Xiaohu Xia, Ph.D.

Associate Professor, Department of Chemistry
NanoScience Technology Center (Secondary joint appointment)
University of Central Florida, Orlando, Florida 32816
Phone: 407-823-2441; Email: Xiaohu.Xia@ucf.edu

I. EMPLOYMENT

08/2021-present	Associate Professor, University of Central Florida
05/2018-08/2021	Assistant Professor, University of Central Florida
08/2014-05/2018	Assistant Professor, Michigan Technological University

II. EDUCATION & TRAINING

01/2012-08/2014	Postdoc	Biomedical Engineering, Georgia Institute of Technology
10/2009-12/2011	Visiting PhD	Biomedical Engineering, Washington University in St. Louis
09/2006-12/2011	PhD	Biochemistry and Molecular Biology, Xiamen University

III. RESEARCH INTERESTS

Xia's research focuses on developing advanced functional nanomaterials and applying them to technologically important applications, including medical diagnostics, biosensing, and food safety.

IV. HONORS & AWARDS

2023 UCF Teaching Incentive Program award, UCF
2023 UCF Research Incentive Award, UCF
2022 Excellence in Undergraduate Teaching Award, College of Sciences, UCF
2022 Invited Speaker, Gordon Research Conference (GRC), Noble Metal Nanoparticles
2021 Scialog Fellow, Research Corporation for Science Advancement
2020 NIFA competitive grant award, National Institute of Food and Agriculture, USDA
2020 Outstanding Chemist, Orlando Section, American Chemical Society (ACS)
2019 Recognition of Early Career Grant Recipients, University of Central Florida
2018 Emerging Investigator, *Journal of Materials Chemistry B*, Royal Society of Chemistry
2018 Up-and-Coming Series of perspectives, *Chemistry of Materials*, ACS
2018 NSF CAREER Award (awarded in 2017, transferred to UCF in 2018)
2017 Portage Health Foundation (PHF) Research Award
2017 Research Excellence Fund Award, Michigan Technological University

V. PEER-REVIEWED PUBLICATIONS

Total citations: 9,276; h-index: 40; 28 papers with citations >100 times (Google Scholar, 2/2023)

[#] Graduate students; [§] Undergraduate student; * Corresponding author

At UCF (2018 - present):

67. Wei, Z.[#]; Luciano, K.[§]; **Xia, X.*** Catalytic gold-iridium nanoparticles as labels for sensitive colorimetric lateral flow assay. *ACS Nano*, 2022, *16*, 21609–21617.
66. Xi, Z.; Gao, W.[#]; Biby, A.[#]; Floyd, A.[§]; **Xia, X.*** Ultrasmall iridium nanoparticles as efficient peroxidase mimics for colorimetric bioassays. *ACS Applied Nano Materials*, 2022, *5*, 6089–6093.
65. Shao, S.[#]; Zhu, X.[#]; Ten, V.[§]; Kim, M.J.; **Xia, X.*** Understanding the impact of wall thickness on thermal stability of silver–gold nanocages. *Journal of Physical Chemistry C*, 2022, *126*, 7337–

7345. (**Invited** article, special issue on Nanophotonics for Chemical Imaging and Spectroscopy)
64. Biby, A.[#]; Crawford, H.[§]; **Xia, X.*** Platinum-group metal nanoparticles as peroxidase mimics: implications for biosensing. *ACS Applied Nano Materials*, 2022, *5*, 17622–17631.
63. Biby, A.[#]; Wang, X.; Liu, X.; Roberson, O.[§]; Henry, A.[#]; **Xia, X.*** Rapid testing for coronavirus disease 2019 (COVID-19). *MRS Communications*, 2022, *12*, 12–23. (**Invited** perspective article)
62. Luciano, K.[§]; Wang, X.; Liu, Y.; Eyler, G.[#]; Qin, Z.; **Xia, X.*** Noble metal nanoparticles for point-of-care testing: recent advancements and social impacts. *Bioengineering*, 2022, *9*, 666. (**Invited** review)
61. Xi, Z.; Wei, K.[#]; Wang, Q.[#]; Kim, M.J.; Sun, S.; Fung, V.; **Xia, X.*** Nickel–platinum nanoparticles as peroxidase mimics with a record high catalytic efficiency. *Journal of the American Chemical Society*, 2021, *143*, 2660–2664. (It was selected as one of the journal **cover stories**; it was **reported** by UCF Today, and it was **highlighted** by EurekAlert at the American Association for the Advancement of Science (AAAS) and by WFTV Channel 9 Orlando)
60. Gao, Z.; Shao, S.[#]; Gao, W.[#]; Tang, D.; Tang, D.; Zou, S.; Kim, M. J.; **Xia, X.*** Morphology-invariant metallic nanoparticles with tunable plasmonic properties. *ACS Nano*, 2021, *15*, 2428–2438.
59. Xi, Z.; Cheng, X.[#]; Gao, Z.; Wang, M.[#]; Cai, T.; Muzzio, M.; Davidson, E.[#]; Chen, O.; Jung, Y.; Sun, S.; Xu, Y.; **Xia, X.*** Strain effect in palladium nanostructures as nanozymes. *Nano Letters*, 2020, *20*, 272–277.
58. Gao, Z.; Ye, H.[#]; Wang, Q.[#]; Kim, M.; Tang, D.; Xi, Z.; Wei, Z.[#]; Shao, S.[#]; **Xia, X.*** Template regeneration in galvanic replacement: A route to highly diverse hollow nanostructures. *ACS Nano*, 2020, *14*, 791–801. (It was **reported** by UCF Today, ScienceDaily, and Phys.org etc.)
57. Wei, Z.[#]; Xi, Z.; Vlasov, S.[§]; Ayala, J.[§]; **Xia, X.*** Nanocrystals of platinum-group metals as peroxidase mimics for in vitro diagnostics. *Chemical Communications*, 2020, *56*, 14962–14975. (**Invited Feature Article**)
56. Xi, Z.; Gao, W.[#]; **Xia, X.*** Size effect in Pd-Ir core-shell nanoparticles as nanozymes. *ChemBioChem*, 2020, *21*, 2440–2444. (**Invited** article, Special Issue on Inorganic Enzyme Mimics)
55. Davidson, E.[#]; Xi, Z.; Gao, Z.; **Xia, X.*** Ultrafast and sensitive colorimetric detection of ascorbic acid with Pd-Pt core-shell nanostructure as peroxidase mimic. *Sensors International*, 2020, *1*, 100031. (**Invited** article, Special Issue on Nanoparticles and Nanostructures for Sensing and Diagnostic Applications)
54. Wang, M.[#]; Shawkat, M.S.; Xi, Z.; **Xia, X.**; Lee, K.S.; Son, D.I.; Bae, T.; Ryu, H.I.; Chung, H.; Jung, Y. Controllable synthesis of platinum diselenide (PtSe2) inorganic fullerene. *Journal of Materials Chemistry A,* 2020, *8*, 18925–18932.
53. Wang, Y.; Gao, Z.; Liu, B.; **Xia, X.*** Peroxidase-AgAu hybrid nanocages as signal transducers for sensitive plasmonic colorimetric sensing. *Journal of Materials Chemistry C*, 2019, *7*, 15179–15187. (**Back cover** story; highlighted as one of the 2019 JMC C **HOT Papers**)
52. Wang, Y.; Biby, A.[§]; Xi, Z.; Liu, B.; Rao, Q.; **Xia, X.*** One-pot synthesis of single-crystal palladium nanoparticles with controllable sizes for applications in catalysis and biomedicine. *ACS Applied Nano Materials*, 2019, *2*, 4605–4612.
51. Ye, H.[#]; Xi, Z.; Magloire, K.[§]; **Xia, X.*** Noble-metal nanostructures as highly efficient peroxidase mimics. *ChemNanoMat*, 2019, 5, 860–868. (**Invited** Mini Review)
50. Xi, Z.; Ye, H.[#]; **Xia, X.*** Engineered noble-metal nanostructures for in vitro diagnostics. *Chemistry of Materials*, 2018, *30*, 8391–8414. (**Invited "Up and Coming" series perspective**)
49. Ye, H.[#]; **Xia, X.*** Enhancing the sensitivity of colorimetric lateral flow assay (CLFA) through signal amplification techniques. *Journal of Materials Chemistry B*, 2018, *6*, 7102–7111. (For the **2018 Emerging Investigator** themed issue)

Prior to UCF (2009-2017):

48. Wan, S.; Ye, H.; **Xia, X.*** Pd-Ru bimetallic nanocrystals with a porous structure and their enhanced catalytic properties. *Particle & Particle Systems Characterization*, 2018, *5*, 1700386. (**Invited** article for special issue "Bimetallic Nanoparticles")
47. Gao, Z.; Tao, J.; Tang, D.; Habibi, S.; Minerick, A.; Tang, D.; **Xia, X.*** Platinum decorated gold nanoparticles with dual functionalities for ultrasensitive *in vitro* diagnostics. *Nano Letters*, 2017, *17*, 5572–5579. (It was highlighted by the **NSF Science360 News** as a **top story**)
46. Ye, H.; Yang, K.; Tao, J.; Liu, Y.; Zhang, Q.; Habibi, S.; Nie, Z.; **Xia, X.*** An enzyme-free signal amplification technique for ultrasensitive colorimetric assay of disease biomarkers. *ACS Nano*, 2017, *11*, 2052–2059.
45. Li, J.; Gao, Z.; Ye, H.; Wan, S.; Pierce, M.; Tang, D.; **Xia, X.*** A non-enzyme cascade amplification strategy for colorimetric assay of disease biomarkers. *Chemical Communications*, 2017, *56*, 9055–9058. (**Cover feature**. It was also highlighted as a **hot article**)
44. Gao, Z.; Liu, G.G.; Ye, H.; Rauschendorfer, R.; Tang, D.; **Xia, X.*** Facile colorimetric detection of silver ions with picomolar sensitivity. *Analytical Chemistry*, 2017, *89*, 3622–3629.
43. Ye, H.; Liu, Y.; Chhabra, A.; Lilla, E.; **Xia, X.*** Polyvinylpyrrolidone (PVP)-capped Pt nanocubes with superior peroxidase-like activity. *ChemNanoMat*, 2017, *3*, 33–38. (**Invited** article; It was highlighted as a **back cover**)
42. Ye, H.; Wang, Q.; Catalano, M.; Lu, N.; Vermeylen, J.; Kim, M. J.; Liu, Y.; Sun, Y.; **Xia, X.*** Ru nanoframes with an fcc structure and enhanced catalytic properties. *Nano Letters*, 2016, *16*, 2812–2817. (It was **highlighted** by *C&EN* News in the issue of March 28, 2016 and U.S. DOE Office of Science on April 4, 2016)
41. Ye, H.; Mohar, J.; Wang, Q..; Catalano, M.; Kim, M.; **Xia, X.*** Peroxidase-like properties of Ruthenium nanoframes. *Science Bulletin*, 2016, *61*, 1739–1745. (**Invited** article; **Cover feature**)
40. **Xia, X.**;* Zhang, J.; Lu, N.; Kim, M. J.; Ghale, K.; Xu, Y.; Mckenzie, E.; Liu, J.; Ye, H. Pd-Ir core-shell nanocubes: A type of highly efficient and versatile peroxidase mimic. *ACS Nano*, 2015, *9*, 9994–10004. (It was **highlighted** by U.S. DOE office of science and U.S. CDC in Sept. 2015)
39. **Xia, X.**;* Zhang, J.; Sawall, T. A simple colorimetric method for the quantification of Au(III) ions and its use in quantifying Au nanoparticles. *Analytical Methods*, 2015, *7*, 3671–3675.
38. Xia, Y.; Gilroy, K.D.; Peng, H.-C.; **Xia, X.** Seed-mediated growth of colloidal metal nanocrystals. *Angewandte Chemie International Edition*, 2017, *56*, 60–95. (Invited review article)
37. Xia, Y.;* **Xia, X.**; Peng, H.-C. Shape-controlled synthesis of colloidal metal nanocrystals: thermodynamic versus kinetic products. *Journal of the American Chemical Society*, 2015, *137*, 7947–7966. (Invited perspective article)
36. Choi, S.-I.; Herron, J. A.; Scaranto, J.; Huang, H.; Wang, Y.; **Xia, X.**; Lv, T.; Park, J.; Peng, H.; Xia, Y. A comprehensive study of formic acid oxidation on palladium nanocrystals with different types of facets and twin defects. *ChemCatChem*, 2015, *7*, 2077–2084.
35. **Xia, X.**; Figueroa-Cosme, L.; Tao, J.; Peng, H.-C.; Niu, G.; Zhu, Y.; Xia, Y. Facile synthesis of iridium nanocrystals with well-controlled facets using seed-mediated growth. *Journal of the American Chemical Society*, 2014, *136*, 10878–10881.
34. **Xia, X.**; Xia, Y. Gold nanocages as multifunctional materials for nanomedicine. *Frontiers of Physics*, 2014, 9, 378–384.
33. Xu, Y.; Liu, Y.; Wu, Y.; **Xia, X.**; Liao, Y.; Li, Q. Fluorescent probe-based lateral flow assay for multiplex nucleic acid detection. *Analytical Chemistry*, 2014, *86*, 5611–5614.
32. Moran, C. H.; Rycenga, M.; **Xia, X.**; Cobley, C. M.; Xia, Y. Using well-defined Ag nanocubes as substrates to quantify the spatial resolution and penetration depth of SERS imaging. *Nanotechnology*, 2014, *25*, 014007.
31. **Xia, X.**; Xie, S.; Liu, M.; Peng, H.-C.; Lu, N.; Wang, J.; Kim, M. J.; Xia, Y. On the role of

surface diffusion in determining the shape or morphology of noble-metal nanocrystals. *Proceedings of the National Academy of Sciences USA (PNAS)*, 2013, *110*, 6669–6673. (Highlighted in *C&EN News*, April 15, 2013, and many other news media)

30. **Xia, X.**; Choi, S. I.; Herron, J. A.; Lu, N.; Scaranto, J.; Peng, H.-C.; Wang, J.; Mavrikakis, M.; Kim, M. J.; Xia, Y. Facile synthesis of Pd right bipyramids and their use as seeds for overgrowth and as catalysts for formic acid oxidation. *Journal of the American Chemical Society*, 2013, *135*, 15706–15709.
29. **Xia, X.**; Wang, Y.; Ruditskiy, A.; Xia, Y. Galvanic replacement: A simple and versatile route to metal nanostructures with tunable and well-controlled. *Advanced Materials*, 2013, *25*, 6313–6333 (for the 25th anniversary issue of *Advanced Materials*)
28. **Xia, X.**; Rycenga, M.; Qin, D.; Xia, Y. A silver nanocube on a gold microplate as a well-defined and highly active substrate for SERS detection. *Journal of Materials Chemistry C*, 2013, *1*, 6145–6150.
27. **Xia, X.**; Xu, Y.; Ke, R.; Zhang, H.; Yang, W.; Zou, M.; Li, Q. A highly sensitive europium nanoparticle-based lateral flow immunoassay for detection of chloramphenicol residue. *Analytical and Bioanalytical Chemistry*, 2013, *405*, 7541–7544.
26. **Xia, X.**; Li, W.; Zhang, Y.; Xia, Y. Silica-coated dimers of silver nanospheres as SERS tags for imaging cancer cells. *Interface Focus*, 2013, *3*, 20120092.
25. Xia, Y.; **Xia, X.**; Wang, Y.; Xie, S. Shape-controlled synthesis of metal nanocrystals. *MRS Bulletin*, 2013, *38*, 335–344. (Invited review article)
24. Peng, H.-C.; Xie, S.; Park, J.; **Xia, X.**; Xia, Y. Quantitative analysis of the coverage density of Br^- ions on Pd{100} facets and its role in controlling the shape of Pd nanocrystals. *Journal of the American Chemical Society*, 2013, *135*, 3780–3783.
23. Choi, S. I.; Xie, S.; Shao, M.; Odell, J. H.; Lu, N.; Peng, H.-C.; Protsailo, L.; Guerrero, S.; Park. J.; **Xia, X.**; Wang, J.; Kim, M. J.; Xia, Y. Synthesis and characterization of 9-nm Pt-Ni octahedra with a record high activity of 3.3 A/mgPt for the oxygen reduction reaction. *Nano Letters*, 2013, *13*, 3420–3425. (Highlighted at http://nanotechweb.org/cws/article/tech/54111)
22. Wang, Y.; Wan, D.; Xie, S.; **Xia, X.**; Huang, C. Z.; Xia, Y. Synthesis of silver octahedra with controlled sizes and optical properties via seeded growth. *ACS Nano*, 2013, *7*, 4586–4594.
21. Wang, Y.; Liu, Y.; Luehman, H.; **Xia, X.**; Wan, D.; Cutler, C.; Xia, Y. Radioluminescent Au nanocages with controlled radioactivity for real-time multimodality imaging. *Nano Letters*, 2013, *13*, 581–585. (It was highlighted at http://nanotechweb.org/cws/article/tech/52479)
20. Wan, D; **Xia, X.**; Wang, Y; Xia, Y. Robust synthesis of gold cubic nanoframes through a combination of galvanic replacement, gold deposition, and silver dealloying. *Small*, 2013, 9, 3111–3117.
19. Moran, C. H.; **Xia, X.**; Xia, Y. Improving correlated SERS measurements with scanning electron microscopy: An assessment of the problem arising from the deposition of amorphous carbon. *Physical Chemistry Chemical Physics*, 2013, *15*, 5400–5406.
18. Xie, S.; Choi, S.-I; **Xia, X.**; Xia, Y. Catalysis on faceted noble-metal nanocrystals: Both shape and size matter. *Current Opinion in Chemical Engineering*, 2013, *2*, 142–150.
17. **Xia, X.**; Xia, Y. Symmetry breaking during seeded growth of nanocrystals. *Nano Letters*, 2012, *12*, 6038–6042.
16. **Xia, X.**; Zeng, J.; Otejen, L. K.; Li, Q.; Xia, Y. Quantitative analysis of the role played by poly(vinylpyrrolidone) in seed-mediated growth of silver nanocrystals. *Journal of the American Chemical Society*, 2012, *134*, 1793–1801.
15. **Xia, X.**; Yang, M.; Wang, Y.; Zheng, Y.; Li, Q.; Chen, J.; Xia, Y. Quantifying the coverage density of poly(ethylene glycol) chains on the surface of gold nanostructures. *ACS Nano*, 2012, *6*, 512–522.
14. **Xia, X.**; Zeng, J.; Zhang, Q.; Moran, C. H.; Xia, Y. Recent developments in shape-controlled

synthesis of silver nanocrystals. *Journal of Physical Chemistry C*, 2012, *116*, 21647–21656. (It was highlighted on the cover)

13. Zhou, Y.;† **Xia, X.**;† (†equal contribution) Xu, Y.; Ke, W.; Y, Wei.; Li, Q. Application of Eu(III) chelates-bonded silica nanoparticles in time-resolved immunofluorometric detection assay for human thyroid stimulating hormone. *Analytica Chimica Acta*, 2012, *722*, 95–99.
12. Wang, Y.; Liu, Y.; Luehman, H.; **Xia, X.**; Brown, P. K.; Jarreau, C.; Welch, M. J.; Xia, Y. Evaluating the pharmacokinetics and in vivo cancer targeting capability of Au nanocages by positron emission tomography imaging. *ACS Nano*, 2012, *6*, 5880–5888.
11. Wang, Y.; Xu, J.; **Xia, X.**; Yang, M.; Vangveravong, S.; Chen, J.; Mach, R. H.; Xia, Y. SV119-gold nanocage conjugates: A new platform for targeting cancer cells via sigma-2 receptors. *Nanoscale*, 2012, *4*, 421–424.
10. Zhang, Q.; Moran, C. H.; **Xia, X.**; Rycenga, M.; Li, N.; Xia, Y. Synthesis of Ag nanobars in the presence of single-crystal seeds and a bromide compound, and their SERS properties. *Langmuir*, 2012, *28*, 9047–9054.
9. Zeng, J.; **Xia, X.**; Zhang, Q.; Wang, Y.; Xia, Y. Controlling the evolution of cubic Ag seeds into nanocrystals with different morphologies. *Scientia Sinica Chimica*, 2012, *42*, 1505–1512. (Invited review article)
8. **Xia, X.**; Zeng, J.; McDearmon, B.; Zheng, Y.; Li, Q.; Xia, Y. Silver nanocrystals with concave surfaces and their optical and surface-enhanced Raman scattering properties. *Angewandte Chemie International Edition*, 2011, *50*, 12542–12546. (It was highlighted on the inside cover)
7. **Xia, X.**; Yang, M.; Oetjen, L. K.; Zhang, Y.; Li, Q.; Chen. J.; Xia, Y. An enzyme-sensitive probe for photoacoustic imaging and fluorescence detection of protease activity. *Nanoscale*, 2011, *3*, 950–953. (It was highlighted as a hot paper)
6. Zeng, J.;† **Xia, X.**;† (†equal contribution) Rycenga, M.; Henneghan, P.; Li, Q.; Xia, Y. Successive deposition of silver on silver nanoplates: Lateral versus vertical growth. *Angewandte Chemie International Edition*, 2011, *50*, 244–249. (It was selected by the editors as a VIP article)
5. Rycenga, M.;† **Xia, X.**;† (†equal contribution) Moran, C.; Zhou, F.; Qin, D.; Li, Z.-Y.; Xia, Y. Generation of hot spots with silver nanocubes for single-molecule detection by surface-enhanced Raman scattering. *Angewandte Chemie International Edition*, 2011, *50*, 5473–5477. (It was highlighted as a hot paper)
4. Xia, Y.; Li, W.; Cobley, C. M.; Chen, J.; **Xia, X.**; Zhang, Q.; Yang, M.; Cho, E. C.; Brown, P. K. Gold Nanocages: from synthesis to theranostic applications. *Accounts of Chemical Research* 2011, *44*, 914–924. (Invited review article, it was also highlighted in C&EN News, Sept. 26th)
3. Zhang, H.; **Xia, X.**; Li, W.; Zeng, J.; Dai, Y.; Yang, D.; Xia, Y. Facile synthesis of five-fold, starfish-like rhodium nanocrystals by eliminating oxidative etching with a chloride-free precursor. *Angewandte Chemie International Edition*, 2010, *49*, 5296–5300. (It was highlighted in *Nature Materials*, 2010, 9, p. 605)
2. Ke, R.; Yang, W.; **Xia, X.**; Xu, Y.; Li, Q. Tandem conjugation of enzyme and antibody on silica nanoparticle for enzyme immunoassay. *Analytical Biochemistry*, 2010, *406*, 8–13.
1. **Xia, X.**; Xu, Y.; Zhao, X.; Li, Q. Lateral flow immunoassay using europium chelate-loaded silica nanoparticles as labels. *Clinical Chemistry*, 2009, *55*, 179–182.

VI. INVITED PRESENTATIONS

At national and international conferences

1. "Catalytic Inorganic Nanoparticles with Enzyme-Like Activities", American Chemical Society (ACS) National Meeting, Indianapolis, IN, USA, March 2023 (Invited talk).
2. "Plasmonic Hollow Nanoparticles: Synthesis and Applications in Biosensing", American Chemical Society (ACS) National Meeting, Indianapolis, IN, USA, March 2023 (Invited talk).

3. "Hollow Metallic Nanoparticles with Unique Structures and Outstanding Plasmonic Properties", Materials Research Society (MRS) National Meeting, San Francisco, CA, USA, April 2023 (Invited talk).
4. "Nanostructures with enzymatic activities for in vitro diagnostics", Gordon Research Conference, Noble Metal Nanoparticles, South Hadley, MA, USA, June 2022 (Invited talk).
5. "Nanozymes: design, synthesis, and applications in bioassays", American Chemical Society (ACS) Northeast Regional Meeting 2022 Rochester, NY, USA, October 2022 (Keynote Speaker).
6. "Bioreceptors-conjugated catalytic nanoparticles for in vitro diagnostics" American Chemical Society (ACS) National Meeting, San Diego, CA, USA, March 2022.
7. "A sensitive lateral flow assay for point-of-care testing of emerging zoonotic diseases", Scialog - Mitigating Zoonotic Threats Conference, Tucson, AZ, USA, September 2022 (Invited).
8. "Nanoscale peroxidase mimics: design, synthesis and applications in biosensing", Pacifichem Congress, Honolulu, Hawaii, USA, December 2021 (Invited talk).
9. "Plasmonic nanoparticles with unique structures for biosensing", Materials Research Society (MRS) National meeting, USA, virtual meeting, April 2021 (Invited talk).
10. "Simple and sensitive immunodetection of animal-derived adulterants in foods using catalytic nanoparticles", 2021 AFRI Nanotechnology Annual Grantees' Conference, October 2021.
11. "Catalytic nanoparticles as labels for biosensing", SciX 2019 Conference, Palm Springs, CA, USA, October 2019 (Invited talk).
12. "Metallic nanostructures for medical diagnostics", Division of Analytical Chemistry, 258th American Chemical Society (ACS) National Meeting, San Diego, CA, USA, August 2019 (Invited talk).
13. "Noble-metal nanostructures as artificial enzymes: controlled synthesis and electron microscope characterizations", Microscopy & Microanalysis 2018 Meeting, Baltimore, MD, USA, August 2018 (Invited talk).
14. "Metal nanocrystals as peroxidase mimics for biosensing applications", Division of Analytical Chemistry, 256th American Chemical Society (ACS) National Meeting, Boston, MA, USA, August 2018 (Invited talk).
15. "Noble-metal nanostructures for colorimetric diagnostics of cancer biomarkers", Division of Analytical Chemistry, 254th ACS National Meeting, Washington DC, USA, August 2017 (Invited talk).
16. "Engineering bimetallic nanocrystals as artificial enzymes for colorimetric detection of disease biomarkers", Division of Colloid and Surface Chemistry, 253rd ACS National Meeting, San Francisco, CA, USA, April 2017 (Invited talk).
17. "Kinetic control: a versatile approach for shape-controlled synthesis of metallic nanocrystals", XXV International Materials Research Congress, Cancun, Mexico, August 2016 (Invited talk)

At universities

18. "Enabling Simple and Sensitive Diagnostics Using Artificial Enzymes", College of Engineering & Computer Science (CECS) seminar series, University of Central Florida, Orlando, FL, June 2021 (Invited talk).
19. "Colloidal Metal Nanocrystals: Controlled Synthesis and Applications in Medical Diagnostics", Department of Bioengineering, University of California, Los Angeles (UCLA), CA, May 2018 (Invited talk).
20. "Metal Nanostructures with Desired Properties for Clinical Diagnostics", NanoScience Technology Center, University of Central Florida, Orlando, FL, September 2018 (Invited talk).
21. "Metal Nanostructures: Controlled Synthesis and Applications in Medical Diagnostics", Department of Materials Engineering, Auburn University, Auburn, AL, November 2017 (Invited talk).

22. "Metal Nanostructures: Controlled Synthesis and Applications in Medical Diagnostics", Department of Chemistry, George Mason University, Fairfax, VA, October 2017 (Invited talk).
23. "Colloidal Metal Nanocrystals: Controlled Synthesis and Their Bio-applications", Department of Materials Science & Engineering, University of Texas at Dallas, TX, April 2017 (Invited talk).
24. "Engineering Noble-metal Nanostructures as Artificial Peroxidases for Sensing and Diagnostics", Department of Chemistry, Soochow University, China, January 2017 (Invited talk).
25. "Shaping Colloidal Metal Nanocrystals Using Kinetic Control", Department of Chemistry, University of Georgia, Athens, GA, April 2016 (Invited talk).

VII. TEACHING EXPERIENCE

At UCF:

Average Student Perception of Instruction (SPI) at UCF: 4.56 out of 5.00

- Spring 2023, CHM5235&4230 *Applied Molecular Spectroscopy* (grad & undergrad, 41 students, 3 credits). SPI: TBD.
- Fall 2022, CHM2046 *Chemistry Fundamentals II* (undergrad, 448 students, 3 credits). SPI: 4.03 (department mean 3.78).
- Spring 2022, CHM5235&4230 *Applied Molecular Spectroscopy* (grad & undergrad, 27 students, 3 credits). SPI: 4.82 (department mean 3.78).
- Fall 2021, CHM3120 *Analytical Chemistry* (undergraduate course, 124 students, 3 credits). SPI: 4.38 (department mean 3.75).
- Spring 2021, CHM5235&4230 *Applied Molecular Spectroscopy* (grad & undergrad, 54 students, 3 credits). SPI: 4.86 (department mean 3.86).
- Fall 2020, CHM3120 *Analytical Chemistry* (undergraduate course, 122 students, 3 credits). SPI: 4.68 (department mean 3.67).
- Spring 2020, CHM5235&4230 *Applied Molecular Spectroscopy* (grad & undergrad, 50 students, 3 credits). SPI: 4.75 (department mean 3.88).
- Fall 2019, CHM3120 *Analytical Chemistry* (undergraduate course, 117 students, 3 credits). SPI: 4.56 (department mean 3.53).
- Spring 2019, CHM3120 *Analytical Chemistry* (undergraduate course, 90 students, 3 credits). SPI: 4.43 (department mean 3.64).

Prior to UCF:

Average student evaluation score at Michigan Tech: 4.21 out of 5.00

- Spring 2018, CH6290 *Modern Nano-Science/Technology* (graduate course, 3 credits)
- Fall 2017, CH4222 *Bioanalytical Chemistry* (undergraduate course, 5 credits)
- Fall 2016, CH4222 *Bioanalytical Chemistry* (undergraduate course, 5 credits)
- Spring 2016, CH2212 *Quantitative Analysis* (undergraduate course, 5 credits)
- Fall 2015, CH4222 *Bioanalytical Chemistry* (undergraduate course, 5 credits)
- Spring 2015, CH1163 *University Chemistry Recitation* (undergraduate course, 3 credits)
- Fall 2014, CH6290 *Nanomaterials Characterization* (graduate course, 3 credits)

New Courses and Other Creative Activities:

- Created a new course "CHM5735 Chemical Synthesis of Nanomaterials", which was approved by UCF Graduate Council Curriculum Committee in spring 2022.
- UCF High-Impact Practice (HIP) Course Designation, Research-Intensive (RI) track, Course CHM 4230 Applied Molecular Spectroscopy.

VIII. GENERAL MEDIA

- Excellence in Undergraduate Teaching award, University of Central Florida (UCF), 2022 UCF Founders' Day Honorees", https://www.ucf.edu/news/2022-ucf-founders-day-honorees/
- "Fellows Selected for New Scialog: Mitigating Zoonotic Threats", Scialog Fellow, Research Corporation for Science Advancement (RCSA). https://rescorp.org/news/2021/06/fellows-selected-for-new-scialog-mitigating-zoonotic-threats.
- "New UCF Nanotech Gives Boost to Detection of Cancer and Disease", UCF Today news report on research work *Journal of the American Chemical Society*, 2021, *143*, 2660–2664. https://www.ucf.edu/news/new-ucf-nanotech-gives-boost-to-detection-of-cancer-and-disease/.
- "UCF is Developing New Nanotech to Detect Food Fraud", News highlight on Xia's recent USDA grant. *UCF Today*: https://www.ucf.edu/news/ucf-is-developing-new-nanotech-to-detect-food-fraud/.
- "UCF's New Technique to Create Nanomaterials May Help Detect Cancer Earlier" News report on *ACS Nano* 2020, *14*, 791–801. *UCF Today*: https://www.ucf.edu/news/ucf-technique-may-help-detect-cancer-earlier/; Phys.org: https://phys.org/news/2020-02-technique-nanomaterials-cancer-earlier.html
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