh, H-C Chang, Ripple Structure-Generated Hybrid Eelectrokinetics for on-Chip Mixing and Separating of Functionalized Beads, *Biomicrofluidics*, **8**, 061102 (2014). (**SCI, IF= 3.258, Ranking: 3/31= 9.6%**) (Cited by 9 times)  6. **I-F Cheng\***, H-C Chang, T-Y Chen, CM Hu, F-L Yang, Rapid (<5min) Identification of Pathogen in Human Blood by Electrokinetic Concentration and Surface-Enhanced Raman Spectroscopy, *Scientific Reports*(**Nature Publishing Group**), **3**, 2365 (2013) (**SCI, IF= 5.708, Ranking: 5/56= 8.9%**) (Cited by **154 times**)  7. **I-F Cheng**, S-L Yang, C-C Chung, H-C Chang, A Rapid Electrochemical Biosensor based on an AC Electrokinetics Enhanced Immuno-reaction, *Analyst*, **138**, 4656 (2013) (**SCI, IF= 4.616, Ranking: 7/74= 9.4%**) (**Cited by 36 times)**  8. **I-F Cheng**, H-W Han, H-C Chang, Dielectrophoresis and shear enhanced DNA hybridization for rapid discrimination of *Candida* species, *Biosens. Bioelectron.*, **33**, 36 (2012) (**SCI, IF= 11.44, Ranking: 1/28= 3.5%, 3/74= 4%**)  9.C-C Chung, **I-F Cheng**, H-C Kan, H-M Chen, W-H Yang, H-C Chang, Screening of the antibiotic susceptibility to -lactam-induced elongation of Gram-negative bacteria based on dielectrophoresis, *Anal. Chem.*, **84**, 3347(2012). (**SCI, IF= 6.986, Ranking: 4/74= 5%**) (Cited by **48 times**)  10. **I-F Cheng**, S-L Liu, C-C Chung, H-C Chang, Stepwise gray-scale light-induced electric field gradient for passive and continuous separation of microparticles, *Microfluid Nanofluid*, **12**, 95 (2012). **(S**CI, IF= 2.529, Ranking: 7/56= 12.5%**)**  (Cited by 8 times)  11. S-H Liao†, **I-F Cheng**† and H-C Chang,Precisely sized separation of multiple particles based on dielectrophoresis gradient in the z-direction, *Microfluid Nanofluid*, **12**, 201 (2012) (**†Equal contribution**) (SCI, IF= 2.529, Ranking: 7/56= 12.5%**)** (Cited by 14 times)  12.**I-F Cheng**, C-C Chung and H-C Chang, High-throughput electrokinetic bioparticle Focusing based on a travelling-wave dielectrophoretic field, *Microfluid Nanofluid*, **10**, 649 (2011). (SCI, IF= 2.529, Ranking: 7/56= 12.5%) (Cited b**y 36 times**)  13. C-C Chung, **I-F Cheng**, C-C Lin, and H-C Chang, Rapid quantification of bio-particles based on image visualisation in a dielectrophoretic microfluidic chip, *Microfluid Nanofluid*, **10**, 311 (2011). 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(**SCI, IF= 6.97, Ranking: 6/79= 7.5 %**) (Cited by **163 times**)  17. **I-F Cheng**, H-C Chang, D Hou, and H-C Chang, "An integrated dielectrophoretic chip for continuous bioparticle filtering, focusing, trapping and detecting", Biomicrofluidics, **1**, 021503 (2007). (**SCI, IF= 3.258, Ranking: 3/31= 9.6%**) (**Cited by 311 times, most cited paper** in *Biomicrofluidics* from 2007 to 2015) |      |  | | --- | | **Conference Papers** | | 1.I-F Cheng\*, T-Y Chen, Y-L Chen, Y-L Chen, W-C Chao, Rapid Determination of Bacterial Antibiotic ResistanceUsing a  Hybrid Optofluidic-Electrokinetic Chip , 2018 WorldCongress on Medical Physics and Biomedical Engineering, Czech Republic, Prague, 2018 (poster presentation)  2. I-F Cheng\*, T-Y Chen, W-C Su, Antibody-FreeIsolation and Analysis of Circulating Tumor Cells from DilutedHuman Blood, 24th International Molecular Medicine Tri-Conference(Mol Med TRI-CON2017), (Poster presentation), USA, San Francisco, 2017 (poster presentation).  3. I-Fang Cheng\*, Tzu-Ying Chen, Minute-level Speed Identification and Assessment of Bacteria/Cells Using Electrokinetic Assistance, International Conference on Advanced Technology Innovation 2016(ICATI2016), Bangkok, Thailand. (Oral presentation)  4. I-F Cheng\*, T-Y Chen, Y-D Lin, C-W Liu, W-C Su, A NovelDielectrophoresis-Based Microfluidic Chip for Antibody-Free Isolation of Circulating Tumor Cells from Blood, IEEE NANO 2015, Roma, Italy. (Oral presentation)  5. I-F Cheng\*, T-Y Chen, H-C Chang, Electrokinetics-Based Microfluidic Technology for the Rapid Separation and Concentration of Bacteria/Cells/Biomolecules, ICKEM 2014, Indonesia, Bali, (2014). (Oral presentation, and session chair)  6. 1. I-F Cheng\*, Hsiao-Lan Yang, Hsien-Chang Chang, (2012) “A Rapid and Label-free Biosensor Based on an AC Electrokinetically-Enhanced Immuno-reaction”, IEEE NANOMED2012, Bangkok, Thailand. (Oral presentation) |     **Projects**  **NSTC Projects:**   |  |  |  |  | | --- | --- | --- | --- | | Year | Project Title | Budget | Period | | 2022 | Development of a Clinical Instrument for Pure Culture-free Antibiotics Susceptibility Testing (II) (**Advanced application for incubating industry project**)  (NSTC 111-2622-B-218-001) **PI** | 9,800,000 | 2022/1/1 – 2023/5/31 | | 2022 | Development of large-area, multiscale nanostructure polymer molding technology and its applications in biomedical and optical engineering  (NSTC 111-2622-B-218-001) **Co-PI** | 6,000,000 | 2022/8/1 –  2023/7/31 | | 2020 | Development of a Biochip System to Accelerate Total Assay Time For Precision Medicine in Clinical Sepsis  (MOST 109-2221-E-492-002-MY2) **PI** | 2,469,000 | 2020/8/1 –  2022/10/31 | | 2020 | Development of a Clinical Instrument for Pure Culture-free Antibiotics Susceptibility Testing (I) **(Advanced application for incubating industry project)**  (MOST 109-2622-B-492-002-)  **PI** | 9,200,000 | 2020/11/1 – 2021/12/31 | | 2020 | Label-free, rapid, high-sensitivity optofluidic biosensing system for rapid and simultaneous identification of pathogens and host response in septic patients (MOST 109-2218-E-194-006-) **Co-PI** | 4,488,000 | 2020/5/1–  2021/4/30 | | 2019 | Development of a Cost-Effective BioChip System for Rapid and On-Site Detection of Bacteria Cell Density, Somatic Cell Count, and Antimicrobial Susceptibility Testing (MOST 108-2221-E-492-008-) **PI** | 991,000 | 2019/8/1–  2020/7/31 | |  |  |  |  | | 2019 | Label-free, rapid, high-sensitivity optofluidic biosensing system for rapid and simultaneous identification of pathogens and host response in septic patients (III) (MOST 108-2218-E-194-001) **Co-PI** | 6,303,000 | 2019/5/1–  2020/4/30 | | 2018 | Label-free, rapid, high-sensitivity optofluidic biosensing system for rapid and simultaneous identification of pathogens and host response in septic patients (II) (MOST 107-2218-E-194-004) **Co-PI** | 6,540,000 | 2018/5/1–  2019/4/30 | | 2018 | Development of a biomicrofluidic chip and its portable prototype for rapid detection of Mastitis, analysis of bacterial antibiotic susceptibility, and milk quality monitoring (MOST 107-2221-E-492-020-) **PI** | 1,136,000 | 2018/8/1–  2019/7/31 | | 2017 | Label-free, rapid, high-sensitivity optofluidic biosensing system for rapid and simultaneous identification of pathogens and host response in septic patients (I) (MOST 106-3114-E-194-001) **Co-PI** | 6,873,000 | 2017/5/1–  2018/4/30 | | 2016 | Rapid identification and quantification of pathogens form blood/water and determination of its Drug Susceptibility within four hours (MOST 105-2628-E-492 -001 -MY2) (**Excellent Young Scholars project)** **PI** | 2,423,000 | 2016/8/1–  2018/10/31 | | 2015 | Development of Antibody-free Isolation and Analysis of Circulating Tumor Cells for Early Detection, Therapy Monitoring and Prognosis of Lung Cancer (MOST 104-2221-E-492 -009 -MY2) **PI** | 1,690,000 | 2015/8/1–  2017/10/31 | | 2014 | An AC Electrokinetics-based Micro-Analysis System for Sorting, Trapping Cancer Cells and Discriminating their Drug Susceptibilities (NSC 102-2221-E-492 -001 -MY2) (**Excellent Young Scholars project**) **PI** | 1,861,000 | 2013/8/1–  2015/10/31 | | 2013 | AC Electrokinetic Concentration of Pathogen from Blood for Surface Enhanced Raman Spectroscopy Identification of Bacteria (NSC 101-2218-E-492-002-) **PI** | 686,000 | 2012/8/1–  2013/7/31 |   **Industry Projects:**   |  |  |  |  | | --- | --- | --- | --- | | Year | Project Title | Budget | Period | | 2022 | BioMicrofluidic chip fabrication, real sample validation, and the design for pre-production tests (**PI**) | 2,100,000 | 2022/12/20 - 2024/12/19 | | 2021 | Design and Verification for Pilot Run of Thin-layer nano-channel Fabrication (I、II) (**PI**) | 2,600,000 | 2021/05/01 -2023/7/31 | | 2018 | OE-AST Biochip on Clinical Testing and Investigation (**PI)** | 1,150,000 | 2007/06/01 - 2008/05/31 | | 2017 | Development of a simple method for thin-layer nano-channel fabrication (I、II、III) (**PI**) | 3,800,000 | 2017/12/01 - 2021/3/30 | | 2016 | The Design and Validation of a Microfluidic Chip for Nanoscale Biomolecular Concentration (II) (**PI**) | 1,200,000 | 2016/11/01 - 2017/11/30 | | 2015 | The Design and Validation of a Microfluidic Chip for Nanoscale Biomolecular Concentration (I) (**PI**) | 1,100,000 | 2015/10/01 - 2016/9/30 | | 2014 | The Design and Validation for a Reagent Concentration Gradient Generator | 1,100,000 | 2014/10/01 - 2015/9/30 | |  |  |  |  |      |  | | --- | | **Patents** | | 1. Photoelectrical device for concentration detection, method for concentration detection thereof and method for testing an antibiotic susceptibility on bacteria, **I-Fang Cheng** , I-L Chen, T-Y Chen, US patent, Patent NO.: US 11,143,585 B2, 2021-2039.。 2. 一種用於濃度檢測的光電裝置及其濃度檢測方法以及測試藥物對細菌有效性的方法，發明人: **鄭宜肪**、陳姿穎、陳以靈，中華民國專利，專利證號: I685656，2020-2038。 3. 分離粒子之方法、其流道裝置以及捕捉結構，發明人: **鄭宜肪**、蘇五洲、黃偉倫、陳姿穎、林育德，中華民國專利，專利證號: I524930, 2016-2033。 4. ‘Bio-Chip and Method for Separating and Concentrating Particles Using the Same,’, **I-Fang Cheng**, Hsien-Chang Chang, Fu-Liang Yang, Tzu-Ying Chen, US Patent, US 9,498,784 B2, 2016-2035. 5. 以複合電動力捕捉並分析生物微粒的方法與晶片，發明人: **鄭宜肪**、張憲彰、蘇五洲、黃偉倫，中華民國專利，專利證號: [I494563](http://twpat2.tipo.gov.tw/tipotwoc/tipotwkm?00701CFA0002010100000000000100A000000001000000000%5e10), 2015-2033. 6. 可選擇地濃縮分離待測粒子的方法與晶片，發明人: **鄭宜肪**、楊富量、張憲彰、陳姿穎，中華民國專利，專利證號: [I510773](http://twpat4.tipo.gov.tw/tipotwoc/tipotwkm?006D109C0002010100000000000100A000000001000000000%5e10) , 2015-2032. 7. 生物晶片裝置及分離並濃縮一流體中的微粒的方法，發明人: **鄭宜肪**、楊富量、張憲彰、陳姿穎，中華民國專利，專利證號: I472756, 2015-2032. 8. 介電微粒操控晶片與其製造方法和操控介電微粒的方法,發明人: 張憲彰、鍾政哲、**鄭宜肪**、王竣宏、蔣盛泉、任麗青，專利證號: I507803，2015-2033。 9. Method for Antibiotic Susceptibility Testing and Determining Minimum Inhibitory Concentration of the Antibiotics, Cheng-Che Chung, **I-Fang Cheng**, Hsien-Chang Chang, US Patent, US 8,911,605 B2, 2014. 10. Microbial Identification and Manipulation of Nanoscale Biomolecules, **I-Fang Cheng**, Hsien-Chang Chang, Cheng-Che Chung, US Patent, US 8,808,518,2014-2034. 11. 生物鑑定方法與操控奈米等級之生物分子的方法，發明人：**鄭宜肪**、張憲彰、鍾政哲，中華民國專利，專利證號: [I404802](http://twpat3.tipo.gov.tw/tipotwoc/tipotwkm?008837200002010100000000000100A000000001000000000%5e) , 2013~2030. | |