Hsiang-Ju Kai

No. 3, Ln. 86, Shida Rd., Taipei, Taiwan
Cell: (+886) 9-2979-7979
kai.hsiang.ju@gmail.com
james.kai@syncell.com

EDUCATION

M.S.E., Chemical and Biomolecular Engineering Aug. 2018–May 2020
University of Pennsylvania Philadelphia, PA
GPA: 3.75/4.0

B.S.E., Chemical Engineering Sept. 2013–Jan. 2018
National Taiwan University (NTU) Taipei, Taiwan
GPA: 3.89/4.3 (3.83/4.0)

RESEARCH EXPERIENCE

Research Scientist Jan. 2021–Present
Syncell Inc. Taipei, Taiwan

- Designed photo-affinity probes by utilizing techniques such as photochemistry, bioconjugation, click chemistry, and immunolabeling
- Developed low-background photochemical probe through DNA technology to increase labeling specificity
- Engaged in software development in imaging processing, automation, and data analysis

Graduate Research Assistant May 2020–Jan. 2021
Institute of Atomic and Molecular Sciences, Academia Sinica Taipei, Taiwan

- Optimized high content image-registered localized photochemical reaction systems
- Assisted in software development for photochemical reaction systems with LabView and Python

Graduate Student Fellow June 2019–Aug. 2019
University of Pennsylvania - Singh Center for Nanotechnology Philadelphia, PA

- Developed and fabricated silicon and glass high-throughput microfluidic droplet generators through lithography and etching techniques.
- Engaged in fabricating microfluidic devices through soft lithography techniques.
- Assisted in training newly joined students to learn general lithography and characterization skills.

Undergraduate Research Intern June 2017–Aug. 2017
Institute of Atomic and Molecular Sciences, Academia Sinica Taipei, Taiwan

- Engaged in building high content image-registered localized photochemical reaction systems.

- Became proficient in processes such as cell culture, fluorescent staining, confocal microscopy, and two-photon excitation microscopy to optimize photochemical reactions and a reaction-specific imaging system.
- Improved the spatial distribution of biological compounds under the imaging system through spin coating technique.

Undergraduate Research Assistant Jan. 2017–June 2017
National Taiwan University - Biointerface Engineering Lab Taipei, Taiwan

- Developed functional biomaterials through chemical vapor deposition (CVD) and physical vapor deposition.
- Optimized electrically charged selectivity in CVD by adjusting the deposition flow rate and converting a polymer into a conductive polymer to create functional nanostructures for biosensors.

SKILLS

- Nanofabrication techniques, including photolithography, soft lithography, chemical vapor deposition, and physical vapor deposition
- Biophysical experimental techniques, including fluorescent microscopy, confocal microscopy, and two-photon microscopy
- 3-D printing, electrospinning
- Programming ability in Python, Java, C++, LabView
- Extensive knowledge in computer-aided design (CAD) software: Autocad, LayoutEditor

PROFESSIONAL CERTIFICATES

- Certification of Professional Achievement in Machine Learning, Modeling, and Simulation (Online course – Massachusetts Institute of Technology)

PATENTS

- "Photoreactive and Cleavable Probes for Tagging Biomolecules" - US Patent Application No. 63/246,283 – Date of Application: Sep. 20, 2021 (Patent Pending)
- "Photoreactive and Cleavable Probes for Tagging Biomolecules" - US Patent Application No. 63/246,287 – Date of Application: Sep. 20, 2021 (Patent Pending)

CONFERENCE EXPERIENCE

- Chen, Y.-D., Chang, C.-W., Liu, Y.-P., Chung, C.-W., Chong, W.M., Wang, P.-J., Sie, Y.-D., Chang, C.-Y., Chen, Z.M., Kai, H.-J., Luo, C.-H., Su, P.-Y., Chiu, T.-Y., Tran T.M.N., Weng, R.R., Yang, T.T., Kong, K.-V., Wang, W.-J., Yu, H.-H., Chen, S.-J., Liao., J.-C. (2019) Image-Guided Subcellular Proteomic Mapping Using $[Ru(bpy)_3]^{2+}$ Catalyzed Two-Photon Labeling. *4th ACS Taiwan Chapter Graduate Student Conference, Taiwan*
- Chen, Y.-D., Chang, C.-W., Chung, C.-W., Kai, H.-J., Luo, C.-H., Yu, H.-H., Liao, J.-C. (2018) High-throughput, in-situ photoaffinity tagging of biomolecules via $[Ru(bpy)_3]^{2+}$ and two-photon microscopy. *7th EuCheMS Chemistry Congress, UK*

VOLUNTEER EXPERIENCE

Science Teacher Jan. 2014– Jan. 2016

NTU Shanfu Service Organization Taitung, Taiwan

- Devoted to teaching aboriginal children science in remote districts of Taiwan, interacting with local government to provide better living condition and education to the children.