

FEI ZHANG

ACADEMIC POSITIONS AND EDUCATION

2019 – Present	Assistant Professor , Department of Chemistry Rutgers University-Newark, Newark
2016 - 2019	Assistant Research Professor , Center for Molecular Design and Biomimetics The Biodesign Institute, Tempe
2015 - 2016	Assistant Research Scientist , Center for Molecular Design and Biomimetics The Biodesign Institute, Tempe
2010 - 2015	Ph.D. in Chemistry and Biochemistry Arizona State University, Tempe
2006 - 2010	B.S. in Chemistry and Molecular Engineering Peking University, Beijing

AWARDS AND HONORS

2021	NSF CAREER Award
2018	Robert Dirks Molecular Programming Prize (https://dirksprize.caltech.edu/recipients) International Society for Nanoscale Science, Computation and Engineering
2015	Outstanding Graduate Research Assistant, Arizona State University
2012	SUN (Serving University Needs) Award, Arizona State University
2011	Doctoral Student Fellowship, Arizona State University

JOURNAL PUBLICATIONS

[Google Scholar](#) (Citations: 2229, H-Index: 19)

* *Corresponding author*; # *Co-first author*

32. G. Yao[#], F. Zhang[#], F. Wang[#], T. Peng, H. Liu, E. Poppleton, P. Šulc^{*}, S. Jiang, L. Liu, C. Gong, X. Jing, X. Liu, L. Wang, Y. Liu, C. Fan^{*}, H. Yan^{*}. Meta-DNA Structures. **Nature Chemistry** 12, 1067 (2020).
31. C. Simmons, T. MacCulloch, F. Zhang, Y. Liu, N. Stephanopoulos^{*}, H. Yan^{*}. A Self-assembled Rhombohedral DNA Crystal Scaffold with Tunable Cavity Sizes and High-Resolution Structural Detail. **Angewandte Chemie International Edition** 59, 18619 (2020).
30. S. Jiang, F. Zhang, H. Yan^{*}. Complex assemblies and crystals guided by DNA. **Nature Materials** 19, 694 (2020).
29. E. Poppleton, J. Bohlin, M. Matthies, S. Sharma, F. Zhang, P. Šulc^{*}. Design, Optimization, and Analysis of Large DNA and RNA Nanostructures through Interactive Visualization, Editing, and Molecular Simulation. **Nucleic Acids Research** 12, e72 (2020).
28. X. Qi, X. Liu, L. Matiski, R. Del Villar, T. Yip, F. Zhang, S. Sokalingam, S. Jiang, L. Liu, H. Yan, Y. Chang^{*}. RNA Origami Nanostructures for Potent and Safe Anti-Cancer Immunotherapy. **ACS Nano** 14, 4727 (2020).
27. X. Fu, F. Peng, J. Lee, Q. Yang, F. Zhang, M. Xiong, G. Kong, H. Meng, G. Ke, X. Zhang^{*}. Aptamer-Functionalized DNA Nanostructures for Biological Applications. **Topics in Current Chemistry** 378, 21 (2020).
26. X. Jing[#], F. Zhang[#], M. Pan, X. Dai, J. Li, L. Wang, X. Liu, H. Yan, C. Fan. Solidifying Framework Nucleic Acids with Silica. **Nature Protocols** 14, 2416 (2019).
25. Y. Zhou, X. Qi, Y. Liu, F. Zhang^{*}, H. Yan^{*}. DNA Nanoscaffold-Assisted Selection of Femtomolar Bivalent Aptamers for Human α -Thrombin with Potent Anticoagulant Activity. **ChemBioChem** 20, 2494 (2019).

24. H. Jun[#], F. Zhang[#], S. Ratanalert, T. Shepherd, X. Qi, H. Yan, M. Bathe*. Autonomously Designed Free-Form DNA Origami. **Science Advances** 5, eaav0655 (2019).
23. C. Su, J. Weir, F. Zhang, H. Yan, T. Wu*. ENTRNA: A Framework to Predict RNA Foldability. **BMC Bioinformatics** 20, 373 (2019).
22. Y. Xu, S. Jiang, C. Simmons, R. Narayanan, F. Zhang, A. Aziz, H. Yan, N. Stephanopoulos*. Tunable Nanoscale Cages from Self-Assembling DNA and Protein Building Blocks. **ACS Nano** 13, 3545 (2019).
21. X. Qi[#], F. Zhang^{**}, Z. Su[#], S. Jiang, D. Han, Y. Liu, W. Chiu, P. Yin, H. Yan*. Programming Molecular Topologies from Single-stranded Nucleic Acids. **Nature Communications** 9, 4579 (2018).
20. F. Hong, S. Jiang, X. Lan, R. N. Pradeep, P. Sulc, F. Zhang*, Y. Liu*, H. Yan*. Layered-Crossover Tiles with Precisely Tunable Angles for 2D and 3D DNA crystal Engineering. **Journal of the American Chemical Society** 140,14670 (2018).
19. X. Liu[#], F. Zhang[#], X. Jing[#], M. Pan, P. Liu, W. Li, B. Zhu, J. Li, H. Chen, L. Wang, J. Lin, Y. Liu, D. Zhao, H. Yan, C. Fan. Complex Silica Composite Nanomaterials Template with DNA Origami. **Nature** 559, 593 (2018).
18. F. Zhang[#], C. Simmons[#], J. Gates, Y. Liu, H. Yan. Self-assembly of a 3D DNA Crystal Structure with Rationally Designed Six-Fold Symmetry. **Angewandte Chemie International Edition** 130, 12684 (2018).
17. D. Han, X. Qi, C. Myhrvold, B. Wang, M. Dai, S. Jiang, M. Bates, Y. Liu, B. An*, F. Zhang*, H. Yan*, P. Yin*. Single-stranded DNA and RNA Origami. **Science** 358, eaao2648 (2017).
16. C. Simmons, F. Zhang, T. MacCulloch, N. E. Fahmi, N. Stephanopoulos, Y. Liu, N. Seeman, H. Yan. Tuning the Cavity Size and Chirality of Self-Assembling 3D DNA Crystals. **Journal of the American Chemical Society** 139, 11254 (2017).
15. F. Zhang, H. Yan. DNA Self-assembly Scaled Up. **Nature** 552, 34 (2017).
14. F. Zhang, F. Hong, H. Yan. DNA Origami Tiles: Nanoscale Mazes. **Nature Nanotechnology** 12, 189 (2017).
13. F Hong, F. Zhang, Y. Liu, H. Yan. DNA Origami: Scaffolds for Creating Higher Order Structures. **Chemical Reviews** 117, 12584 (2017).
12. C. Simmons, F. Zhang, J. Birktoft, D. Han, Y. Liu, R. Sha, H. Abdallah, C. Hernandez, Y. Ohayon, N. C. Seeman, H. Yan. Construction and Structure Determination of a Self-Assembling DNA Crystal. **Journal of the American Chemical Society** 138, 10047 (2016).
11. R. Veneziano, S. Ratanalert, K. Zhang, F. Zhang, H. Yan, W. Chiu, M. Bathe. Designer Nanoscale DNA Assemblies Programmed from the Top Down. **Science** 352, 1534 (2016).
10. G. Ke, M. Liu, S. Jiang, X. Qi, Y. Yang, S. Wootten, F. Zhang, Z. Zhu, Y. Liu, C. Yang, H. Yan. Directional Regulation of Enzyme Pathways through the Control of Substrate Channeling on a DNA Origami Scaffold. **Angewandte Chemie International Edition** 55, 7483 (2016)
9. W. Li, F. Zhang, Y. Liu, H. Yan. Half Adder Based on DNA Strand Displacement. **Nanoscale** 8, 3775 (2016).
8. F. Zhang, S. Jiang, W. Li, A. Hunt, Y. Liu, H. Yan. Self-Assembly of Complex DNA tessellations. **Angewandte Chemie International Edition** 55, 8860 (2016).
7. F. Zhang, S. Jiang, S. Wu, Y. Li, C. Mao, Y. Liu, H. Yan. Complex Wireframe DNA Origami Nanostructures with Multi-Arm Junction Vertices. **Nature Nanotechnology** 10, 779 (2015).
 - Featured as **cover story** of the September 2015 issue of *Nature Nanotechnology*.
6. X. Ye, F. Zhang, Y. Ma, L. Qi. Brittlestar-Inspired Microlens Arrays Made of Calcite Single Crystals. **Small** 11, 1677 (2015).
5. K. Pan, D. N. Kim, F. Zhang, M. Adendorff, H. Yan, M. Bathe. Lattice-Free Prediction of Three-Dimensional Structure of Programmed DNA Assemblies. **Nature Communications** 5, 5078 (2014).

4. F. Zhang, J. Nangreave, Y. Liu, H. Yan. Structural DNA Nanotechnology: State of the Art and Future Perspective. *Journal of the American Chemical Society* 136, 11198 (2014).
3. Y. Yang, Z. Zhao, F. Zhang, J. Nangreave, Y. Liu, H. Yan. Self-Assembly of DNA Rings from Scaffold Free DNA Tiles. *Nano Letters* 13, 1862 (2013).
2. F. Zhang, Y. Liu, H. Yan. Complex Archimedean Tiling Self-Assembled from DNA Nanostructures. *Journal of the American Chemical Society* 135, 7458 (2013).
1. F. Zhang, J. Nangreave, Y. Liu, H. Yan. Reconfigurable DNA Origami to Generate Quasi-Fractal Patterns. *Nano Letters* 12, 3290 (2012).

PATENT APPLICATIONS

3. F. Zhang, X. Qi, H. Yan, "Highly knotted molecular topologies from single-stranded nucleic acids", Provisional Disclosure
2. X. Liu, X. Qi, F. Zhang, Y. Chang, H. Yan, "RNA nanostructures and methods of making and using RNA nanostructures" PCT/US 18/48973
1. Y. Chang, H. Yan, X. Qi, F. Zhang, "RNA-nanostructured double robots and methods of use thereof", PCT/US 16/954458

INVITED PRESENTATIONS

- | | |
|---------|--|
| 2020/10 | Seminar , Institute for Quantitative Biomedicine, Piscataway, NJ |
| 2020/3 | Seminar , Department of Chemistry, William Paterson University, Wayne, NJ |
| 2019/10 | Seminar , College of Staten Island and Graduate Center, City University of New York, Staten Island, NY |
| 2019/10 | Seminar , Department of Chemistry, New York University, New York, NY |
| 2019/9 | Talk , Peking University- Rutgers University Bilateral Symposium, Peking University, Beijing |
| 2019/5 | Seminar , School of Medicine, Shanghai Jiao Tong University, Shanghai |
| 2019/5 | Seminar , Shanghai Institute of Applied Physics, Chinese Academy of Sciences, Shanghai |
| 2019/4 | Seminar , Department of Chemistry, Tsinghua University, Beijing |
| 2019/2 | Seminar , Department of Chemistry, University of Kentucky, Lexington, KY |
| 2019/1 | Seminar , Department of Chemistry and Chemical Biology, Northeastern University, Boston, MA |
| 2019/1 | Seminar , Department of Chemistry, Rutgers University-Newark, Newark, NJ |
| 2018/4 | Robert Dirks Prize Lecture , 15 th Annual Conference on Foundations of Nanoscience, Snowbird, UT |
| 2017/9 | Talk , 23 rd International Conference on DNA Computing and Molecular Programming, Austin, TX |
| 2013/9 | Talk , 19 th International Conference on DNA Computing and Molecular Programming, Tempe, AZ |

TEACHING AND MENTORING

CLASS TAUGHT

- 26:160:591 **Special Topics in Materials Chemistry: Biomolecular Design and Nanotechnology**
(Fall 2019, Spring 2021)
- 21:160:345 **Physical Chemistry I**
(Fall 2020)

PHD STUDENTS

3. **Xu Leo Chang** Ph.D. Chemistry Department Rutgers University, Newark (2020-Present)
2. **Jungyeon Alice Lee** Ph.D. Chemistry Department Rutgers University, Newark (2019-Present)
1. **Qi Maggie Yang** Ph.D. Chemistry Department Rutgers University, Newark (2019-Present)

M.S. STUDENTS

1. **Alisa Xhambazi** Chemistry Department Rutgers University, Newark (2019-2020)

UNDERGRADUATE RESEARCH MENTORING

4. **Maria Shawky** Chemistry Department Rutgers University, Newark (2020-2021)
3. **Marina Tadrosse** Chemistry Department at Rutgers University, Newark (2019-2020)
2. **Jade Gates** Chemistry Department at Arizona State University (2017-2018) – co-author
1. **Ashley Hunt** Chemistry Department at Arizona State University (2013-2015) – co-author

PHD COMMITTEE

1. **Congzhe Su** School of Computing, Informatics, Decision Systems Engineering at Arizona State University (2015-2018)

PROFESSIONAL SERVICES

SERVICE – UNIVERSITY

- **Admission Committee** for Graduate Program at Rutgers University, Newark (2020 Spring, 2020 Fall, 2021 Spring, 2021 Fall)
- **Panelist** to talks ‘Mentoring: Learn from the Best’, The Biodesign Institute, Tempe, Arizona, 2017

SERVICE - CONFERENCE

- **Program Committee** 27th International Conference on DNA Computing and Molecular Programming, Oxford, UK, 2021
- **Program Committee** 26th International Conference on DNA Computing and Molecular Programming, virtual conference, 2020
- **Faculty committee** 3rd FUSION Scientific Retreat, Carefree, Arizona, 2018
- **Session Chair** 23rd International Conference on DNA Computing and Molecular Programming, Austin, Texas, 2017

SERVICE – PROPOSAL AND MANUSCRIPT REVIEW

- **External reviewer** for Air Force Office of Scientific Research (AFOSR) 2016.
- **Reviewer for journals:**

ACS Applied Materials & Interfaces

ACS Sensors

Advanced Healthcare Materials

Analytical Chemistry

Biomacromolecules

Biophysical journal

Chemical Science

Materials Science and Engineering: R: Reports

Nano Letters

Nano Research

Proceedings of the National Academy of Sciences

RSC Advances

Sensors and Actuators B Chemical

ACS Nano

ACS Synthetic Biology

Analyst

Angewandte Chemie

Biomechanics

Chem

Journal of Visualized Experiments

Nature Chemistry

Nanoscale

Nucleic Acids Research

PLOS ONE

Scientific Reports

Small