Yue Jane Wu, PhD

Email: yuew@ucr.edu | Mobile: (+1)323-747-4337
Address: 452 Chemical Sciences Building, 501 Big Springs Road, Riverside, CA 92521

Research Interests/expertise: Analytical Chemistry, Material Chemistry, Optical barcoding devices, Microfabrication, Molecular barcoding, DNA barcoding, High-content live-cell imaging, Single-cell analysis, Omics (Mass spectrometry-based and NGS-based).

PROFESSIONAL EXPERIENCE

Assistant Professor, Analytical Chemistry, University of California, Riverside — Riverside, CA, Oct. 2025 – Present

Research Fellow, Massachusetts General Hospital/ Harvard Medical School & Broad Institute of MIT and Harvard — Cambridge, MA
Advisor: Prof. Seok-Hyun Andy Yun — Sep. 2019 – Jul. 2025

Instructor and lecturer, Harvard-MIT Summer Institute for Biomedical Optics — Cambridge, MA, Jun. 2023 – Sep. 2023

Graduate Research Assistant, Georgia Institute of Technology — Atlanta, GA
Advisor: Prof. Mostafa A. El-Sayed, Department of Chemistry & Biochemistry — Sep. 2016 – May 2019

Graduate Teaching Assistant, Georgia Institute of Technology — Atlanta, GA
Chemical Principles (CHEM 1212K) and Synthesis Lab (CHEM 2380) — Sep. 2014 – Sep. 2016

EDUCATION AND TRAINING

Georgia Institute of Technology, **Ph.D.** | Chemistry — Atlanta, GA
Advisor: Prof. Mostafa A. El-Sayed, Department of Chemistry & Biochemistry — Sep. 2014–May. 2019

University of Chinese Academy of Sciences, M.S. | Analytical Chemistry — Dalian, China
Advisor: Profs. Hanfa Zou and Fangjun Wang, Dalian Institute of Chemical Physics — Aug. 2011–Jun. 2014

Zhejiang University of Technology, **B.S.** | Chemistry — Hangzhou, China, Sep. 2007 –Jun. 2011

RESEARCH GRANT (Lead and major contribution, Total: $6.5 M)

NIH Pathway to Independence Award K99HG013129 (PI: Yue Jane Wu; $ 1M) Aug 1, 2023 - Jul 31, 2028
National Human Genome Research Institute
Laser particles-based spatiotemporal and dynamic single-cell multiomics

MGH Fund for Medical Discovery (PI: Yue Jane Wu; $88,840) Jan 1, 2023-Jul 31, 2023
Massachusetts General Hospital/Harvard Medical School

Bullock-Wellman Fellowship (PI: Yue Jane Wu; $65,000). Jan 1, 2022-Dec 31, 2022
Wellman Center for Photomedicine, Massachusetts General Hospital

NIH Director's Transformative Award R01EB033155 (PI: Seok-Hyun Andy Yun). Sep 2021-Sep 2026
Laser particles for multi-dimensional single-cell analysis ($ 3.5 M)

NIH Small Business Innovation Research Grant R44HG013591 (LASE INNOVATION INC.)

DNA-optical barcoding technology for spatiotemporal single-cell analysis ($ 2 M). Feb. 2024-Dec 2026

HONORS AND AWARDS

NIH K99/R00 Award (NHGRI)	2023
MGH ECOR FMD Fellowship, Massachusetts General Hospital/Harvard Medical School	2023
Bullock-Wellman Fellowship, Massachusetts General Hospital/Harvard Medical School	2022
Bud Suddath Memorial Award (Third place) Georgia Institute of Technology	2019
Petit Scholar Mentor Award, Georgia Institute of Technology	2018
National Scholarship for Graduate Students, China	2013
Excellent Student of the Chinese Academy of Sciences	2012
Mathematical Contest of Modeling of USA: Honorable Mention	2011
Outstanding Student Scholarship of ZJUT: First Class	2008,2010

PUBLICATIONS

(20+ peer-reviewed journal papers | h-index 13, total citations 1,800, ResearchGate | MyBibliography (accessed in May 2025)

Journal articles (‡ equal contribution):

1. **Wu Y**, Martino N, et al., Yun S. Optical-And-Oligo "Dual" Barcoding for Dynamic Single-Cell Sequencing. (*In Preparation*)

2. X. Kuang‡, Zhenwu Wang‡, M. O. Arıcan, Vidal R. R., L. Lian, M. Wang, S. Maharjan, **Y. Wu**, R. S. Flores, W. Li, X. Mei, J. J. Fitzgibbon, P. V. Heindel, C. K. Ozaki, and Y. S. Zhang*, Cell-Instructive Biphasic Tough Hydrogels Enable Biofabricating Physiologically Relevant Tissues. (*To be submitted*).

3. Martino N, Yan H, Abbott G, Fahlberg M, Forward S, Zhu H, **Wu Y**, and Kwok S, Yun S. Large-scale combinatorial optical barcoding of cells with laser particles. *Light Sci Appl* 14, 148 (2025). (Journal impact factor: 20.257)

4. Sarkar D, Dannenberg PH, Martino N, Kim K, **Wu Y**, Yun S. Precise photoelectrochemical tuning of semiconductor microdisk lasers. *Advanced Photonics,* 2023 September; 5(5):056004. (Journal impact factor: 20.6)

5. Yan H, Forward S, Kim K, **Wu Y**, Hui J, Kashiparekh A, Yun S. All-natural-molecule, bioluminescent photodynamic therapy results in complete tumor regression and prevents metastasis, *Biomaterials,* 2023, 296: 122079. (Journal impact factor: 12.479)

6. Dong X, Yu P, Zhao J, **Wu Y**, Ali M, El-Sayed M, and Jianping Wang. Structural Dynamics of (RGD)4PGC Peptides in Solvated and Au Nanorod Surface-Bound Forms Examined by Ultrafast 2D IR Spectroscopy. *J. Phys. Chem. C*, 2023, 127 (7), 3532-3541. (Journal impact factor: 3.7)

7. Dannenberg PH, Liapis AC, Martino N, Kang J, **Wu Y**, Kashiparekh A, Yun S. Multi-layer fabrication of a rainbow of microdisk laser particles across a 500 nm bandwidth, *ACS Photonics.* 2021, 8, 5, 1301. (Journal impact factor: 6.5)

8. **Wu Y**, Ali M, Chen K, Fang N, El-Sayed M. Gold Nanoparticle in Biological Optical Imaging, *Nano Today*, 2019, 24:120. (336 citations) (Journal impact factor: 18.962)

9. Ali M‡, **Wu Y**‡, El-Sayed M. Gold-Nanoparticle-Assisted Plasmonic Photothermal Therapy Advances Toward Clinical Application, *J. Phys. Chem. C,* 2019, 123:15375. (‡ Equal-first author) (Journal impact factor: 3.7)

10. **Wu Y**, Ali M, Dansby K, El-Sayed M. Improving the Flow Cytometry based Detection of the Cellular Uptake of Gold Nanoparticles*, Anal. Chem.,* 2019, 91:14261. (Journal impact factor: 8.008)

11. Ali M, **Wu Y**, Chapman S, Ding Y. Synthesis, structure evolution, and optical properties of gold nanobones. *Research on Chemical Intermediates*. 2019/08; 45(8):3973-3983. (Journal impact factor: 2.8)

12. Ali MRK, Farghali HAM, **Wu Y**, El-Sayed I, Osman AH, Selim SA, El-Sayed M. Gold Nanorod-Assisted Photothermal Therapy Decreases Bleeding during Breast Cancer Surgery in Dogs and Cats. *Cancers (Basel).* 2019 Jun 19;11(6). (Journal impact factor: 5.2)

13. **Wu Y‡**, Chen J‡, Liu Z, Wang F. Identification of pyridoxal phosphate modified proteins using mass spectrometry, *Rapid Commun. Mass Spectrom,* 2018, 32:195. (‡ Equal-first author) (Journal impact factor: 2.419)

14. **Wu Y**‡, Ali M‡, Dong B, Han T, Chen K, Chen J, Tang Y, Fang N, Wang F, El-Sayed M, Gold Nanorod-Photothermal Therapy Alters Cell Junctions and Actin Network in Inhibiting Cancer Cell Collective Migration*. ACS Nano,* 2018, 12:9279. (‡ Equal-first author) (Journal impact factor: 15.8)

15. Ali M‡, **Wu Y**‡, Ghosh D, Do B, Chen K, Dawson M, Fang N, Sulchek,T, El-Sayed M. Nuclear Membrane-Targeted Gold Nanoparticles Inhibit Cancer Cell Migration and Invasion, *ACS Nano* 2017,11:3716. (‡ Equal-first author) (Journal impact factor: 15.8)

16. Ali M‡, **Wu Y**‡, Tang Y, Xiao H, Chen K, Han T, Fang N, Wu R, El-Sayed M. Targeting Cancer Cell Integrins Using Gold Nanorods in Photothermal Therapy Inhibits Its Migration by Affecting Cytoskeleton Proteins. *Proc. Natl. Acad. Sci. U S A,* 2017, 114: E5655. (‡ Equal-first author) (Journal impact factor: 9.4)
    News coverage:
    https://www.eurekalert.org/news-releases/589284
    https://www.sciencedaily.com/releases/2017/06/170626181045.htm

17. Ali MR, Rahman MA, **Wu Y**, Han T, Peng X, Mackey MA, Wang D, Shin HJ, Chen ZG, Xiao H, Wu R, Tang Y, Shin DM, El-Sayed MA. Efficacy, long-term toxicity, and mechanistic studies of gold nanorods photothermal therapy of cancer in xenograft mice. *Proc Natl Acad Sci U S A.* 2017 Apr 11;114(15):E3110-E3118. (Journal impact factor: 9.4)

18. Ali M‡, **Wu Y‡**, Han T, Zang X, Xiao H, Tang Y, Wu R, Fernandez F, El-Sayed M. Simultaneous Time-dependent Surface Enhanced Raman Spectroscopy, Metabolomics, and Proteomics Reveal Cancer Cell Death Mechanisms Associated with Au-Nanorod Photo-thermal Therapy. *J. Am. Chem. Soc*., 2016, 138:15434. (‡ Equal-first author) (Journal impact factor: 14.4)

19. Zhou Y‡, **Wu Y‡**, Yao M, Liu Z, Chen J, Chen J, Tian L, Han G, Shen J, Wang F. Probing the lysine proximal microenvironments within membrane protein complexes by active dimethyl labeling and mass spectrometry. *Anal. Chem.* 2016, 88:12060. (‡ Equal-first author) (Journal impact factor: 8.008)

20. Ali HR, Ali MR, **Wu Y**, Selim SA, Abdelaal HF, Nasr EA, El-Sayed MA. Gold Nanorods as Drug Delivery Vehicles for Rifampicin Greatly Improve the Efficacy of Combating Mycobacterium tuberculosis with Good Biocompatibility with the Host Cells. *Bioconjug Chem.* 2016 Oct 19;27(10):2486-2492. (Journal impact factor: 4.7)

21. **Wu Y,** Wang F, Liu Z, Qin H, Song C, Huang J, Bian Y, Wei X, Dong J, Zou H, Five-plex isotope dimethyl labeling for quantitative proteomics. *Chem. Commun.,* 2014, 50:1708. (Journal impact factor: 6.222)

Patents:

1. Yun S, **Wu Y**, Martino N, Kwok S, Cellular Coding Constructs Providing Identification of Cellular Entities, U.S. Patent App., US20230272372A1(2023)
2. Yun S, **Wu Y**, et al, Large-Scale Microparticles with Optical and Oligo Barcodes, Patent Agreement, (2025).

RESEARCH EXPERIENCE

My research experience spans multiple disciplines, including analytical chemistry, material chemistry, microfabrication, system biology, and optical imaging. The following sections outline my research experiences in different areas.

Microsized optical-and-molecular encoded devices for high-content live-cell imaging and single-cell analysis.

- Develop microscale barcoded devices with millions of optical and molecular channels attached to individual cells for single-cell analysis. (2 first-author manuscripts in progress, 2 US patent applications, 3 leading or major-contributing NIH grants)
- Participating in microfabrication of optical barcoding devices. (4 articles published)

Photonic nanomaterials for imaging, sensing, and medicine.

- Developed plasmonic nanoprobes for in situ recording of metabolic dynamics inside live cells. Developed and studied photo-thermal therapy using plasmonic nanoparticles for cancer treatment. Designed and studied gold nanoparticles for inhibiting cancer cell migration and invasion. (12 articles published, among which 7 first/equal first author articles)

Mass spectrometry(MS)-based Proteomics.

- Developed MS-based analytical method for high-throughput quantitative proteomics, three-dimensional structure analysis of large protein complexes, protein post-transcriptional modifications, etc. (3 first/equal first author articles published)

PROFESSIONAL ACTIVITIES & LEADERSHIP

Independent Journal Reviewers

Journal of the American Chemical Society (JACS), ACS Biomaterials Science & Engineering

Member of Professional Societies

American Chemical Society (ACS), American Association for Cancer Research (AACR), AACR-Women in Cancer Research, Biophysics Society

Seminars/Conferences Presentations

1. Optical and Molecular Barcoding for High-throughput Single-cell Analysis. Wellman Center for Photomedicine, Massachusetts General Hospital. Jun, 2025, Boston, MA. (Invited talk)
2. Optical-Oligo Barcoding for Multi-Platform Single-Cell Analysis. 20th Annual Broad Institute Scientific Retreat. Dec 2024, Boston, MA. (Poster)

3. Combinatorial barcoding of cells with Laser Particles. Nicola Martino, Hao Yan, Kwon-Hyeon Kim, Paul H. Dannenberg, Yue Wu, Geoffrey Abbot, Han Zhu, Sheldon J.J. Kwok, and Seok-Hyun Yun. Bio-Optics: Design and Application 2023, Vancouver, British Columbia Canada. (Oral)

4. Developing gold nanoparticles for inhibiting cancer metastasis. Coll, 256th ACS National Meeting, Boston, MA, 2018. (Oral)

5. Active Dimethyl Labeling and Mass Spectrometry for Protein Structure Analysis, Anal, 256th ACS National Meeting, Boston, MA, 2018. (Oral)

6. Microscopic Imaging for Understanding Gold Nanorods-Protein Interactions in Inhibiting Cancer Cell Migration. American Association for Cancer Research (AACR) Annual Meeting, Chicago, 2018. (Oral)

7. Designing and Mechanistic Study of Gold Nanoparticles for Inhibiting Cancer Metastasis. School of Chemistry and Biochemistry Graduate Research Symposium (selected talk), Georgia Tech, Atlanta, 2018. (Oral)

8. Inhibiting Cancer Cell Migration and Invasion Using Gold Nanoparticles. Georgia Tech Chemistry Department Retreat, Historic Banning Mills, GA, 2017. (Oral)

9. Mass Spectrometry in Bio-Nano Interaction. 6th International Conference on Current Trends in Mass Spectrometry, Atlanta, 2017. (Oral)

10. Simultaneous Time-dependent Surface Enhanced Raman Spectroscopy, Metabolomics and Proteomics Reveal Cancer Cell Death Mechanisms Associated with Au-Nanorod Photo-thermal Therapy, COLL, ACS Annual Meeting, San Francisco, 2017. (Oral)

11. Global Protein Phosphorylation Dynamics during IGF-1 Stimulation Using Five-plex Isotope Dimethyl Labeling Strategy. 5th Asia Oceania Mass Spectrometry Conference, Young Scientist Forum, Beijing, 2014. (Oral)

TEACHING AND MENTORING

Teaching

The Harvard-MIT Summer Institute at MGH (Lecturer) Topic: Plasmonic nanoparticles July, 2021

Georgia Institute of Technology (Teaching Assistant)

- Chemical Principles (CHEM 1212K) 2015-2016
- Synthesis Lab (CHEM 2380) Summer 2016

Student/trainee Mentoring (on behalf of PI)

Mentee	Role	Notes	Time	After graduation
Kamillah J Kassam	Undergraduate research assistant, Georgia Tech	PURA awardee	2015	PhD student, Duke University, Chemistry
Savita C Chapman	Undergraduate research assistant, Georgia Tech	PURA awardee	2015-2016	MBA, University of Illinois Urbana-Champaign
Sarah A Ghalayini	Undergraduate research assistant, Georgia Tech	Petit scholar	2016	MD-PhD student, UT MD Anderson Cancer Center
Tessneem Belhadj Yahya	Undergraduate research assistant, Georgia Tech		2016	

Mostafa Ayman Riad Nasser	Undergraduate research assistant, Georgia Tech		2016	
Cassidy M Tobin	Undergraduate research assistant, Georgia Tech			PhD student, UC Santa Barbara, Chemical Engineering
Cecily C Ritch	Undergraduate research assistant, Georgia Tech	PURA awardee	2016-2017	MD-PhD student, Yale School of Medicine
Arusha A Siddiqa	Undergraduate research assistant, Georgia Tech		2016	Master student, The Johns Hopkins University
Tsion M Assaye	Undergraduate research assistant, Georgia Tech		2016	MD student, Emory University
Sreenath Raparti	Undergraduate research assistant, Georgia Tech		2016	Master student, Georgia Tech
Ahmed Amer	Undergraduate research assistant, Georgia Tech		2016	MD student, Rosalind Franklin University of Medicine and Science
Samuel R Nelson	Undergraduate research assistant, Georgia Tech		2016	Engineer
Shreyas Krishnapura	Undergraduate research assistant, Georgia Tech		2017	MD student, Vanderbilt University School of Medicine
Hashem Mohilldean	Undergraduate research assistant, Georgia Tech		2017	MD student, Oakland University William Beaumont School of Medicine
Ziyan Wu	Visiting student, Shanghai Tech		2018	Master student, Georgia Tech
Paige Warner	Undergraduate research assistant, Georgia Tech		2018-2019	
Arfa Ul-Harque	Undergraduate research assistant, Georgia Tech		2018	
Anokhi Kashiparekh	Lab technician, Harvard Medical School		2019	PhD student, University of Pittsburgh Medical Center, Genetics
Daniel Spencer	Lab technician, Harvard Medical School		2020-2021	PhD student, University of Maryland, College Park, Physics
Maryam Hiradfar	Lab technician, Harvard Medical School		2021-2022	MD-PhD Student, Harvard Medical School
Elia Bilani	Summer Institute student, Hartford University		2023 Summer	
Ella Vacchi	Lab technician, Harvard Medical School		2023-present	
Eunice Yun	Research assistant, Harvard Medical School		2024	
Piyush Raj	Research fellow, Harvard Medical School		2024-present	

Outreach

As a first-generation college student, I'm enthusiastic about outreach activities to promote science education in high school.

- High school Biophotonics Ambassador program (Boston, Massachusetts), 2022.
- Judge in a local high school scientific invention competition (Atlanta, Georgia), 2016.

Promote diversity in STEM

- I have mentored many women or minority trainees. Many continued their graduate education in prestigious institutions in the U.S., including Harvard Medical School (HMS, MD-PhD program, one), Yale School of Medicine (MD-PhD program, one), Emory University School of Medicine (MD program, two), Duke University Chemistry Department (PhD program, one), etc.
- Member of the AACR-Women in Cancer Research

REFEREES

Seok-Hyun Andy Yun, PhD (Postdoctoral mentor)

Professor, Harvard Medical School
Patricia and Scott Eston MGH Research Scholar
Principal Investigator, Wellman Center for Photomedicine, Massachusetts General Hospital
Affiliated Faculty, Harvard-MIT Health Sciences and Technology
Associate Faculty, Broad Institute of MIT and Harvard
65 Landsdowne St. UP-525, Cambridge, MA 02139
Tel: 617-768-8704
syun@mgh.harvard.edu

Ning Fang, PhD (Collaborator)

Professor, College of Chemistry and Chemical Engineering, Xiamen University, China
Previous Associate Professor, Department of Chemistry, Georgia State University
Room 551, Department of Chemistry, Siming Campus, Xiamen University, Xiamen 361005, China
Tel: 86-592-5908912
nfang@xmu.edu.cn

Haopeng Xiao, PhD (Collaborator)

Assistant professor
Department of Biochemistry & Stanford Cancer Institute
Stanford University
Beckman Center, 279 Campus Drive, Stanford, CA 94305
hpxiao@stanford.edu

Sai Ma, PhD (Collaborator)

Assistant Professor
Dept. of Genetics and Genomic Sciences, Icahn School of Medicine at Mount Sinai.
1425 Madison Avenue (Icahn building), 14th Floor, Room 14-20F, New York, NY, 10029
sai.ma2@mssm.edu

Mostafa A. El-Sayed, PhD (PhD advisor, retired in 2020)

Regents' Professor Emeritus
Recipient of the USA National Medal of Science
Elected Member of the USA National Academy of Sciences
School of Chemistry and Biochemistry
Georgia Institute of Technology
Laser Dynamics Laboratory Director
901 Atlantic Drive / Atlanta, GA 30332-0400
melsayed@gatech.edu