

Curriculum Vitae

Lee Ming Hung Thomas

Department of Biomedical Engineering
Faculty of Engineering
The Hong Kong Polytechnic University
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EDUCATION

PhD in Chemical Engineering, The Hong Kong University of Science and Technology, 00–03
MPhil in Chemical Engineering, The Hong Kong University of Science and Technology, 98–00
BEng in Chemical Engineering, The Hong Kong University of Science and Technology, 95–98

ACADEMIC CAREER

Associate Professor Department of Biomedical Engineering (BME) The Hong Kong Polytechnic University (PolyU) Hung Hom, Hong Kong	Jul 14–present
Assistant Professor Interdisciplinary Division of Biomedical Engineering (BME) The Hong Kong Polytechnic University (PolyU) Hung Hom, Hong Kong	Apr 12–Jun 14
Assistant Professor Department of Health Technology and Informatics (HTI) The Hong Kong Polytechnic University (PolyU) Hung Hom, Hong Kong	Aug 06–Mar 12
Visiting Scholar Department of Chemical Engineering The Hong Kong University of Science and Technology Clear Water Bay, Hong Kong	Feb 05–Jul 06
Research Associate Department of Chemistry and Biochemistry Arizona State University; New Mexico State University Tempe, AZ; Las Cruces, NM, USA	Jan 04–Jan 05
Research Associate Department of Chemical Engineering The Hong Kong University of Science and Technology Clear Water Bay, Hong Kong	Jul 03–Dec 03

TEACHING

A. Awards

- President's Award for Outstanding Achievement in Teaching (Individual), The Hong Kong Polytechnic University, 2022.
- Faculty Award for Outstanding Achievement in Teaching (Individual), Faculty of Engineering, The Hong Kong Polytechnic University, 2022.
- Faculty Merit Award in Teaching (Individual), Faculty of Engineering, The Hong Kong Polytechnic University, 2018.
- Best Teacher Award, Interdisciplinary Division of Biomedical Engineering, The Hong Kong Polytechnic University, 2016.

B. Teaching Duties

- BME11108 Biomedical Engineering in Society (undergraduate Year 1 compulsory subject; subject coordinator)
- BME32115 Biosensors: Theories and Biomedical Applications (undergraduate elective subject; subject leader)
- BME31210 Biomedical Engineering Industrial Internship (undergraduate compulsory subject for BME stream students; subject coordinator)

RESEARCH

A. Award

- Gold Medal, 48th International Exhibition of Inventions Geneva, Gold-LAMP: A Portable Ultra-Fast Nucleic Acid Testing System, 2023.

B. Journal Papers

1. S. Wang, A. Qin, L. Y. Chau, E. W. T. Fok, M. Y. Choy, C. J. Brackman, G. K. H. Siu, C.-L. Huang, S. P. Yip, T. M. H. Lee, Amine-Functionalized Quantum Qots as a Universal Fluorescent Nanoprobe for a One-Step Loop-Mediated Isothermal Amplification Assay with Single-Copy Sensitivity, *ACS Appl. Mater. Interfaces*, 2022, 14, 35299–35308.
2. L. Gedefaw, S. Ullah, T. M. H. Lee, S. P. Yip, C.-L. Huang, Targeting Inflammasome Activation in COVID-19: Delivery of RNA Interference-Based Therapeutic Molecules, *Biomedicines*, 2021, 9, 1823.
3. F. Meng, G. K.-H. Siu, B. W.-Y. Mok, J. Sun, K. S. C. Fung, J. Y.-W. Lam, N. K. Wong, L. Gedefaw, S. Luo, T. M. H. Lee, S. P. Yip, C.-L. Huang, Viral MicroRNAs Encoded by Nucleocapsid Gene of SARS-CoV-2 Are Detected during Infection, and Targeting Metabolic Pathways in Host Cells, *Cells*, 2021, 10, 1762.
4. A. Qin, L. T. Fu, J. K. F. Wong, L. Y. Chau, S. P. Yip, T. M. H. Lee, Precipitation of PEG/Carboxyl-Modified Gold Nanoparticles with Magnesium Pyrophosphate: A New Platform for Real-Time Monitoring of Loop-Mediated Isothermal Amplification, *ACS Appl. Mater. Interfaces*, 2017, 9, 10472–10480.

5. L. Y. Chau, Q. He, A. Qin, S. P. Yip, T. M. H. Lee, Platinum Nanoparticles on Reduced Graphene Oxide as Peroxidase Mimetics for the Colorimetric Detection of Specific DNA Sequence, *J. Mater. Chem. B*, 2016, 4, 4076–4083.
6. J. K. F. Wong, S. P. Yip, T. M. H. Lee, Ultrasensitive and Closed-Tube Colorimetric Loop-Mediated Isothermal Amplification Assay Using Carboxyl-Modified Gold Nanoparticles, *Small*, 2014, 10, 1495–1499.
7. D. C. Lee, S. P. Yip, T. M. H. Lee, Simple and Sensitive Electrochemical DNA Detection Based on Primer Generation–Rolling Circle Amplification, *Electroanalysis*, 2013, 25, 1310–1315.
8. J. K. F. Wong, S. P. Yip, T. M. H. Lee, Ultra-Stable Oligonucleotide–Gold and –Silver Nanoparticle Conjugates Prepared by a Facile Silica Reinforcement Method, *Nano Res.*, 2012, 5, 585–594.
9. J. K. F. Wong, S. P. Yip, T. M. H. Lee, Silica-Modified Oligonucleotide–Gold Nanoparticle Conjugate Enables Closed-Tube Colorimetric Polymerase Chain Reaction, *Small*, 2012, 8, 214–219.
10. K. L. Yung, Y. Xu, C. Kang, H. Liu, K. F. Tam, S. M. Ko, F. Y. Kwan, T. M. H. Lee, Sharp Tipped Plastic Hollow Microneedle Array by Microinjection Moulding, *J. Micromech. Microeng.*, 2012, 22, 015016.
11. Y. Xu, L.-B. Huang, K.-L. Yung, Y.-C. Xie, T. M. H. Lee, Low Cost Fabrication of Microelectrodes on Plastic Substrate, *Microsyst. Technol.*, 2011, 17, 361–366.
12. Y.-C. Xie, Y. Xu, K. L. Yung, L.-B. Huang, T. M. H. Lee, Photolamination Bonding for PMMA Microfluidic Chips, *Microsyst. Technol.*, 2010, 16, 1887–1891.
13. F. L.-Y. Lam, X. Hu, T. M. H. Lee, K. Y. Chan, A Combined Technique of Photo-Doping and MOCVD for the Development of Heterogeneous Photo-Fenton Catalyst, *Sep. Purif. Technol.*, 2009, 67, 233–237.
14. X. Luo, T. M. H. Lee, I-M. Hsing, Immobilization-Free Sequence-Specific Electrochemical Detection of DNA Using Ferrocene-Labeled Peptide Nucleic Acid, *Anal. Chem.*, 2008, 80, 7341–7346.
15. T. M. H. Lee, Over-the-Counter Biosensors: Past, Present, and Future, *Sensors*, 2008, 8, 5535–5559.
16. S. S. W. Yeung, T. M. H. Lee, I-M. Hsing, Electrochemistry-Based Real-Time PCR on a Microchip, *Anal. Chem.*, 2008, 80, 363–368.
17. W. Zhao, T. M. H. Lee, S. S. Y. Leung, I-M. Hsing, Tunable Stabilization of Gold Nanoparticles in Aqueous Solutions by Mononucleotides, *Langmuir*, 2007, 23, 7143–7147.
18. S.-W. Yeung, T. M. H. Lee, H. Cai, I-M. Hsing, A DNA Biochip for on-the-Spot Multiplexed Pathogen Identification, *Nucleic Acids Res.*, 2006, 34, e118.
19. S. S. W. Yeung, T. M. H. Lee, I-M. Hsing, Electrochemical Real-Time Polymerase Chain Reaction, *J. Am. Chem. Soc.*, 2006, 128, 13374–13375.
20. T. M. H. Lee, I-M. Hsing, DNA-Based Bioanalytical Microsystems for Handheld Device Application, *Anal. Chim. Acta*, 2006, 556, 26–37.
21. H. Cai, T. M. H. Lee, I-M. Hsing, Label-Free Protein Recognition Using an Aptamer-Based Impedance Measurement Assay, *Sens. Actuators, B*, 2006, 114, 433–437.
22. A.-N. Kawde, M. C. Rodriguez, T. M. H. Lee, J. Wang, Label-Free Bioelectronic Detection of Aptamer–Protein Interactions, *Electrochem. Comm.*, 2005, 7, 537–540.

23. G. Liu, T. M. H. Lee, J. Wang, Nanocrystal-Based Bioelectronic Coding of Single Nucleotide Polymorphisms, *J. Am. Chem. Soc.*, 2005, 127, 38–39.
24. T. M. H. Lee, H. Cai, I-M. Hsing, Effects of Gold Nanoparticle and Electrode Surface Properties on Electrocatalytic Silver Deposition for Electrochemical DNA Hybridization Detection, *Analyst*, 2005, 130, 364–369.
25. T. M. H. Lee, H. Cai, I-M. Hsing, Gold Nanoparticle-Catalyzed Silver Electrodeposition on an Indium Tin Oxide Electrode and Its Application in DNA Hybridization Transduction, *Electroanalysis*, 2004, 16, 1628–1631.
26. L.-L. Li, H. Cai, T. M. H. Lee, J. Barford, I-M. Hsing, Electrochemical Detection of PCR Amplicons Using Electroconductive Polymer Modified Electrode and Multiple Nanoparticle Labels, *Electroanalysis*, 2004, 16, 81–87.
27. T. M. H. Lee, M. C. Carles, I-M. Hsing, Microfabricated PCR-Electrochemical Device for Simultaneous DNA Amplification and Detection, *Lab Chip*, 2003, 3, 100–105.
28. T. M. H. Lee, L.-L. Li, I-M. Hsing, Enhanced Electrochemical Detection of DNA Hybridization Based on Electrode Surface Modification, *Langmuir*, 2003, 19, 4338–4343.
29. T. M. H. Lee, I-M. Hsing, Sequence-Specific Electrochemical Detection of Asymmetric PCR Amplicons of Traditional Chinese Medicinal Plant DNA, *Anal. Chem.*, 2002, 74, 5057–5062.
30. D. Trau, T. M. H. Lee, A. I. K. Lao, R. Lenigk, I-M. Hsing, N. Y. Ip, M. C. Carles, N. J. Sucher, Genotyping on a Complementary Metal Oxide Semiconductor Silicon Polymerase Chain Reaction Chip with Integrated DNA Microarray, *Anal. Chem.*, 2002, 74, 3168–3173.
31. M. Carles, T. M. H. Lee, S. Moganti, R. Lenigk, K. W. K. Tsim, N. Y. Ip, I-M. Hsing, N. J. Sucher, Chips and Qi: Microcomponent-Based Analysis in Tradition Chinese Medicine, *Fresenius J. Anal. Chem.*, 2001, 371, 190–194.
32. T. M. H. Lee, I-M. Hsing, A. I. K. Lao, M. C. Carles, A Miniaturized DNA Amplifier: Its Application in Traditional Chinese Medicine, *Anal. Chem.*, 2000, 72, 4242–4247.
33. T. M. H. Lee, I-M. Hsing, C. Y. N. Liaw, An Improved Anodic Bonding Process Using Pulsed Voltage Technique, *J. Microelectromech. Syst.*, 2000, 9, 469–473.
34. T. M. H. Lee, D. H. Y. Lee, C. Y. N. Liaw, A. I. K. Lao, I-M. Hsing, Detailed Characterization of Anodic Bonding Process between Glass and Thin-Film Coated Silicon Substrates, *Sens. Actuators, A*, 2000, 86, 103–107.
35. A. I. K. Lao, T. M. H. Lee, I-M. Hsing, N. Y. Ip, Precise Temperature Control of Microfluidic Chamber for Gas and Liquid Phase Reactions, *Sens. Actuators, A*, 2000, 84, 11–17.

C. Patents

1. Patent on “Method of Closed-Tube Colorimetric Detection of Loop-Mediated Isothermal Amplification Using Gold Nanoparticles” (Chinese Patent No.: 201410073730.4; granted on 12 Jan 2021), Inventors: Dr. Thomas Ming Hung Lee, Dr. Jacky Kwun Fung Wong, and Prof. Shea Ping Yip.
2. Patent on “Manufacture of Nonelectronic, Active-Infusion Patch and Device for Transdermal Delivery Across Skin” (U.S. Patent No.: 10,548,854 B2; granted on 4 Feb 2020), Inventors: Prof. King Lun Yeung, Mr. Wai Kit Wong, Dr. Siu Ming Kwan, Mr. Li Yin Chau, Mr. Ho Yee Timothy Poon, Dr. Thomas Ming Hung Lee, and Prof. Albert Hee Lum Chow.

3. Patent on “Ultra-Stable Oligonucleotide–Gold and –Silver Nanoparticle Conjugates Prepared by a Facile Silica Reinforcement Method” (U.S. Patent No.: 9,605,304; granted on 28 Mar 2017), Inventors: Dr. Thomas Ming Hung Lee, Dr. Jacky Kwun Fung Wong, and Prof. Shea Ping Yip.
4. Patent on “Method and System for Real-Time Quantification and Monitoring of Nucleic Acid Amplification Using Electroconductive or Electrochemically Active Labels” (U.S. Patent No.: 8,465,926; granted on 18 Jun 2013), Inventors: Prof. I-Ming Hsing, Dr. Thomas Ming Hung Lee, Dr. Siu Wai Yeung, and Dr. Xiaoteng Luo.