

Tsz Wing FAN

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Education

Ph.D. in Chemical and Biological Engineering 2013-2018

The Hong Kong University of Science and Technology

- Cumulative GPA: 4.18

B.Eng. (First Class Honors) in Chemical and Bioproduct Engineering 2010-2013

The Hong Kong University of Science and Technology

- 2nd in Department, Cumulative GGA: 3.88
- Minor in Biomedical Engineering
- Exchange in Technical University of Dortmund, Germany in Summer 2012

Research Experience

Visiting Graduate, Prof. Peng Yin Laboratory 2017-2018

Wyss Institute for Biologically Inspired Engineering, Harvard University

- Develop single molecule immunoassays through proximity extension reactions of nucleic acids

Graduate Student, Prof. I-ming Hsing Laboratory 2013-2018

The Hong Kong University of Science and Technology

- Thesis Title: Programming Nucleic Acid based Molecular Machineries for Bioanalyte Detection
- Design nucleic acid molecular circuits through thermodynamic and kinetic computations
- Simplify haplotype phasing using synthetic plasmids and dried blood spot samples

Honors and Awards

Hong Kong PhD Fellowship Scheme 2013-2017

Dean's list Awards (all semesters) in Bachelor 2010-2013

The Cheng Foundation Scholarship 2012-2013

Hang Seng Bank Community Service Award and Scholarship 2010-2011

Publications

F. Xuan, **T.W. Fan** and I. Hsing, Electrochemical Interrogation of Kinetically-Controlled Dendritic DNA/PNA Assembly for Immobilization-Free and Enzyme-Free Nucleic Acids Sensing, *ACS Nano*, 2015, 9, 5027-5033.

T.W. Fan and I. Hsing, Kinetically modulated specificity against single-base mutants in nucleic acid recycling circuitry using the destabilization motif, *Analyst*, 2017, 142, 2786-2795

Z. Zhang, **T.W. Fan** and I. Hsing, Integrating DNA strand displacement circuitry to the nonlinear hybridization chain reaction, *Nanoscale*, 2017, 9, 2748-2754.

T.W. Fan, H.L. Yu and I. Hsing, Conditional Displacement Hybridization Assay for Multiple SNP Phasing, *Anal. Chem.*, 2017, 89 (18), pp 9961-9966

Patent Applications

T.W. Fan, H.L. Yu and I. Hsing, “Methods for Haplotype and Diplotype Determination”, PCT filed

Conferences

Asian Deans’ Forum 2018 The Rising Stars Women in Engineering Workshop, Hong Kong (by institutional nomination), **2018**

Fnano 2016, Snowbird, “Cooperating Target Recycling and Cascaded Self-Assembly for Enzyme-Free, Highly Sensitive and Specific Nucleic Acid Detection”, **2016**

1st ASCBC Symposium, Japan, “Exploiting Nucleic Acid Molecular Probes for Highly Specific SNV Detection”, **2015- Best Poster Award**

MRS Conference Symposium JJ, “Peptide Nucleic Acid Mediated Dendritic Growth of Nucleic Acid Self-Assembly for Amplified Homogeneous Electrochemical Nucleic Acid Assay”, **2015 – Best Poster Award**

Technical Proficiencies

Software: Nupack, Domain based Sequence Design (DD), Visual DSD, Matlab, C++

Experimental: Antibody Conjugation and Purification, Nucleic acid Assembly and Purification, Quantitative and real time PCR, Gel electrophoresis and Imaging, AFM, DLS, Spectrofluorometry, FPLC, Cell Culture, Nanoparticle synthesis

Data Analysis and Design tools: Origin Lab, Image J, Stata, Adobe Illustrator, Inkscape

Activities and Services

Teaching Assistant Coordinator 2014-2015

The Chemical and Biological Department, HKUST

- Coordinate the course duties of the teaching assistants in CBME department
- Organize programs and activities for postgraduates within the Department and hold Departmental Seminar

Research Operation Assistant in Paraxel 2012-2013

- Provide administrative support of central filing, project checking, courier, launching expense reports and material purchasing