

RISHENG WANG, PH.D.

*Department of Chemistry | Missouri University of Science and Technology
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EDUCATION

Columbia University New York, NY Postdoctoral Research Scientist	12/2012
New York University New York, NY Ph.D. in Chemistry Dissertation Advisor: Prof. Nadrian C. Seeman	01/2010
Beijing University of Technology Beijing, China M.S. in Environmental Engineering	07/2003

PROFESSIONAL EXPERIENCE

Associate Professor Department of Chemistry, Missouri University of Science and Technology Member , Center for Biomedical Research, Material Research Center, and Center for Research in Energy and Environment	09/2020 – Present
Assistant Professor Department of Chemistry, Missouri University of Science and Technology	09/2014 – 08/2020
Associate Research Scientist Department of Chemistry, Columbia University	01/2013 – 08/2014
Postdoctoral Research Scientist Department of Chemistry, Columbia University	01/2010 – 12/2012
Research Assistant Department of Chemistry, New York University	09/2006 – 12/2009
Teaching Assistant Department of Chemistry, New York University	09/2003 – 08/2006

RESEARCH INTERESTS

- Designing stimuli-responsive biomaterials for biomedical applications including drug delivery and sensitive biosensing.
- Studying of biomolecular interactions through self-assembled DNA templates at the single molecular level.
- Engineering DNA-based nanostructures to control functional nanomaterials, characterizing their optical and chemical properties for making novel devices and exploring their potential applications in biomedical and material science.
- Developing methodology for merging the lithography nanofabrication techniques with bottom-up self-assembly to fabricate nanomaterial-based devices and biosensors.

PUBLICATIONS (* corresponding author)

1. K. Thapa, W. Liu, Y. Zhang, D. Westenberg, Y. Zhou, and **R. Wang***, “Boosting the power performance of microbial fuel cells by using dual nanomaterial-modified carbon felt electrodes”. *Energy and Fuel*, **2024**, In press.
2. W. Liu, P. Gupta, Y. Zhang, K. Thapa, S. Singamaneni, and **R. Wang***, “DNA origami-assisted regioselective organization of anisotropic gold nanoparticle clusters”. *ACS Appl. Opt. Mater*, **2024**, <https://doi.org/10.1021/acsaom.4c00086>
3. A. Priester, J. Yeng, Y. Zhang, K. Hilmas, **R. Wang**, and A. J. Convertine, “PISA printing microneedles with controllable aqueous dissolution kinetics”. *ACS Appl. Polym. Mater*, **2024**, 6, 1944-1950.
4. A. Priester, J. Yeng, Y. Zhang, **R. Wang**, and A. J. Convertine, “PISA printing from CTA functionalized polymer scaffolds”. *RSC Appl. Polym*, **2024**, 2, 612-623.
5. A. Priester, J. Yeng, Y. Zhang, **R. Wang**, and A. J. Convertine, “3D printing soluble solids via PISA”. *Polymer Chemistry*, **2023**, 14, 2452-2456.
6. S. Han, K. Thapa, W. Liu, D. Westenberg, and **R. Wang***, “Enhancement of electricity production of microbial fuel cells by using DNA nanostructures as electron mediator carriers”. *ACS Sustain. Chem. Eng*, **2022**, <https://doi.org/10.1021/acssuschemeng.2c04399> (**Front cover image**)
7. Y. Zeng, T. Yi, J. Ma, M. Han, X. Xu, D. Chen, X. Chen, **R. Wang**, and Y. Zhan, “Precisely controlled polydopamine-mediated antibacterial system: mathematical model of polymerization, prediction of antibacterial capacity, and promotion of wound healing”. *Nanotechnology*, **2022**, 33, 455102.
8. A. Udomprasert, C. Wootthichairangsan, R. Duangrat, S. Chaithongyot, Y. Zhang, R. Nixon, W. Liu, **R. Wang**, M. Ponglikitmongkol, and T. Kangsamaksin, “Enhanced functional properties of three DNA origami nanostructures as doxorubicin carriers to breast cancer cells”. *ACS Applied Bio Materials*, **2022**, 5, 2262-2272.
9. K. Thapa, W. Liu, and **R. Wang***, “Nucleic acid-based electrochemical biosensor: recent advances in probe immobilization and signal amplification strategies”. *WIREs Nanomedicine and Nanobiotechnology*, **2022**, 14, e1765.
10. S. Yang, W. Liu, Y. Zhang and **R. Wang***, “Bottom-up fabrication of large-scale gold nanorod arrays by surface diffusion mediated DNA origami assembly”. *ACS Appl. Mater. Interfaces*, **2021**, 13, 50516-50523.
11. Y. Zeng*, R. Nixon, W. Liu, and **R. Wang***, “The application of functional DNA nanostructures in bioimaging and cancer therapy”. *Biomaterials*, **2021**, 268, 120560.
12. T. L. Odom, J. R. Blankenship, G. Campos, D. C. Mart, W. Liu, **R. Wang**, and K. Yoshimatsu, “Effect of vortex-induced physical stress on fluorescent properties of dye-containing poly(ethylene glycol)-block-poly (lactic acid) micelles”, *Journal of Applied Polymer*, **2021**,

138 (4), 49743.

13. L. Hui, R. Nixon, N. Tolman, J. Mukai, R. Bai, **R. Wang**, and H. Liu*, "Area-selective atomic layer deposition of metal oxides on DNA nanostructures and its applications". *ACS nano*, **2020**, 14, 10, 13047-13055.
14. S. Han, W. Liu*, M. Zheng and **R. Wang***, "Label-free and ultrasensitive electrochemical DNA biosensors based on urchinlike carbon nanotube-gold Nanoparticle nanoclusters", *Analytical Chemistry* **2020**, 92, 4780-4787. (**Front cover image**)
15. S. Yang, W. Liu and **R. Wang***, "Control of the stepwise assembly-disassembly of DNA origami nanoclusters by pH stimuli-responsive DNA triplexes", *Nanoscale* **2019**, 11, 18026-18030.
16. S. Han, W. Liu*, S. Yang, and **R. Wang***, "Facile and label-free electrochemical biosensors for microRNA detection based on DNA origami nanostructures", *ACS Omega* **2019**, 4 (6) 11025-11031.
17. S. Han, C. Zhou, and **R. Wang**, "Bacillus biocathode improved electricity generation with microbial fuel cells", *TechConnect Briefs* **2019**, 191-194.
18. Y. Zeng, W. Liu, and **R. Wang***, "Bio-inspired polydopamine surface modification of nanodiamonds and its reduction of silver nanoparticles", *Journal of Visualized Experiments* **2018**, e58458.
19. R. Nixon, W. Liu, S. Yang, and **R. Wang***, "Exploring the addressability of DNA decorated multifunctional gold nanoparticles with DNA origami template", *Bioconjugate Chemistry* **2018**, 29 (8) 2520-2525.
20. Y. Zeng, W. Liu, Z. Wang, S. Singamaneni, and **R. Wang***, "Multifunctional surface modification of nanodiamonds based on dopamine polymerization", *Langmuir* **2018**, 34 (13), 4036-4042.
21. S. Yang, W. Liu, R. Nixon, and **R. Wang***, "Metal-ion responsive reversible assembly of DNA origami dimers: G-quadruplex induced intermolecular interaction", *Nanoscale* **2018**, 10 (8), 3626-3630.
22. Y. Zeng, J. Liu, S. Yang, W. Liu, L. Xu, and **R. Wang***, "Time-lapse live cell imaging to monitor doxorubicin release from DNA origami nanostructures", *Journal of Materials Chemistry B* **2018**, 6 (11), 1605-1612. (**Front cover image**)
23. S. Han, C. Zhou, and **R. Wang**, "Growth of carbon nanotube on graphene as efficient air-cathode for highly H₂O₂ producing microbial fuel cell", *TechConnect Briefs* **2018**, 2, 121-124.
24. W. Liu, L. Li, S. Yang, J. Gao and **R. Wang***, "Self-assembly of heterogeneously shaped nanoparticles into plasmonic metamolecules on DNA origami", *Chemistry-A European Journal* **2017**, 23 (57), 14177-14181.
25. **R. Wang***, I. Bowling, and W. Liu, "Cost effective surface functionalization of gold nanoparticles with a mixed DNA and PEG monolayer for nanotechnology applications", *RSC*

Advances **2017**, 7 (7), 3676-3679.

26. **R. Wang***, K. Gorday, C. Nuckolls and S. J. Wind*, "Control of DNA origami inter-tile connection with vertical linkers" *Chemical Communications* **2016**, 52, 1610-1613.
27. E. Penzo, M. Palma, **R. Wang**, H. Cai, M. Zheng and S. J. Wind*, "Directed assembly of end-functionalized single wall carbon nanotube segments", *Nano Letters*. **2015**, 15 (10), 6547-6552.
28. S. J. Wind*, E. Penzo, M. Palma, **R. Wang**, T. Fazio, D. Porath, D. Rotem, G. and L. A. Stern*, "Integrating DNA with functional nanomaterials", *Journal of Self-Assembly and Molecular Electronics* **2013**, 1 (2) 177-194.
29. **R. Wang**, M. Palma, E. Penzo and S. J. Wind*, "Lithographically directed assembly of one-dimensional DNA nanostructures via bivalent binding interactions", *Nano Research* **2013**, 6 (6), 409-417.
30. M. Ye, J. Guillaume, Y. Liu, R. Sha, **R. Wang**, N. C. Seeman* and J. W. Canary*, "Site-specific inter-strand cross-links of DNA duplexes", *Chemical Science* **2013**, 4, 1319-1329.
31. **R. Wang***, C. Nuckolls and S. J. Wind*, "Assembly of heterogeneous functional nanomaterials on DNA origami scaffolds", *Angewandte Chemie International Edition* **2012**, 51, 11325-11327.
32. Y. Liu, **R. Wang**, L. Ding, R. Sha, N. C. Seeman and J. W. Canary*. "Templated synthesis of nylon nucleic acids and characterization by nuclease digestion", *Chemical Science* **2012**, 3, 1930-1937.
33. E. Penzo, **R. Wang**, M. Palma and S. J. Wind*. "Selective placement of DNA origami on substrates patterned by nanoimprint lithography", *Journal of Vacuum Science & Technology B* **2011**, 29(6), 06F205.
34. W. Liu, H. Zhong, **R. Wang**, and N. C. Seeman*. "Crystalline two-dimensional DNA origami arrays", *Angewandte Chemie International Edition* **2011**, 50, 264-267.
35. **R. Wang**, A. Kuzuya, W. Liu and N. C. Seeman*. "Blunt-ended DNA stacking interactions in a 3-Helix motif", *Chemical Communications* **2010**, 46, 495-4907.
36. **R. Wang**, W. Liu and N. C. Seeman*, "Prototyping nanorod control: a DNA helix sheathed within a DNA six-helix bundle", *Chemistry and Biology* **2009**, 16, 862-867.
37. Y. Liu, **R. Wang**, L. Ding, R. Sha, P. S. Lukeman, J. W. Canary and N. C. Seeman*. "Thermodynamic analysis of nylon nucleic acids" *ChemBioChem* **2008**, 9, 1641-1648.
38. Y. Liu, R. Sha, **R. Wang**, L. Ding, J. W. Canary and N. C. Seeman*. "2',2'-Ligation demonstrates the thermal dependence of DNA-directed positional control" *Tetrahedron* **2008**, 64, 8417-8422.
39. Y. Liu, A. Kuzuya, R. Sha, J. Guillaume, **R. Wang**, J. W. Canary, and N. C. Seeman*. "Coupling across a DNA helical turn yields a hybrid DNA/organic catenane doubly tailed with functional

termini" *Journal of the American Chemical Society* **2008**, 130, 10882-10883.

40. A. Kuzuya, **R. Wang**, R. Sha and N. C. Seeman*. "Six-helix and eight-helix DNA nanotubes assembled from half-tubes" *Nano Letters* **2007**, 7(6) 1757-1763.

PRESENTATIONS (Since joining Missouri S&T)

Invited Talks

70. **R. Wang**, "Early disease diagnosis using DNA nanostructure-enhanced electrochemical biosensor", 2024 Midwest Regional Meeting of the American Chemical Society, Nebraska, NE, October 13-15, 2024.
69. **R. Wang**, "The application of DNA nanostructures for drug delivery and biosensing", 2023 Missouri S&T NextGen, OBI Symposium & Poster Session, Rolla, MO, 4/28/2023.
68. **R. Wang**, "Bottom-up fabrication of anisotropic nanoparticle clusters and large-scale arrays by using DNA origami assembly", 2023 ACS Fall conference, San Francisco, CA, August 13-17, 2023.
67. **R. Wang**, "Exploration and Application of DNA nanotechnology", Symposium to honor Nadrian Seeman, New York University, 12/09/2022.
66. **R. Wang**, "Bottom-Up Fabrication of Large-Scale Gold Nanorod Arrays by Surface Diffusion-Mediated DNA Origami Assembly", 96th ACS Colloid and Surface Science Symposium, 2022 Colorado School of Mines, Golden, CO July 10-13, 2022.
65. **R. Wang**, "Label-free and ultrasensitive electrochemical biosensor-based on artificial nanoparticles", 2021 Midwest Regional Meeting of the American Chemical Society, Springfield, MO, October 20-22, 2021.
64. **R. Wang**, "Engineering DNA nanostructures: application from drug delivery to plasmonic metamolecules", Department of Chemistry and Biochemistry, University of Missouri-St Louis, St Louis, February 22, 2021.
63. S. Han, W. Liu, M. Zheng, and **R. Wang**, "Label-free and ultrasensitive electrochemical biosensor based on artificial nanoparticles" 2020 ACS Midwest regional meeting, Missouri State University, Springfield MO, October 21-23, 2020 (cancelled due to COVID-19).
62. **R. Wang**, "DNA-enabled nanofabrication of plasmonic metamolecules from anisotropic metal nanoparticles", NSF Midscale Research Infrastructure workshop, University of Missouri, Columbia MO, August 5-7, 2020.
61. R. Nixon and **R. Wang**, "Exploration and Application of Artificial DNA Nanostructures", Dean's Leadership Council Meeting, College of Arts, Sciences, and Business, Missouri S&T, Rolla MO, October 07, 2019.
60. **R. Wang**, "Engineering DNA nanostructures: application from drug delivery to plasmonic metamolecules", Department of Chemistry, Wichita State University, Wichita KS, September 11, 2019.

59. **R. Wang**, "Engineering DNA nanostructures: application from drug delivery to plasmonic metamolecules", Nanobiology Institute, Yale University, West Haven CT, May 24, 2019.
58. Y. Zeng, W. Liu, and **R. Wang**, "Fabrication of a DNA origami integrated hydrogen peroxide sensing platform", The 16th Annual Conference on the Foundations of Nanoscience: self-assembled architectures and devices (FNANO 2019), Snowbird UT, April 15-18, 2019.
57. **R. Wang**, "Engineering DNA nanostructures: application from drug delivery to plasmonic metamolecules", Department of Chemistry, University of Pittsburgh, Pittsburgh PA, February 25, 2019.
56. **R. Wang**, "Engineering DNA nanostructures: application from drug delivery to plasmonic metamolecules", Department of Physics, University of Missouri, Columbia MO, November 28, 2018.
55. **R. Wang**, "Engineering DNA nanostructures: application from drug delivery to plasmonic metamolecules", Dean's Leadership Council Meeting, College of Arts, Sciences, and Business, Missouri S&T, Rolla MO, October 11, 2018.
54. **R. Wang**, "Engineering DNA nanostructures: application from drug delivery to plasmonic metamolecules", Department of Biology, Missouri State University, Springfield MO, September 21, 2018.
53. **R. Wang**, "Engineering DNA nanostructures: application from drug delivery to plasmonic metamolecules", 3rd International Conference on Nanotechnology and Materials Science, Chengdu, China, July 25-27, 2018 (Keynote speaker).
52. **R. Wang**, "Engineering DNA nanostructures: application from drug delivery to plasmonic metamolecules", Nano World Summit: Current and Future Perspectives, Philadelphia PA, June 6-7, 2018 (Tracking chair).
51. **R. Wang**, "DNA Engineering: from structure to application", W. T. Schrenk Society, Missouri S&T, Rolla MO, November 2, 2017.
50. **R. Wang**, "DNA Engineering: from structure to application", Department of Chemistry, Missouri State University, Springfield MO, September 20, 2017.
49. **R. Wang**, "DNA Engineering: from structure to application", Department of Biological Science, Missouri S&T, Rolla MO, September 26, 2016.
48. **R. Wang**, E. Penzo, M. Palma, and S. J. Wind, "Directed assembly of 1D nanostructures: from DNA motif to CNT", The 13th Annual Conference on the Foundations of Nanoscience: Self-assembled architectures and devices (FNANO 2016), Snowbird UT, April 11-14, 2016.
47. **R. Wang**, "DNA engineering: from structure to application", Department of Mechanical and Aerospace Engineering, University of Missouri, Columbia MO, October 29, 2015.
46. **R. Wang**, "The fabrication of DNA nanostructures and their applications in biotechnology" The 7th Asia-Pacific Biotech Congress, Beijing, China, July 13-15, 2015 (Conference moderator).

45. **R. Wang**, “DNA engineering: from structure to application”, Department of Physics, Missouri S&T, Rolla MO, October 2, 2014.

Conference and other presentations (The presenting author indicated in bold)

44. **Y. Zhang** and R. Wang, “Metallization of DNA nanostructures as building blocks for fabricating nanoelectronic circuits”, 2024 Missouri Inorganic Day, Saint Louis University, MO, 5/11/2024.

43. **K. Thapa**, C. Edward, and R. Wang, “Synthesis and surface functionalization of graphene quantum dots: exploring DNA origami mediated 2D arrays”, 2024 Missouri Inorganic Day, Saint Louis University, MO, 5/11/2024.

42. **C. Bills**, Y. Zhang, and R. Wang, “Functionalized DNA nanostructures as a drug delivery vehicle for cancer therapy”, 2024 FYRE showcase, Missouri S&T, 05/2024.

41. **A. Tantioco**, Y. Zhang, and R. Wang, “Investigation the self-assembly capability of DNA nanostructures via stacking interaction”, 2023 FYRE showcase, Missouri S&T, 05/2023

40. **A. Decker** and R. Wang, “Stability of DNA origami nanostructures to functionalize electrochemical biosensors”, 2023 OURE conference, Missouri S&T, 05/2023.

39. **Y. Zhang**, Y. Li, C. Jie, W. Liu, C. Wu, and R. Wang, “Investigation of Nanomechanical Properties of DNA- Based Nanostructures” 2022 ACS National Meeting & Expositions, oral presentation, Chicago, August 21-25, 2022.

38. **K. Thapa**, W. Liu, and R. Wang, “Nanomaterial-modified electrodes for improving the performance of microbial fuel cell” 2022 ACS National Meeting & Expositions, oral presentation, Chicago, August 21-25, 2022.

37. **K. Thapa**, H. Shuo, W. Liu, and R. Wang, “Nanomaterial-enhanced fabrication of ultrasensitive electrochemical DNA biosensor” FNANO 2022: 19TH Annual Conference Foundations of Nanoscience, Snowbird Utah, April 11-44, 2022.

36. **Y. Zhang**, W. Liu, S. Yang, and R. Wang, “Bottom-up fabrication of large-scale gold nanorod arrays by surface diffusion-mediated DNA origami assembly” FNANO 2022: 19TH Annual Conference Foundations of Nanoscience, Snowbird Utah, April 11-44, 2022.

35. **K. Thapa**, S. Han, W. Liu, and R. Wang, “CBR Symposium: Nanomaterial-based fabrication of ultrasensitive electrochemical DNA biosensor” 2022 Center for Biomedical Research Symposium and Poster session, Missouri S&T, March 4, 2022.

34. **Y. Zhang**, W. Liu, and R. Wang, “Metallization of DNA nanostructures as building blocks for fabricating nanoelectronic circuits” 2021 ACS National Meeting & Expositions, Virtual presentation, April 5-30, 2021.

33. **K. Thapa**, H. Shuo, W. Liu, and R. Wang, “Effect of immobilized methylene blue on the DNA origami as electron carriers in microbial fuel cell” 2021 ACS National Meeting & Expositions, Virtual presentation, April 5-30, 2021.

32. **K. Thapa**, H. Shuo, W. Liu, and R. Wang, "Effect of immobilized methylene blue on the DNA origami as electron carriers in microbial fuel cell" Missouri Academy of Science Meeting, Columbia College, Columbia, MO, April 23-24, 2021.
31. **Y. Zhang**, W. Liu, and R. Wang, "Metallization of DNA nanostructures as building blocks for fabricating nanoelectronic circuits" Missouri Academy of Science Meeting, Columbia College, Columbia, MO, April 23-24, 2021.
30. **K. Thapa**, S. Han, W. Liu, M. Zheng, and R. Wang, "Label-free and ultrasensitive electrochemical biosensor using DNA origami nanostructures and CNT-AuNPs nanoclusters" 2020 ACS Midwest regional meeting, Missouri State University, Springfield MO, October 21-23, 2020, (cancelled due to COVID-19).
29. W. Liu, S. Han, M. Zheng, and **R. Wang**, "Label-free and ultrasensitive electrochemical DNA biosensor based on urchin-like carbon nanotube-gold nanoparticle nanoclusters", The 17th Annual Conference on the Foundations of Nanoscience: self-assembled architectures and devices (FNANO 2020), Snowbird UT, April 6-9, 2020.
28. S. Han, S. Yang, W. Liu, and **R. Wang**, "DNA nanostructure-based label-free detection of cancer miRNA-21 biomarker", Ozark Biomedical Initiative Research Symposium, Rolla MO, September 14, 2019.
27. **R. Wang**, "Engineering DNA nanostructures: application from drug delivery to plasmonic metamolecules", Department of Chemistry, Missouri S&T, Rolla MO, April 29, 2019.
26. Y. Zeng, W. Liu, and **R. Wang**, "Fabrication of DNA origami integrated nanoplatfrom for biosensing and drug delivery" 2018 ACS Midwest regional meeting, Iowa State University, Ames IA, October 21-23, 2018.
25. Y. Zeng, J. Liu, S. Yang, W. Liu, L. Xu, and **R. Wang**, "Time-lapse living cell imaging to monitor doxorubicin release from DNA origami nanostructures", The 256th ACS National Meeting, Boston MA, August 19-23, 2018.
24. W. Liu, L. Li, S. Yang, J. Gao, and **R. Wang**, "Self-assembly of heterogeneously shaped nanoparticles into plasmonic metamolecules on DNA origami", 2017 Materials Research Society, Boston MA, November 26- December 1, 2017.
23. Y. Zeng, J. Liu, S. Yang, W. Liu, L. Xu, and **R. Wang**, "Time-lapse living cell imaging to monitor doxorubicin release from DNA origami nanostructures" 2017 ACS Midwest regional meeting, University of Kansas, Lawrence KS, October 18-20, 2017.
22. **R. Wang**, "Fabrication of DNA nanostructures and their biomedical application" 2016 Ozark Biomedical Initiative Research Symposium (OBIRS), Missouri S&T, Rolla MO, February 27, 2017.
21. **R. Wang**, E. Penzo, M. Palma, and S. J. Wind, "Directed assembly of 1D nanostructures on lithographically patterned surfaces", The 251th ACS National Meeting, San Diego CA, March 13-17, 2016.

20. **R. Wang**, and W. Liu, "DNA nanostructure assisted self-assembly of anisotropic nanoparticles with tunable optical activity" 2016 ACS Midwest regional meeting, Kansas State University, Kansas City KS October 26-28, 2016.
19. **R. Wang**, "DNA engineering: from structure to application", Department of Chemistry, Missouri S&T, Rolla MO, February 16, 2015.
18. S. Han, S. Yang, W. Liu, and **R. Wang**, "DNA nanostructure-based label-free detection of cancer miRNA-21 biomarker", The 25th International Conference on DNA Computing and Molecular Programming (DNA25), Seattle WA, August 5-9, 2019.
17. R. Nixon, W. Liu, S. Yang, and **R. Wang**, "Exploring the addressability of DNA decorated multifunctional gold nanoparticles with DNA origami template", The 16th Annual Conference on the Foundations of Nanoscience: Self-assembled architectures and devices (FNANO 2019), Snowbird UT, April 15-18, 2019.
16. S. Yang, W. Liu, and **R. Wang**, "Control of the stepwise assembly-disassembly of DNA origami nanoclusters by pH stimuli-responsive DNA triplexes", The 16th Annual Conference on the Foundations of Nanoscience: Self-assembled architectures and devices (FNANO 2019), Snowbird UT, April 15-18, 2019.
15. S. Yang, W. Liu, R. Nixon, and **R. Wang**, "Metal-ion responsive reversible assembly of DNA origami dimers: G-quadruplex induced intermolecular interaction", The 15th Annual Conference on the Foundations of Nanoscience: Self-assembled architectures and devices (FNANO 2018), Snowbird UT, April 16-19, 2018.
14. W. Liu, L. Li, S. Yang, J. Gao, and **R. Wang** "Self-assembly of heterogeneously shaped nanoparticles into plasmonic metamolecules on DNA origami", The 14th Annual Conference on the Foundations of Nanoscience: Self-assembled architectures and devices (FNANO 2017), Snowbird UT, April 10-13, 2017.
13. **R. Wang**, K. Gorday, and W. Liu, "DNA nanostructure design and biomedical applications", St. Louis Institute of Nanoscience & Nanomedicine (SLINN2015), University of Missouri-St Louis, St Louis MO, December 12, 2015.
12. **S. Yang**, W. Liu, and R. Wang, "Control of the stepwise assembly-disassembly of DNA origami nanoclusters by pH stimuli-responsive DNA triplexes" The 257th ACS National Meeting, Orlando FL, March 31-April 4, 2019.
11. **S. Han**, S. Yang, W. Liu, and R. Wang, "DNA origami-based label-free biosensor for cancer biomarker miRNA-21 detection" The 257th ACS National Meeting, Orlando FL, March 31-April 4, 2019.
10. **R. Nixon**, W. Liu, S. Yang, and R. Wang, "Exploring the addressability of DNA decorated multifunctional gold nanoparticles with DNA origami template" The 257th ACS National Meeting, Orlando FL, March 31-April 4, 2019.
9. **S. Yang**, W. Liu, S. Yang, and R. Wang, "Control of the stepwise assembly-disassembly of

- DNA origami nanoclusters by pH stimuli-responsive DNA triplexes” 2018 ACS Midwest regional meeting, Iowa State University, Ames IA, October 21-23, 2018.
8. **S. Yang** and R. Wang, “Metal-ion responsive reversible assembly of DNA origami dimers: G-quadruplex induced intermolecular interaction” Missouri Academy of Science annual meeting, Missouri S&T, Rolla MO, April 27-28, 2018.
 7. **S. Yang**, W. Liu, and R. Wang, “Metal-ion responsive reversible assembly of DNA origami dimers: G-quadruplex induced intermolecular interaction” 2017 ACS Midwest regional meeting, University of Kansas, Lawrence KS, October 18-20, 2017.
 6. **S. Yang**, and R. Wang, “Time-lapse living cell imaging to monitor doxorubicin release from DNA origami nanostructures” 2018 Biomedical humanities symposium, Missouri S&T, Rolla MO, April 11, 2018.
 5. **Y. Zeng** and R. Wang, “Time-lapse living cell imaging to monitor doxorubicin release from DNA origami nanostructures” 2017 Ozark Biomedical Initiative Research Symposium (OBIRS), Missouri S&T, Rolla MO, August 19, 2017.
 4. **R. Nixon**, W. Liu, S. Yang, and R. Wang, “Exploring the addressability of DNA decorated multifunctional gold nanoparticles with DNA origami template” Missouri Academy of Science annual meeting, Missouri S&T, Rolla MO, April 27-28, 2018.
 3. **R. Nixon** and R. Wang, “Exploring the addressability of DNA decorated multifunctional gold nanoparticles with DNA origami template” Missouri S&T undergraduate Research Symposium, Rolla MO, April, 2018.
 2. **I. Bowling** and R. Wang, “Bi-functionalization of nanoparticles with DNA and PEG polymers” Missouri S&T undergraduate Research Symposium, Rolla MO, April, 2017.
 1. **K. Gorday** and R. Wang, “Self-assembling of gold nanorod arrays using DNA origami” Missouri S&T undergraduate Research Symposium, Rolla MO, April, 2016.

TEACHING EXPERIENCE

Received “Departmental Tappmeyer Teaching Excellence Award” 2015-2016 & 2016-2017

CHEM 4610/5610[#], Introduction to Biochemistry

CHEM 4630/5630[#], Biochemical Nanotechnology

CHEM 5650, Introduction to Medicinal Chemistry

CHEM 4619, Biochemistry Lab

CHEM 1310, General Chemistry

CHEM 1319, General Chemistry Lab

[#] Combined undergraduate/graduate program

RESEARCH ADVISEES

Graduate Student Mentoring

Shuo Yang (PhD) (Fall 2016 – 2021)
Krishna Thapa (PhD) (Fall 2018 – Summer 2024)
Yuwei Zhang (PhD) (Fall 2019 – present)
Chikadibia Edward (PhD) (Spring 2024 – present)
Emmanuel Oluwarotimi (PhD) (Fall 2021-Fall 2022)
Liam Harrison (MS) (Spring 2022- 2024)

Postdoctoral Researcher Mentoring

Dr. Shuo Han (04/2018 – 10/2019) Postdoc Scientist, University of Missouri-Kansas City
Dr. Yun Zeng (10/2016 – 10/2017) Assistant Professor, Xidian University, Xi'an, China

Undergraduate Student Mentoring

Current Undergraduates

Ethan Keuhn (Fall 2024 – present), Department of Chemistry
Award: OURE 2024
Sindhujaa Jaiganesh (Fall 2024 – present), Department of Biological Science
Award: OURE 2024,

Former Undergraduates

Jesse Camacho (Spring 2022 – Fall 2023), Department of Chemical Engineering
Award: OURE 2022
Autym Decker (Spring 2022 – Fall 2023), Department of Chemistry
Award: OURE 2022, Undergraduate Research Fellow, Summer 2022
Antoni Chadrei Tantioco (Fall 2022 – Spring 2023), Department of Chemistry
Award: FYRE 2023
Taryn Dewey (Fall 2017 – 2020), Department of Chemistry
Award: The Carey and Christine Bottom Fellowship (2019)
Alyssa Weyl (Spring 2019 – 2021), Department of Chemistry
Award: NSF REU student
Dakota Martin (Spring 2020 – 2021), Department of Chemistry
Award: William Hamlet Webb Endowed Scholarship
Rachel Nixon (Spring 2017 – Summer 2020), Department of Chemistry
Admitted graduate student at Chemistry of UIUC at FS2020
Award: South Central Missouri Local Section of the ACS for the Excellence in Undergraduate Research Scholarship (2019)
The Carey and Christine Bottom Fellowship (2018)

Maycie Lubbers (Spring 2019 – Spring 2020), Department of Chemistry

Award: NSF REU student

Isabella Bowling (Spring 2016 – Fall 2017), Department of Biology

Admitted graduate student at Indiana University of Genetic Counseling Program at FS 2019

Henry Meyer (Spring 2016 – Spring 2017), Department of Biology

Kent Gorday (Fall 2014 – Spring 2016), Department of Physics and Applied Mathematics

Award: The 2nd place in Opportunities for Undergraduate Research Experiences (OURE)'s science conference of 2016

The 2nd place in the 45th Harold Q Fuller Prize Colloquium of 2016

Robert A Houston (Spring 2015 – Fall 2015), Department of Chemical and Biochemical Engineering

Jeff Bridges (Spring 2015 – Fall 2015), Department of Chemical and Biochemical Engineering

GRANTS RECEIVED

- Project Title: “DNA-polymer hybrid nanotape loaded with MPG for prevention of cataracts”. Center for Biomedical Research; Award: \$10,000. Funding Period: 07/01/2024-06/30/2025.
- Project Title: “Inclusive culture towards faculty success”, The S&T ADVANCE Team; Award: \$10,000. Funding Period: 1/15/2024-1/14/2025.
- NSF CIF-1814797: Project Title: “SMALL: Toward a molecular computer: scaling up programmable single-molecule junctions based on DNA self-assembly” NSF; Award Amount: \$349,999; Funding Period: 10/01/2018 – 09/30/2023, (Sole-PI).
- NSF CIF-1814797: Project Title: “REU Supplement: SMALL: Toward a molecular computer: scaling up programmable single-molecule junctions based on DNA self-assembly” NSF; Award Amount: \$16,000; Funding Period: 06/01/2019 – 05/31/2023, (Sole-PI).
- Project Title: “New Biomedical Research Core Facility: The Bio-CURE Lab at Missouri S&T” Office of Research of Missouri S&T; Award: \$570,000. Funding Period: 07/01/2019-06/31/2022, (Co-PI).
- Project Title “Green Antibiotic Testing & Validation” IVOGEN INC; Award Amount: \$36,571; Funding Period: 09/01/2018 – 12/31/2021, (Co-PI).
- Project Title “Rapid and Ultrasensitive Diagnosis of Traumatic Brain Injury by Using DNA-nanoparticle-assisted novel electrochemical biosensor” Ozark Biomedical Initiative; Award Amount: \$18,933; Funding Period: 11/01/2020 – 10/31/2021, (PI).
- Project Title: “New material characterization by OEA, GFAA, ICP-AES, and ion chromatography” Brewer Science; Award Amount: \$4,812; Funding Period: 04/01/2019 – 09/30/2020, (Sole-PI).

- Project Title: *“DNA-based targeted drug delivery for breast cancer therapy”* Center for Biomedical Research of Missouri S&T; Award Amount: \$15,000; Funding Period: 01/01/2019 – 06/30/2020, (PI).
- Project Title: *“New material characterization by SPME-GC-MS, and OEA”* Brewer Science; Award Amount: \$3,513; Funding Period: 10/01/2018 – 06/30/2019, (Sole-PI).
- Project Title: *“Exploring the scanning capability of TT-2 AFM for imaging DNA origami in solution”* AFM Workshop; Award Amount: \$4,872; Funding Period: 09/01/2018 – 02/28/2019, (Sole-PI).
- Project Title: *“Nanomanufacturing: “Bottom-up self-assembly with biomolecules”* Best-In-Class Pilot Study Program in College of Arts, Sciences, and Business of Missouri S&T; Award Amount: \$14,800; Funding Period: 07/01/2017 – 06/30/2018, (Sole-PI).
- Project Title: *“DNA-Mediated self-assembly of anisotropic nanoparticle superstructures”* MRC Young Investigator Award of Missouri S&T; Award Amount: \$7,500; Funding Period: 10/01/2016 – 06/30/2017, (Sole-PI).
- Project Title: *“DNA directed self-assembly of nanodiamonds for biomedical applications”* University of Missouri Research Board; Award Amount: \$56,397; Funding Period: 06/30/2016 – 11/30/2017, (Sole-PI).
- Project Title: *“Engineering DNA nanostructures as a smart drug delivery carrier for cancer therapy”* Center for Biomedical Science and Engineering of Missouri S&T; Award Amount: \$15,910; Funding Period: 01/01/2016 – 12/31/2016, (PI).

SERVICE AND COMMUNITY ACTIVITIES

Department

- Chair of Personnel Committee, MST Chemistry Department, (2022-2023).
- Chair of Graduate Recruitment Committee, MST Chemistry Department, (2022-2023)
- Member of Personnel Committee, MST Chemistry Department, (2020-2023).
- Member of Graduate Recruitment Committee, MST Chemistry Department, (2014-2024).
- Member of Undergraduate Recruitment Committee, MST Chemistry Department (2019 – present).
- Member of Graduate Affairs Committee, MST Chemistry Department, (2016 – 2017, 2024-present).
- ADVANCE Advocates of Chemistry, (2022-Present)

Campus or College level

- Missouri S&T Bio-X engineering undergraduate degree program committee (2020-2024).
- Missouri S & T pre-medicine advisory committee (2015 – present).

- Interviewer: The Chancellor’s Scholarship of High School Seniors, UM system (2014 – present).
- Speaker: Minority Introduction to Technology and Engineering camp (summer of 2015).
- Host: Missouri S& T Kummer Center for STEM Education (2022, 2023, and 2024)

Professional Service

- Chair: The ACS South Central Missouri Section (2020 – 2021).
- Committee: The ACS South Central Missouri Section (2014 – present).
- Chair-Elect: The ACS South Central Missouri Section (2019).
- Organizer: American Chemical Society South Central Missouri Local Section, National Chemistry Week presentation of DNA nanotechnology in Dr. Wang’s lab (2019).
- American Chemical Society South Central Missouri Local Section National Chemistry Week Organizing Committee (2015).

Grant Review Service

- Proposal Panelist: National Science Foundation (2016-present).
- Ad Hoc Reviewer: ACS Petroleum Research Fund (2019 and 2020).
- Ad Hoc Reviewer: National Science Center-Poland (2019).
- Ad Hoc Reviewer: National Research Foundation of Korea, Korea-U.S. Science Cooperation Center (KUSCO) (2018).
- Ad Hoc Reviewer: University of Nebraska Collaboration Initiative Proposal (2018).
- Ad Hoc Reviewer: University of Missouri Research Board Proposal (2016).

PROFESSIONAL AFFILIATIONS

- American Chemical Society 2008 – present
- The ACS South Central Missouri Local Section 2014 – present; Chair: 2020
- International Society for Nanoscale Science, Computation and Engineering 2009 – present
- Materials Research Society 2017 – present

FELLOWSHIP & AWARDS

- Faculty Research Award of CASB at Missouri S&T 2020
- Faculty Success Program Scholarship-University of Missouri System 2018
- Tappmeyer Excellence in Teaching Chemistry, Missouri S&T 2016 – 2017
- University of Missouri Faculty Scholars 2015 – 2016
- Tappmeyer Excellence in Teaching Chemistry, Missouri S&T 2015 – 2016
- Outstanding services to 7th Asia-Pacific Biotech Congress 2015

MEDIA COVERAGE

- “Researchers create unique DNA biosensor for early stage disease detection”, S. Yang, W. Liu, M. Zheng, and R. Wang, 04/07/2020.
<https://news.mst.edu/2020/04/researchers-create-unique-dna-biosensor-for-early-stage-disease-detection/>
- “Researchers discover new accuracies in cancer-fighting, nano drug delivery”, Y. Zeng, W. Liu, S. Yang, and R. Wang (Missouri S&T), J. Liu, and L. Xu (University of Kansas), 03/21/2018.
<https://news.mst.edu/2018/03/researchers-discover-new-accuracies-in-cancer-fighting-nano-drug-delivery/>
- “Chemistry undergraduate completes summer fellowship with gratitude and a published, peer-reviewed paper”, R. Nixon, W. Liu, S. Yang, and R. Wang, Missouri S&T, 08/29/2018.
<https://news.mst.edu/2018/08/chemistry-undergraduate-completes-summer-fellowship-with-gratitude-and-a-published-peer-reviewed-paper/>
- “Wang to lead \$350,000 NSF project”, Missouri S&T, 08/31/2018.
<https://econnection.mst.edu/2018/08/wang-to-lead-350000-nsf-project/>