

Tse-Shao Chang

University of Michigan
109 Zina Pitcher Place, BSRB 1728
Ann Arbor, MI 48105 USA

Email: tsechang@umich.edu
[Google Scholar](#) | [ORCID](#)

Current position

- Since 2019 *Ph.D. Candidate* in Mechanical Engineering, University of Michigan (UMich), Ann Arbor, MI
- Graduate Computational Discovery and Engineering (CDE) Certificate Program
 - Rackham Professional Development Diversity, Equity, and Inclusion (DEI) Certificate Program
 - Inclusive STEM Teaching Project, National Science Foundation (NSF) Funded
 - Foundational Course Initiative (FCI) | Center for Research on Learning and Teaching (CRLT)

Education

- 2014 B.S. in Mechanical Engineering, National Cheng Kung University (NCKU), Tainan, Taiwan
- Dean's List
 - Valedictorian
- 2018 M.S.E. in Mechanical Engineering, University of Michigan (UMich), Ann Arbor, MI

Research Experience

- 2011-2012 Research Assistant, Applied Solid Mechanics and Electronic Packaging Lab, NCKU
- 2012-2014 Undergraduate Researcher, Applied Solid Mechanics and Electronic Packaging Lab, NCKU
- 2015-2016 R&D Intern, Mechanical Engineering Department, Logitech Far East Ltd., Hsinchu, Taiwan
- 2017-2018 Graduate Researcher, Structural Dynamics and Controls Lab, UMich
- 2017-2018 Graduate Researcher, Vibration and Acoustics Laboratory: Microsystems, UMich
- 2018-2019 Research Lab Specialist Associate, Wang Molecular Imaging Laboratory, UMich
- Since 2019 Graduate Researcher, Wang Molecular Imaging Laboratory, UMich
- 2022-2023 Graduate Student Instructor, ME240: Introduction to Dynamics and Vibrations, UMich

Publications

POSTER PRESENTATIONS

- 2018 **Tse-Shao Chang**, Shuo Feng, Zhao Li, Jiye Zhu, Thomas D. Wang, "*In Vivo Fluorescence Imaging of Hepatocellular Carcinoma using Near-infrared Labeled GPC₃ peptide*," Michigan Medicine - Peking University Health Science Center Joint Institute for Translational and Clinical Research, 8th Annual symposium, Ann Arbor, Michigan.
- 2019 **Tse-Shao Chang**, Shuo Feng, Zhao Li, Jiye Zhu, Thomas D. Wang, "*In Vivo Fluorescence Imaging*

of *Hepatocellular Carcinoma* using *Near-infrared Labeled GPC₃ peptide*," 34th Annual University of Michigan Center for Gastrointestinal Research (UMCGR) Winter Retreat, Ann Arbor, Michigan.

CONFERENCE PRESENTATIONS

- 2023 **Tse-Shao Chang**, HaiJun Li, Gaoming Li, Tong Li, Xiaoli Wu, Kenn Oldham, Thomas Wang, "*Fiber-scanning GRIN-lens-based photoacoustic endomicroscope for early colon cancer detection*," SPIE Photonics West, Photons Plus Ultrasound: Imaging and Sensing 2023, San Francisco, CA

CONFERENCE FULL PAPER PUBLICATIONS

- 2018 Hongbin Fang, **Tse-Shao Chang**, K.W. Wang, "*Controlling Origami Stability Profile Using Magnets*," ASME International Design Engineering Technical Conferences & Computers and Information in Engineering Conference, 42nd Mechanisms and Robotics Conference, DETC2018-85712, Quebec, Canada.

JOURNAL PUBLICATIONS

- 2019 [Hongbin Fang, **Tse-Shao Chang**], K.W. Wang, "*Magneto-Origami Structures: Engineering Multi-Stability and Dynamics via Magnetic-Elastic Coupling*," Smart Materials and Structures, 2019; **29**(1), 015026
- 2019 Xiaoli Wu, Juan Zhou, Fa Wang, Xiaoqing Meng, Jing Chen, **Tse-Shao Chang**, Miki Lee, Gaoming Li, Xue Li, Henry D. Appelman, Rork Kuick, Thomas D. Wang, "*Detection of colonic neoplasia in vivo using near-infrared-labeled peptide targeting cMet*," Scientific Reports, 2019; 9: 17917
- 2020 Fa Wang, Xiyu Duan, Jing Chen, Zhenghong Gao, Juan Zhou, Xiaoli Wu, **Tse-Shao Chang**, Miki Lee, Gaoming Li, Asma Nusrat, Rork Kuick, Henry D. Appelman, Thomas D. Wang, "*Integrated Imaging Methodology Detects Claudin-1 Expression in Premalignant Nonpolypoid and Polypoid Colonic Epithelium in Mice*," Clinical and Translational Gastroenterology, 2020 Jan; **11**(1): e00089
- 2020 Jing Chen, Yang Jiang, **Tse-Shao Chang**, Bishnu Joshi, Juan Zhou, Joel H. Rubenstein, Erik J. Wamsteker, Richard S. Kwon, Henry Appelman, David G. Beer, Danielle K. Turgeon, Eric J. Seibel, Thomas D. Wang, "*Multiplexed endoscopic imaging of Barrett's neoplasia using targeted fluorescent heptapeptides in a phase I proof-of-concept study*," Gut, 2020; **0**:1-4
- 2021 Yongping Lin, **Tse-Shao Chang**, Jing Chen, Gaoming Li, "*Dual-axis confocal configuration for depth sensitive fluorescence spectroscopy*," Optics Letters, 2021; **46**(15)
- 2021 [Shuo Feng, Xiaoqing Meng, Zhao Li], **Tse-Shao Chang**, Xiaoli Wu, Juan Zhou, Bishnu Joshi, Eun-Young Choi, Lili Zhao, Jiye Zhu, Thomas D. Wang, "*Multi-Modal Imaging Probe for Glypican-3 Overexpressed in Orthotopic Hepatocellular Carcinoma*," Journal of Medicinal Chemistry, 2021; **64**: 15639–15650
- 2022 Jing Chen, Yang Jiang, **Tse-Shao Chang**, Joel H. Rubenstein, Richard S. Kwon, Erik J. Wamsteker, Anoop Prabhu, Lili Zhao, Henry Appelman, Scott R. Owens, David G. Beer, Danielle K. Turgeon, Eric J. Seibel, Thomas D. Wang, "*Detection of Barrett's Neoplasia with Near-infrared Fluorescent Heterodimeric Peptide*," Endoscopy, 2022; **54**(12): 1198-1204
- 2022 [Xiaoli Wu, Xiaoqing Meng], **Tse-Shao Chang**, Shuo Feng, Miki Lee, Sangeeta Jaiswal, Eun-Young Choi, Lam Tran, Hui Jiang, Thomas D. Wang, "*Multi-modal imaging for uptake of peptide ligand specific for CD44 by hepatocellular carcinoma*," Photoacoustics, 2022; **26**: 100355

- 2022 [Miki Lee, Gaoming Li], Haijun Li, Xiyu Duan, Mayur B. Birla, **Tse-Shao Chang**, Danielle K. Turgeon, Kenn R. Oldham, and Thomas D. Wang, "Confocal Laser Endomicroscope with Distal MEMS Scanner for Real-Time Histopathology," Scientific Reports, 2022; 12: 20155
- 2023 **Tse-Shao Chang**, Yaxuan Zhou, Ruoliu Zhang, Richard S. Kwon, Erik J. Wamsteker, D. Kim Turgeon, Eric J. Seibel, Thomas D. Wang, "Flexible fiber cholangioscope for detection of near-infrared fluorescence," VideoGIE, 2023; 8(3): 110-112
- 2023 Xiaoli Wu, Chun-Wei Chen, Sangeeta Jaiswal, **Tse-Shao Chang**, Ruoliu Zhang, Michael K. Dame, Yuting Duan, Hui Jiang, Jason R. Spence, Sen-Yung Hsieh, Thomas D. Wang, "Near-Infrared Imaging of Colonic Adenomas In Vivo Using Orthotopic Human Organoids for Early Cancer Detection," Cancers, 2023; 15(19): 4795
- 2023 [Gaoming Li, Miki Lee, **Tse-Shao Chang**], Joonyoung Yu, Haijun Li, Xiyu Duan, Xiaoli Wu, Sangeeta Jaiswal, Shuo Feng, Kenn R. Oldham, Thomas D. Wang, "Wide-field endoscope accessory for multiplexed fluorescence imaging," Scientific Reports, 2023; 13:19527
- 2024 Tong Li, **Tse-Shao Chang**, Ahmad Shirazi, Xiaoli Wu, Wei-Kuan Lin, Ruoliu Zhang, L. Jay Guo, Kenn Oldham, Thomas Wang, "Scaling down the dimensions of a Fabry-Perot polymer film acoustic sensor for photoacoustic endoscopy," Journal of Biomedical Optics, 2024, 29(S1), S11514
- Under Review Tong Li, Xiaoli Wu, **Tse-Shao Chang**, Wei-Kuan Lin, Ahmad Shirazi, Ruoliu Zhang, L. Jay Guo, Kenn Oldham, Thomas Wang, "Miniature Fabry-Perot polymer film ultrasound sensor array for photoacoustic endoscopy," Journal of Biomedical Optics
- Under Review **Tse-Shao Chang**, Jing Chen, Richard S. Kwon, Yang Jiang, Eric J. Seibel, D. Kim Turgeon, Thomas D. Wang, "A Case Study for Targeted Detection of Barrett's Neoplasia," Global Translational Medicine
- Under Review Sangeeta Jaiswal, Fa Wang, Xiaoli Wu, **Tse-Shao Chang**, Ahmad Shirazi, Miki Lee, Michael K. Dame, Jason R. Spence, Thomas D. Wang, "Near-Infrared In Vivo Imaging of Claudin-1 Expression by Orthotopically Implanted Patient-Derived Colonic Adenoma Organoids," Diagnostics

Grant

- 2020 Rackham Graduate Student Research Grant, "In Vivo Tumor-Targeted Photoacoustic Imaging of Cancer with Fluorescently-Labeled Peptide", UMich, \$1,468
- 2022 Rackham Conference Travel Grant, "Fiber-scanning GRIN-lens-based photoacoustic endomicroscope for early colon cancer detection" Photons Plus Ultrasound: Imaging and Sensing 2023 Conference, UMich, \$9,00

Peer-Review Service

JOURNALS

IEEE Journal of Biomedical and Health Informatics
 Big Data and Cognitive Computing
 Journal of Personalized Medicine
 Biomedical Signal Processing and Control
 Journal of Imaging
 Physics in Medicine and Biology
 Applied Sciences
 Physica Scripta

Electronics
Photonics
Chinese Optics Letters
Journal of Clinical Medicine
Review of Scientific Instruments

CONFERENCES

International Design Engineering Technical Conferences (IDETC)
Computers and Information in Engineering Conference (CIE)
Mechanisms and Robotics Conference (MR)
International Conference on Micro- and Nanosystems (MNS)
Design Automation Conference (DAC)
IEEE/ASME International Conference on Mechatronic and Embedded Systems and Applications (MESA)

Member

AAAS member
SPIE member / SPIE student chapter
Optica student chapter

Mentoring Experience

2010-2012	Peer Assistant Leader, Kaohsiung Graduation Association, NCKU
2018, 2020	Graduate Mentor, Graduate Student Mentoring Program, UMich
2020-2021	Mentor, Graduate Rackham International (GRIN) Mentoring Program, UMich
2022	Mentor, Mechanical Engineering Graduate Council (MEGC), UMich

Department, College, and University Service

2014	Student Judge, Machine Design Competition, NCKU, ME
2016	Volunteer, 8th International Conference on Automotive User Interfaces and Interactive Vehicular Applications, Ann Arbor, MI
2018-2019	Graduate Student Judge, Mechanical Engineering Undergraduate Symposium (MEUS), UMich
2022	Symposium Judge, Undergraduate Research Opportunity Program (UROP) Research Symposium, UMich

Honours & Awards

2011	Outstanding Student Award for Academic Achievement, NCKU
2012	Outstanding Student Award for Academic Achievement, NCKU
2013	Outstanding Student Award for Academic Achievement, NCKU

2013	Undergraduate Researcher Award, NCKU
2014	Young Day National Outstanding University Young Award, China Youth Corps
2014	Valedictorian, NCKU, ME
2020	AAAS/Science Program for Excellence in Science, UMich

Scholarships & Fellowships

2011	Professor Li Ke-Rang Scholarships, NCKU
2012	Professor Li Ke-Rang Scholarships, NCKU
2013	Professor Li Ke-Rang Scholarships, NCKU
2013	Dr. Er-Chang Xie Memorial Scholarship, NCKU
2014	Dr. Chun Ti Chuang Memorial Scholarship, NCKU
2014	Dr. Wei-Noon Wang Memorial Scholarship, NCKU

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