

## Curriculum Vitae

### Dr. Dongmao Zhang

Professor, Department of Chemistry

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## PROFESSIONAL EXPERIENCE

### Academic Positions

- **Professor**, 2019 – Present. Department of Chemistry, Mississippi State University, MS  
**Associate Professor**, 2014 – 2019. Department of Chemistry, Mississippi State University, MS  
**Assistant Professor**, 2008 – 2014. Department of Chemistry, Mississippi State University, MS  
*Research Interests*: Materials Characterization; Optical spectrometry; (Bio)Analytical Chemistry.
- **Postdoctoral Associate**, 2006 – 2008. Laboratory for Nanophotonics, Rice University, TX  
**Advisor**: Prof. Naomi Halas  
*Research Focus*: Surface-enhanced Raman spectroscopy for biological systems
- **Research Scientist**, 2004 – 2005. Bindley Bioscience Center, Purdue University, IN  
**Assistant Research Scientist**, 2003 – 2004. Department of Chemistry, Purdue University, IN  
**Research Associate**, 2002 – 2003. Department of Chemistry, Purdue University, IN  
*Research focus*: Raman and surface-enhanced Raman technology for protein analysis

### Industry Positions

- **Analytical Chemist**, 2005 – 2006. GE Plastics, Washington, WV  
*Major responsibility*: Process and quality controls and troubleshooting. Method development.
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## EDUCATION

- **Ph.D. in Chemistry**, 2002. Purdue University, West Lafayette, IN  
**Dissertation Title**: “Multivariate Techniques for Processing Raman Spectral Data”  
**Research Advisor**: Prof. Dor Ben-Amotz
  - **B.S. in Chemistry**, 1987. Wuhan University, China
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## AWARDS AND HONORS

- NSF "Creativity Project Extension" - Selected by NSF Program Directors (2024)
  - Chemist of the Year - Mississippi Chapter of the American Chemical Society (2017)
  - Worldwide Top Ten Most Prolific Authors - Journal of Physical Chemistry C, recognized for contributions from 2012–2017 (2017)
  - Dean's Eminent Scholar - College of Arts & Sciences, Mississippi State University (2015)
  - Faculty Research Award - Mississippi State University (2013)
  - NSF CAREER Award (2012)
  - State Pride Award - Mississippi State University (2012)
  - NRC NIH/NIST Joint Postdoctoral Fellowship (2006, declined for a position at Rice University)
  - GE Plastic Leadership Award - Expertise (2006)
  - GE Plastic Leadership Awards - Imagination (2006)
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## RESEARCH GRANTS & FUNDING

### Current Grants (\$2,368790)

1. **NSF 2420230:** I-Corps: Translation Potential of a Kinetic Fluorogenic Technology for Rapid Chemical and Biological Testing. *Role: PI; Amount: \$50,000; Duration: 5/1/2024–4/30/2025*  
**Abstract link:**  
[https://www.nsf.gov/awardsearch/showAward?AWD\\_ID=2420230&HistoricalAwards=false](https://www.nsf.gov/awardsearch/showAward?AWD_ID=2420230&HistoricalAwards=false)
2. **NSF 2320462:** Equipment: MRI: Track II Development of an Optical Spectrometer for Multimodal Linearly Polarized, Circularly Polarized, and Integrating-Sphere-Assisted Spectroscopic Measurements. *Role: PI; Total amount: 1,415,000. Amount to group: \$1,205,000; Duration: 10/1/2023–9/30/2027*  
**Abstract link:**  
[https://www.nsf.gov/awardsearch/showAward?AWD\\_ID=2320462&HistoricalAwards=false](https://www.nsf.gov/awardsearch/showAward?AWD_ID=2320462&HistoricalAwards=false)
3. **NSF 2203571:** Instrument Development: Modular, Multitrack, and Multifunctional Linearly Polarized Spectrometer for Synchronized Multispectral Characterization of Molecular Assembly  
*Role: PI; Amount: \$704,900; Duration: 8/01/2022–7/30/2027*  
**Abstract link:**  
[https://www.nsf.gov/awardsearch/showAward?AWD\\_ID=2203571&HistoricalAwards=false](https://www.nsf.gov/awardsearch/showAward?AWD_ID=2203571&HistoricalAwards=false)
4. **MSU NIH COBRE Pilot Project:** Modular Laser Fluorometer for Ultra-efficient Quantification of Reactive Species  
*Role: PI; Amount: \$198,890; Duration: 10/01/2022–6/30/2025*

### Completed Grants

5. **MSU Global Discovery Seed Grant:** Building a Sustainable Collaboration between MSU and Multiple Universities in Chengdu, China  
*Role: PI; Amount: \$20,000; Duration: 3/1/2018–2/28/2019*
6. **NSF 1151057:** CAREER: Ultra-Sensitive and Accurate Quantification of Protein Carbonyl Formation using Ratiometric Cleavable SERS Tags. *Role: PI; Amount: \$599,998; Duration: 05/1/2012–05/31/2018.*  
**Abstract link:** [https://www.nsf.gov/awardsearch/showAward?AWD\\_ID=1151057](https://www.nsf.gov/awardsearch/showAward?AWD_ID=1151057)
7. **MSU Henry Family Research Fund – New Direction Seed Grant:** Stealth Drug Delivery through Ligand Displacement" *Role: PI; Amount: \$5,000; Duration: 9/1/2015–8/31/2016*
8. **Mississippi EPSCoR Seed Grant:** Towards Fundamental Understanding of Structure, Dispersion Stability, and Oil/Water/Solid Phase Transition of Aryl Para-Dithiol Functionalized Gold and Silver Nanoparticles. *Role: PI; Amount: \$86,000; Duration: 9/1/2014–8/31/2016*
9. **MSU Food Safety Initiative:** Nanoengineering Biologically Active Surface Enhanced Raman Spectroscopic Tags for Ultrasensitive and Convenient Food Pathogen Detections. *Role: PI; Amount: \$30,000; Duration: 4/1/2014–3/31/2015*
10. **Mississippi EPSCoR Seed Grant:** Understanding Mercaptobenzimidazole Adsorption, Desorption, and Reaction on Silver Nanoparticles in Water. *Role: PI; Amount: \$43,000; Duration: 9/1/2013–8/31/2014*
11. **MSU Food Safety Initiative:** Listeria Monocytogenes Sorting and Quantification Using Multiplex Surface Enhanced Raman Spectroscopic Tagging. *Role: PI; Amount: \$49,966; Duration: 4/1/2013–3/31/2014*

12. **Mississippi EPSCoR Seed Grant:** Experimental and Computational Study of the Optical Inner Filtration and Damping Effects by Plasmonic Gold Nanoparticles. *Role: PI; Amount: \$43,000; Duration: 9/1/2012–8/31/2013*
  13. **Mississippi EPSCoR Seed Grant:** Deciphering the Drastic pH and Concentration Dependence of the SERS Spectrum of Thiobarbituric Acid. *Role: PI; Amount: \$28,874; Duration: 9/1/2011–8/31/2012*
  14. **MSU Seed Grant:** Towards a SERS-based Omics Platform Technology. *Role: PI; Amount: \$10,000; Duration: 1/1/2009–12/31/2009*
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## PATENTS

1. "Accessories for Raman and Luminescence Spectral Acquisitions," Patent No. 11,327,022 (Issued May 20, 2022)
  2. "Methods and systems for integrating-sphere-assisted resonance synchronous (ISARS) spectroscopy," Patent pending
  3. "Reagents, devices, and accessories for kinetic fluorogenic quantifications," Patent pending
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## PEER-REVIEWED PUBLICATIONS

(Total publications 102; 76 since 2008; Google Scholar: H-Index = 37, i10 Index = 84)

1. Pham-Hoang, H.; Zou, S.; and Zhang, D.\* "A Robust and Versatile Method for Objective Bandgap Quantification in Photoactive Materials". *In Preparation*.
2. Yan, R.; Wathudura, P.; Hao, Q.; Wamsley, M.; and Zhang, D.\* "Modular, Multitrack, and Multifunctional Linearly Polarized Spectrometer for Molecular Assembly". *In Preparation*.
3. Bhandari, K.; Wamsley, M.; Nanduri, B.; Collier, W.; and Zhang, D.\* "Rapid Kinetic Fluorogenic Quantification of Malondialdehyde in Ground Beef," *Under review by Food Chemistry*, **2024**.
4. Wathudura, P.; McEachin, J.; and Zhang, D.\* "New Insights into Spectral Distortion and Nonlinearity in UV-vis and Fluorescence Spectroscopy of Molecular Fluorophore Solutions: Effect of Cascading Optical Processes (Part IV)," *Analytical Chemistry*, **2024**. [Link](#)
5. Rodriguez-Nieves, A.; Taylor, M.; Wilson, R.; Eldridge, B.; Nawalage, S.; Annamer, A.; Miller, H.; Alle, M.; Gomrok, S.; Zhang, D.; Wang, Y.; Huang, X.\* "Multiplexed Surface Protein Detection and Cancer Classification Using Gap-enhanced Magnetic-Plasmonic Core-Shell Raman Nanotags and Machine Learning Algorithm," *ACS Applied Materials & Interfaces*, **2024**. [Link](#)
6. Wamsley, M.; Zou, S.; and Zhang, D.\* "Advancing Evidence-based Data Interpretation in UV-vis and Fluorescence Analysis for Nanomaterials: An Analytical Chemistry Perspective," *Analytical Chemistry*, **2023**. [Link](#)
7. Wathudura, P.; Wamsley, M.; Zou, S.; and Zhang, D.\* "Effects of Cascading Optical Processes: Part III: Impacts on UV-vis, Fluorescence, and Scattering Measurements of Photoluminescent Samples," *Analytical Chemistry*, **2023**. [Link](#)
8. Wathudura, P.; Wamsley, M.; Zou, S.; and Zhang, D.\* "Effects of Cascading Optical Processes: Part II: Impacts on Experimental Quantification of Sample Absorption and Scattering Properties," *Analytical Chemistry*, **2023**. [Link](#) (Supplementary Cover)

9. Nawalage, S.; Wathudura, P.; Wang, A.; Wamsley, M.; Zou, S.; and Zhang, D.\* "Effects of Cascading Optical Processes: Part I: Impacts on Quantification of Sample Scattering Extinction, Intensity, and Depolarization," *Analytical Chemistry*, **2023**. [Link](#) (Supplementary Cover)
10. Wamsley, M.; Peng, W.; Tan, W.; Wanthudura, P.; Cui, C.; Zou, S.; and Zhang, D.\* "Total Luminescence Spectroscopy for Quantification of Temperature Effects on Photophysical Properties of Photoluminescence Materials," *ACS Measurement Science Au*, **2022**. [Link](#) (Supplementary Cover)
11. Wamsley, M.; Wathudura, P.; Hu, J.; and Zhang, D.\* "Integrating-sphere-assisted Resonance Synchronous Spectroscopy for Quantification of Materials Double-beam UV-vis Absorption and Scattering Extinctions," *Analytical Chemistry*, **2022**. [Link](#)
12. Wamsley, M.; Nawalage, S.; Hu, J.; Collier, W.; and Zhang, D.\* "Going Back to the Drawing Board: A Unifying First-Principle Model for Correlating Sample UV-vis Absorption and Fluorescence Emission," *Analytical Chemistry*, **2022**. [Link](#) (Supplementary Cover)
13. Wang, Z.; Wang, W.; Wamsley, M.; Zhang, D.; and Wang, H.\* "Colloidal Polydopamine Beads: A Photothermally Active Support for Noble Metal Nanocatalysts," *ACS Applied Materials & Interfaces*, **2022**. [Link](#)
14. Zhao, Y.; Hu, Y.; Zhong, Y.; Wang, J.; Liu, Z.; Bai, F.; and Zhang, D.\* "Missing Links Between the Structures and Optical Properties of Porphyrin Assemblies," *Journal of Physical Chemistry C*, **2021**, 125, 22318-22327. [Link](#)
15. Peng, W.; Athukorale, S.; Hu, J.; Cui, X.; and Zhang, D.\* "Kinetic Spectroscopic Quantification Using Two-Step Chromogenic and Fluorogenic Reactions: From Theoretical Modeling to Experimental Quantification of Biomarkers in Practical Samples," *Analytica Chimica Acta*, **2021**. [Link](#)
16. Zhang, W.; Zilevu, D.; Creutz, S.; and Zhang, D.\* "Quantification of the Optical Properties of Perovskite Nanocrystals Using Combination of Polarized Resonance Synchronous and Polarized Anti-Stokes, On-Resonance, and Stokes-Shifted Spectroscopy," *Journal of Physical Chemistry C*, **2020**. [Link](#)
17. Xu, X.J.; Yuan, Y.; Liu, M.; Zou, S.; Chen, O.; and Zhang, D.\* "Quantification of the Photon Absorption, Scattering, and On-resonance Emission Properties of CdSe/CdS Core/Shell Quantum Dots: Effect of Shell Geometry and Volumes," *Analytical Chemistry*, **2020**. [Link](#)
18. Yang, H.; Zhang, W.; Athukorale, S.; Li, Z.; Zou, S.; Donnadieu, B.; Wang, Z.; and Zhang, D.\* "Dithiosulfene Adsorption and Reaction on Gold Nanoparticles in Water," *Journal of Physical Chemistry C*, **2020**. [Link](#)
19. Xu, J.; Yuan, G.; Niu, B.Z.; and Zhang, D.\* "Polarized Resonance Synchronous Spectroscopy as a Powerful Tool for Studying the Kinetics and Optical Properties of Aggregation-Induced Emission," *Journal of Materials Chemistry C*, **2019**, 7, 12086. [Link](#) (Cover)
20. Xu, J.; Yuan, Y.; Zou, S.; Chen, O.; and Zhang, D.\* "A Divide-and-Conquer Method for Quantification of the Optical Properties of Fluorescent Nanoparticles in Solutions," *Analytical Chemistry*, **2019**. [Link](#)
21. Wang, H.; Zhu, K.; Yan, L.; Zhang, Y.; Gong, C.; Guo, J.; Zhang, J.; Zhang, D.; and Zhang, J.\* "Efficient and Scalable High-Quality Graphene Nanodot Fabrication through Confined Lattice Plane Electrochemical Exfoliation," *Chemical Communications*, **2019**, 55, 5805. [Link](#)

22. Xu, J.; Liu, M.; Athukorale, S.; Zou, S.; and Zhang, D.\* "Linear Extrapolation of the Analyte-Specific Light Scattering and Fluorescence Depolarization in Turbid Samples," *ACS Omega*, **2019**, 4, 4739. [Link](#)
23. Athukorale, S.; Leng, X.; Xu, J.; Perera, Y.; Fitzkee, N.; and Zhang, D.\* "Surface Plasmon Resonance, Formation Mechanism, and Surface Enhanced Raman Spectroscopy of Ag<sup>+</sup>-Stained Gold Nanoparticles," *Frontiers in Chemistry*, **2019**. [Link](#)
24. Vithanage, B.; Xu, J.; and Zhang, D.\* "Optical Properties and Kinetics: New Insights to the Porphyrin Assembly and Disassembly by Polarized Resonance Synchronous Spectroscopy," *Journal of Physical Chemistry B*, **2018**, 122, 8429. [Link](#)
25. Lakmak, H.; Xu, J.; Xu, X.; Ahmed, B.; Fong, C.; Szalda, D.; Ramig, K.; Sygula, A.; Wester, C.; Zhang, D.; and Cui, X.\* "Synthesis of C-unsubstituted 1,2-diazetidines and Their Ring-Opening Reactions via Selective N-N Bond Cleavage," *Journal of Organic Chemistry*, **2018**, 83, 9497. [Link](#)
26. Xu, J.; Vithanage, B.; and Zhang, D.\* "Light Scattering and Absorption Differs Drastically in Their Inner Filter Effects on Fluorescence, Resonance Synchronous, and Polarized Resonance Synchronous Spectroscopic Measurements," *Analytist*, **2018**, 143, 3382. [Link](#)
27. Xu, J.; Hu, J.; and Zhang, D.\* "Quantification of the Material Fluorescence and Light Scattering Cross-sections and Depolarization Using Ratiometric Bandwidth-varied Polarized Resonance Synchronous Spectroscopy," *Analytical Chemistry*, **2018**, 90, 7406. [Link](#)
28. Athukorale, S.; De Silva, M.; LaCour, A.; Perera, G.; and Zhang, D.\* "NaHS Induces Complete Nondestructive Ligand Displacement from Aggregated Gold Nanoparticles," *Journal of Physical Chemistry C*, **2018**, 122, 2137-2144. [Link](#)
29. Xu, J.; Siriwardana, K.; Zhou, Y.; Zou, S.; and Zhang, D.\* "Quantification of the Gold Nanoparticle Photon Extinction, Scattering, and Absorption Cross-section and Scattering Depolarization Spectra as Functions of Nanoparticle Geometry, Solvent Compositions, Ligand Functionalization, and Nanoparticle Aggregations," *Analytical Chemistry*, **2018**, 90, 785-793. [Link](#)
30. Perera, G.; Athukorale, S.; LaCour, A.; Perez, F.; Gadogbe, M.; and Zhang, D.\* "Facile Displacement of Citrate Residues from Gold Nanoparticles," *Journal of Colloid and Interface Science*, **2017**, 511, 335-343. [Link](#)
31. Athukorale, S.; Zhou, Y.; Zou, S.; and Zhang, D.\* "Determination of the Liquid Light Scattering Cross-sections and Depolarization Spectra using Polarized Resonance Synchronous Spectroscopy," *Analytical Chemistry*, **2017**, 89(23), 12705. [Link](#)
32. Perera, G.; Athukorale, S.; Perez, F.; Gadogbe, M.; and Zhang, D.\* "Reactive Ag<sup>+</sup> Adsorption onto Gold," *Journal of Physical Chemistry C*, **2017**, 121, 22487. [Link](#)
33. Siriwardana, K.; Vithanage, B.; Zou, S.; and Zhang, D.\* "Quantification of the Depolarization and Anisotropy of Fluorophore Stokes-Shifted Fluorescence, On-Resonance Fluorescence, and Rayleigh-Scattering," *Analytical Chemistry*, **2017**, 89, 6686. [Link](#)
34. Perera, G.; Nettles, C.; Perez, F.; and Zhang, D.\* "Counter-ion Effects on Electrolyte Binding to Nanoparticles," *Journal of Physical Chemistry C*, **2016**, 120, 23604. [Link](#)
35. Siriwardana, K.; Nettles, C.; Vithanage, B.; Zhou, Y.; Zou, S.; and Zhang, D.\* "On-resonance Fluorescence, Resonance Rayleigh Scattering, and Ratiometric Resonance Synchronous Spectroscopy of Molecular- and Quantum Dot-Fluorophores," *Analytical Chemistry*, **2016**, 88, 9199. [Link](#)



36. Perera, G.; Gadogbe, M.; Alahakoon, S.; Zhou, Y.; Zou, S.; Perze, F.; and Zhang, D.\* "Ion Pairing as the Main Pathway for Reducing Electrostatic Repulsion among Organothiolate Self-assembled on Gold Nanoparticles in Water," *Journal of Physical Chemistry C*, **2016**, 120, 19878. [Link](#)
37. Nettles, C.B.; Zhou, Y.; Zou, S.; and Zhang, D.\* "UV-vis Ratiometric Resonance Synchronous Spectroscopy for Determination of Molecular and Nanoparticle Optical Cross-sections," *Analytical Chemistry*, **2016**, 88, 2891-2898. [Link](#)
38. Suwandarane, N.; Hu, J.; Siriwardana, K.; Gadogbe, M.; and Zhang, D.\* "Evaluation of Thiol Raman Activities and pKa Values Using Internally-referenced Raman-based pH Titration," *Analytical Chemistry*, **2016**, 88, 3624-3631. [Link](#)
39. Gadogbe, M.; Zhou, Y.; Zou, S.; and Zhang, D.\* "Rigid Single Carbon-Carbon Bond That Doesn't Rotate in Water," *Journal of Physical Chemistry C*, **2016**, 120, 2418-2422. [Link](#)
40. Siriwardana, K.; LaCour, A.; and Zhang, D.\* "Critical Sequence Dependence in Multicomponent Ligand Binding to Gold Nanoparticles," *Journal of Physical Chemistry C*, **2016**, 120, 6900-6905. [Link](#)
41. Sameera, K.; and Zhang, D.\* "Undergraduate Student Laboratory Experimental Modules for Probing Nanoparticle Interfacial Interactions," *Journal of Chemical Education*, **2015**, 92, 1924-1927. [Link](#)
42. Siriwardana, K.; Suwandarane, N.; Perera, G.; Collier, W.; Perez, F.; and Zhang, D.\* "Contradictory Dual Effects: Organothiol-Induced Both Silver Nanoparticle Disintegration and Formation Under Ambient Conditions," *Journal of Physical Chemistry C*, **2015**, 119, 20975-20984. [Link](#)
43. Siriwardana, K.; Wang, A.; Gadogbe, M.; Collier, W.; Fitzkee, N.; and Zhang, D.\* "Probing the Effect of Cysteine Residue on Protein Interactions with Silver Nanoparticles," *Journal of Physical Chemistry C*, **2015**, 119, 2910-2916. [Link](#)
44. Perea, G. S.; LaCour, A.; Hu, S.; Chen, M.; Zou, S.; Pittman, C. U.; and Zhang, D.\* "Iodide-Induced Organothiol Desorption and Photochemical Reaction, Gold Nanoparticle (AuNP) Fusion, and SERS Signal Reduction in Organothiol-Containing AuNP Aggregates," *Journal of Physical Chemistry C*, **2015**, 119, 4261-4267. [Link](#)
45. Gadogbe, M.; Chen, M.; and Zhang, D.\* "Can Para-aryl-dithiols Cross-Link Two Plasmonic Noble Nanoparticles as Monolayer Dithiolate Spacers?" *Journal of Physical Chemistry C*, **2015**, 119, 6626-6633. [Link](#)
46. Zhang, D.; and Nettles, C. "A Generalized Model on the Effects of Nanoparticles on Fluorophore Fluorescence in Solution," *Journal of Physical Chemistry C*, **2015**, 119, 7941-7948. [Link](#)
47. Nettles, C. B.; Hu, J.; and Zhang, D.\* "Using Water Raman Intensity to Determine the Effective Excitation and Emission Path Lengths of Fluorophotometers for Correcting Fluorescence Inner Filter Effect," *Analytical Chemistry*, **2015**, 87, 4917. [Link](#)
48. Shi, Q.S.; Che, W.; Liang, K.; Xia, C.; and Zhang, D. "Phase Transitions of Carbon-Encapsulated Iron Oxide Nanoparticles During the Carbonization of Cellulose at Various Pyrolysis Temperatures," *Journal of Analytical and Applied Pyrolysis*, **2015**, 115, 1-6. [Link](#)
49. Gadogbe, M.; Zhou, Y.; Alakakoon, S. H.; Perera, G.; Zou, S.; Pittman, C. U.; and Zhang, D.\* "Structures and Conformations of Alkanedithiols on Gold and Silver Nanoparticles in Water," *Journal of Physical Chemistry C*, **2015**, 119, 18414-18421. [Link](#)

50. Perera, G.; Nettles, C.; Zhou, Y.; Zou, S.; Hollis, K.; and Zhang, D.\* "Direct Observation of Ion Pairing at the Liquid/Solid Interfaces by Surface Enhanced Raman Spectroscopy," *Langmuir*, **2015**, 31, 8998-9005. [Link](#)
51. Che, W.; Shi, S.Q.; Zhang, D.; Jiang, D.; and Barnes, M. H. "Structure of Cellulosic Fiber-Derived Carbon Catalyzed by Iron Oxide Nanoparticles," *Wood and Fiber Science*, **2014**, 46, 237-246.
52. Wang, A.; Vangala, K.; Vo, T.; Zhang, D.; and Fitzkee, N.\* "A Three-step Model for Protein-Gold Nanoparticle Adsorption," *Journal of Physical Chemistry C*, **2014**, 118, 8134-8142. [Link](#)
53. Perera, G.; Ansar, S.; Hu, S.; Chen, M.; Zou, S.; Pittman, C.; and Zhang, D.\* "Ligand Desorption and Desulfurization on Silver Nanoparticles Using Sodium Borohydride in Water," *Journal of Physical Chemistry C*, **2014**, 118, 10509-10518. [Link](#)
54. Siriwardana, K.; Gadogbe, M.; Ansar, S.; Vasquez, E.; Collier, W.; Zou, S.; Walter, K.; and Zhang, D.\* "Ligand Adsorption and Exchange on Pegylated Gold Nanoparticles," *Journal of Physical Chemistry C*, **2014**, 118, 11111-11119. [Link](#)
55. Gadogbe, M.; Ansar, S.; Chu, I.; Zou, S.; and Zhang, D.\* "Comparative Study of Gold and Silver Nanoparticle Self-assembly onto Thiophene Oil," *Langmuir*, **2014**, 30, 11520-11527. [Link](#)
56. Ameer, F.; Zhou, F.; Zou, S.; and Zhang, D.\* "Wavelength-dependent Correlations between UV-Vis Intensities and SERS Enhancement Factors of Aggregated Gold and Silver Nanoparticles," *Journal of Physical Chemistry C*, **2014**, 118, 22234-22242. [Link](#)
57. Ansar, S.; Gadogbe, M.; Siriwardana, K.; Howe, J.; Dogel, S.; Hosseinkhannazer, H.; Collier, W.; Rodriguez, J.; Zou, S.; and Zhang, D.\* "Dispersion Stability, Ligand Structure and Conformation, and SERS Activities of 1-Alkanethiol Functionalized Gold and Silver Nanoparticles," *Journal of Physical Chemistry C*, **2014**, 118, 24925-24934. [Link](#)
58. Gadogbe, M.; Ansar, S.M.; He, G.; Collier, W.E.; Rodriguez, J.; Liu, D.; Chu, I.; and Zhang, D.\* "Determination of Colloidal Gold Nanoparticle Surface Areas, Concentrations, and Diameters through Quantitative Ligand Adsorption," *Analytical and Bioanalytical Chemistry*, **2013**, 405, 413-422. [Link](#)
59. Ameer, F.; Ansar, S.M.; Wang, H.; Zou, S.; and Zhang, D.\* "Robust and Reproducible Quantification of SERS Enhancement Factors Using a Combination of Time-Resolved Raman Spectroscopy and Solvent Internal Reference Method," *Journal of Physical Chemistry C*, **2013**, 117, 3483-3488. [Link](#)
60. Vangala, K.; Siriwardana, K.; Vasquez, E.; Xin, Y.; Pittman, C.U.; and Zhang, D.\* "Simultaneous and Sequential Protein and Organothiol Interactions with Gold Nanoparticles," *Journal of Physical Chemistry C*, **2013**, 117, 1366-1374. [Link](#)
61. Ansar, S. M.; Ameer, F. S.; Hu, W.; Zou, S.; Pittman, C. U.; and Zhang, D.\* "Removal of Molecular Adsorbates on Gold Nanoparticles Using Sodium Borohydride in Water," *Nano Letters*, **2013**, 13(3), 1226-1229. [Link](#)
62. Ansar, S.; Perera, G.; Jiang, D.; Holler, R.; Pittman, C.; and Zhang, D.\* "Organothiols Self-Assembled Onto Gold: Evidence for Deprotonation of the Sulfur-Bound Hydrogen and Charge-Transfer from Thiolate," *Journal of Physical Chemistry C*, **2013**, 117, 8793-8798. [Link](#)
63. Ansar, S. M.; Perera, G.; Ameer, F. S.; Zou, S.; Pittman, C. U.; and Zhang, D.\* "Desulfurization of Mercaptobenzimidazole and Thioguanine on Gold Nanoparticles Using Sodium Borohydride in Water at Room Temperature," *Journal of Physical Chemistry C*, **2013**, 117, 13722-13729. [Link](#)

64. Siriwardana, K.; Wang, A.; Vangala, K.; Fitzkee, N.; and Zhang, D.\* "Probing the Effects of Cysteine Residues on Protein Adsorption onto Gold Nanoparticles Using Wild-type and Mutated GB3 Proteins," *Langmuir*, **2013**, 29, 10990-10996. [Link](#)
65. Ansar, S. M.; Perera, G.; Salomons, G.; Pittman, C. U.; Zou, S.; and Zhang, D.\* "Mechanistic Studies of Reactive Continuous Organothiol Interaction with Silver Nanoparticles," *Journal of Physical Chemistry C*, **2013**, 117, 27146-27154. [Link](#)
66. Ameer, F.; Collier, W.; and Zhang, D.\* "Quantification of Resonance Raman Enhancement Factors for Rhodamine 6G (R6G) in Water and Adsorbed onto Gold and Silver Nanoparticles," *Journal of Physical Chemistry C*, **2013**, 117, 27096-27104. [Link](#)
67. Vangala, K.; Ameer, F.; Salomons, G.; Le, V.; Lewis, E. A.; Liu, D.; Yu, L.; and Zhang, D.\* "Studying Protein and Gold Nanoparticle Interaction Using Organothiols as Molecular Probes," *Journal of Physical Chemistry C*, **2012**, 116, 3645-3652. [Link](#)
68. Ansar, S.; Li, X.; Zou, S.; and Zhang, D.\* "Quantitative Comparison of Raman Activities, SERS Activities, and SERS Enhancement Factors of Organothiols: Implication to Chemical Enhancement," *Journal of Physical Chemistry Letters*, **2012**, 3, 560-565. [Link](#)
69. Zhang, D.\*; Shi, S.; Pittman, C. U.; Moore, K. L.; and Howie, J. Y. "A Versatile and Biomass Synthesis of Iron-based Nanoparticles Supported on Carbon Matrix with High Iron Content and Tunable Reactivity," *Journal of Nanoparticle Research*, **2012**, 14, 1023-1034. [Link](#)
70. Ameer, F.; Ansar, S. M.; Wang, H.; Zou, S.; and Zhang, D.\* "Inner Filter Effect on Surface Enhanced Raman Spectroscopic Measurements," *Analytical Chemistry*, **2012**, 84, 8437-8441. Editors' Highlight. [Link](#)
71. Zhang, D.\*; Vangala, K.; Li, S.; Yanney, M.; Xia, H.; Zou, S.; and Sygula, A. "Acid Cleavable Surface Enhanced Raman Tagging for Protein Detection," *Analyst*, **2011**, 136, 520-526. [Link](#)
72. Ansar, S. M.; Haputhanthri, R.; Edmonds, B.; Liu, D.; Yu, L.; Sygula, A.; and Zhang, D.\* "Determination of the Binding Affinity, Packing, and Conformation of Thiolate and Thione Ligands on Gold Nanoparticles," *Journal of Physical Chemistry C*, **2011**, 115, 653-660. [Link](#)
73. Zhang, D.\*; Ansar, S. M. "Ratiometric Surface Enhanced Raman Quantification of Ligand Adsorption onto a Gold Nanoparticle," *Analytical Chemistry*, **2010**, 82(13), 5910-5914. [Link](#)
74. Zhang, D.\*; Ansar, S. M.; and Vangala, K. "Protein Adsorption Drastically Reduces SERS Signal of Dye Molecule," *Journal of Raman Spectroscopy*, **2010**, 41(9), 952-957. [Link](#)
75. Zhang, D.\*; Vangala, K.; Jiang, D.; Pechan, T.; and Zou, S. "Raman Spectroscopy of Fluorescein Isothiocyanate Labeled Protein," *Applied Spectroscopy*, **2010**, 64, 1078-1085. [Link](#)
76. Zhang, D.\*; Haputhanthri, R.; Ansar, S. M.; Vangala, K.; De Silva, H. I.; Sygula, A.; Saebo, S.; and Pittman, C. U., Jr. "Ultrasensitive Surface Enhanced Raman Detection of Malondialdehyde," *Analytical and Bioanalytical Chemistry*, **2010**, 398, 3193-3201. [Link](#)
77. Vangala, K.; Yanney, M.; Hsiao, C. T.; Wu, W. W.; Shen, R. F.; Zou, S.; Sygula, A.; and Zhang, D.\* "Sensitive Carbohydrate Detection Using Surface Enhanced Raman Tagging," *Analytical Chemistry*, **2010**, 82(24), 10164-10171. [Link](#)
78. Zhang, D.\*; Jiang, D.; Yanney, M.; Zou, S.; and Sygula, A. "Ratiometric Raman Spectroscopy for Quantification of Protein Oxidation Damage," *Analytical Biochemistry*, **2009**, 391(2), 121-126. [Link](#)



## Before MSU

79. Zhang, D.; Neumann, O.; Wang, H.; Yuwono, V.; Barhoumi, A.; Perham, M.; Hartgerink, J.; Wittung-Stafshede, P.; and Halas, N. J.\* "Gold Nanoparticles Can Induce the Formation of Protein-Based Aggregates at Physiological pH," *Nano Letters*, **2009**, 9(2), 666-671.
80. Kundu, J.; Neumann, O.; Janesko, B.; Zhang, D.; Lal, S.; Barhoumi, A.; Scuseria, G.; and Halas, N.\* "Adenine- and Adenosine Monophosphate (AMP)-Gold Binding Interactions Studied by Surface Enhanced Raman and Infrared Spectroscopies," *Journal of Physical Chemistry C*, **2009**, 113(32), 14390-14397.
81. Neumann, O.; Zhang, D.; Tam, F.; Lal, S.; Wittung-Stafshede, P.; and Halas, N.\* "Direct Optical Detection of Aptamer Conformational Changes Induced by Target Molecules," *Analytical Chemistry*, **2009**, 81(24), 10002-10006.
82. Barhoumi, A.; Zhang, D.; Tam, F.; and Halas, N. J.\* "Surface-Enhanced Raman Spectroscopy of DNA," *Journal of the American Chemical Society*, **2008**, 130, 5523-5529.
83. Wei, F.; Zhang, D.; Halas, N. J.; and Hartgerink, J. D. "Aromatic Amino Acids Providing Characteristic Motifs in the Raman and SERS Spectroscopy of Peptides," *Journal of Physical Chemistry B*, **2008**, 112, 9158-9164.
84. Barhoumi, A.; Zhang, D.; and Halas, N. J.\* "Correlation of Molecular Orientation and Packing Density in a dsDNA Self-Assembled Monolayer Observable with Surface-Enhanced Raman Spectroscopy," *Journal of the American Chemical Society*, **2008**, 130, 14040-14041.
85. Xie, Y.; Zhang, D.; and Ben-Amotz, D.\* "Protein-Ligand Binding Detected Using Ultrafiltration Raman Difference Spectroscopy," *Analytical Biochemistry*, **2008**, 373(1), 154-160.
86. Ortiz, C.; Zhang, D.; Ribbe, A. E.; Xie, Y.; and Ben-Amotz, D. "Analysis of Insulin Amyloid Fibrils by Raman Spectroscopy," *Biophysical Chemistry*, **2007**, 128(2-3), 150-155.
87. Ortiz, C.; Zhang, D.; Xie, Y.; Ribbe, A. E.; and Ben-Amotz, D. "Validation of the Drop Coating Deposition Raman Method for Protein Analysis," *Analytical Biochemistry*, **2006**, 353(2), 157-166.
88. Zhang, D.; Ortiz, C.; Xie, Y.; Davisson, V. J.; and Ben-Amotz, D.\* "Detection of the Site of Phosphorylation in a Peptide Using Raman Spectroscopy and Partial Least Squares Discriminant Analysis," *Spectrochimica Acta, Part A: Molecular and Biomolecular Spectroscopy*, **2005**, 61A, 471-475.
89. Zhang, D.\*; Xie, Y.; Deb, S. K.; Davisson, V. J.; and Ben-Amotz, D. "Isotope Edited Internal Standard Method for Quantitative Surface-Enhanced Raman Spectroscopy," *Analytical Chemistry*, **2005**, 77, 3563-3569.
90. Mrozek, M. F.; Zhang, D.; and Ben-Amotz, D.\* "Oligosaccharide Identification and Mixture Quantification Using Raman Spectroscopy and Chemometric Analysis," *Carbohydrate Research*, **2004**, 339, 141-145.
91. Loethen, Y. L.; Zhang, D.; Favors, R. N.; Basiaga, S. B. G.; and Ben-Amotz, D.\* "Second-Derivative Variance Minimization Method for Automated Spectral Subtraction," *Applied Spectroscopy*, **2004**, 58, 272-278.
92. Xie, Y.; Zhang, D.; Jarori, G. K.; Davisson, V. J.; and Ben-Amotz, D.\* "The Raman Detection of Peptide Tyrosine Phosphorylation," *Analytical Biochemistry*, **2004**, 332, 116-121.
93. Ortiz, C.; Zhang, D.; Xie, Y.; Davisson, V. J.; and Ben-Amotz, D.\* "Identification of Insulin Variants Using Raman Spectroscopy," *Analytical Biochemistry*, **2004**, 332, 245-252.

94. Zhang, D.; Mrozek, M. F.; Xie, Y.; and Ben-Amotz, D.\* "Chemical Segregation and Reduction of Raman Background Interference Using Drop Coating Deposition," *Applied Spectroscopy*, **2004**, 58, 929-933.
95. Zhang, D.; Xie, Y.; Mrozek, M. F.; Ortiz, C.; Davisson, V. J.; and Ben-Amotz, D.\* "Raman Detection of Proteomic Analytes," *Analytical Chemistry*, **2003**, 75, 5703-5709.
96. Zhang, D.; Hanna, J. D.; and Ben-Amotz, D.\* "Single Scan Cosmic Spike Removal Using the Upper Bound Spectrum Method," *Applied Spectroscopy*, **2003**, 57, 1303-1305.
97. Drachev, V. P.; Thoreson, M.; Khaliullin, E. N.; Sarychev, A. K.; Zhang, D.; Ben-Amotz, D.; and Shalaev, V. M.\* "Semicontinuous Silver Films for Protein Sensing with SERS," *Proceedings of SPIE-The International Society for Optical Engineering*, **2003**, 5221, 76-81.
98. Zhang, D.; and Ben-Amotz, D.\* "Removal of Cosmic Spikes from Hyper-spectral Images Using a Hybrid Upper-Bound Spectrum Method," *Applied Spectroscopy*, **2002**, 56, 91-98.
99. Zhang, D.; Hanna, J. D.; Jiang, Y.; and Ben-Amotz, D.\* "Influence of Laser Illumination Geometry on the Power Distribution Advantage," *Applied Spectroscopy*, **2001**, 55, 61-65.
100. Cai, T. T.; Zhang, D.; and Ben-Amotz, D.\* "Enhanced Chemical Classification of Raman Images Using Multiresolution Wavelet Transformation," *Applied Spectroscopy*, **2001**, 55, 1124-1130.
101. Zhang, D.; Jallad, K. N.; and Ben-Amotz, D.\* "Stripping of Cosmic Spike Spectral Artifacts Using a New Upper-Bound Spectrum Algorithm," *Applied Spectroscopy*, **2001**, 55, 1523-1531.
102. Zhang, D.; and Ben-Amotz, D.\* "Enhanced Chemical Classification of Raman Images in the Presence of Strong Fluorescence Interference," *Applied Spectroscopy*, **2000**, 54, 1379-1383.

## BOOK CHAPTERS

1. Ortiz, C.; Xie, Y.; Zhang, D.; Ben-Amotz, D.; Chapter 5: "Proteomic Applications of Drop Coating Deposition Raman Spectroscopy" in *New Approaches in Biomedical Spectroscopy*, Editors Kneipp et al., 2007, Oxford University Press.

## INVITED SEMINAR AND CONFERENCE PRESENTATIONS

(Total Invited Talks: 42 across USA, China, Japan, Mexico)

1. "Cascading Light-Matter Interactions and their Impact on UV-vis and Fluorescence Spectral Analysis" *PolyMatt Conference, Huatulco, Mexico, October 20-25, 2024*
2. "Challenges and Recent Progress in Improving Evidence-Based Interpretation of UV-vis and Fluorescence Spectra" *Wuhan University, Wuhan, China, December 14, 2023*
3. "Challenges and Recent Progress in Improving Evidence-Based Interpretation of UV-vis and Fluorescence Spectra" *Hubei University, Wuhan, China, December 15, 2023*
4. "Enhancing Evidence-Based Interpretation of UV-vis and Fluorescence Spectra" *University of Science, Ho Chi Minh City, Vietnam, December 7, 2023*. "Enhancing Evidence-Based Interpretation of UV-vis and Fluorescence Spectra" *Ton Duc Thang University, Ho Chi Minh City, Vietnam, December 8, 2023*

5. "Enhancing Evidence-Based Interpretation of UV-vis and Fluorescence Spectra"  
*Ho Chi Minh City University of Industry and Trade, Ho Chi Minh City, Vietnam, December 9, 2023*
6. "Enhancing Evidence-Based Interpretation of UV-vis and Fluorescence Spectra"  
*Ho Chi Minh City University of Technology and Education, Ho Chi Minh City, Vietnam, December 10, 2023*

*(Full list available upon request)*

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## **MENTEES**

### **Former Graduate Students (9 PhD, 8 MS):**

- **PhD Graduates:** Kathikeswar Vangala (2012), Siyam Ansar (2013), Fathima Ameer (2014), Manuel Gadogbe (2016), Charles Nettles (2016), Ganganath Perera (2017), Kumudu Siriwardana (2017), Sumudu Athukorale (2020), Joanna Xu (2020)
- **MS Graduates:** Pravindya Haputhranthri (2012), Hao Xia (2013), Nuwanthi Suwandarathne (2016), Sandamini Heshani (2016), Chathurangi Buddhini (2018), Nancy Peng (2021), Samadhi Nawalage (2024), Pathum Wathudura (2024)

**Current PhD Graduate Students (7):** Max Wamsley, Pathum Wathudura, Keshav Bhandari, Rongjing Yan, Christopher Yole, Joshua McEachin, Huy Pham-Hoang

### **Former and Current Postdoctoral Researchers (3):**

- Dr. Hao Qiang (Current)
- Dr. Huy Minh-Do (2024)
- Dr. Shaoyong Li (2012–2013)

### **Visiting Scholars (5):**

- Dr. Wenkai Zhang, Associate Professor at Henan University (2019–2021)
- Dr. Shaogui Wu, Associate Professor at Sichuan Normal University (2018–2019)
- Dr. Rui Li, Associate Professor at Southwest University (2017–2018)
- Ms. Xue Leng, Chengdu University of Technology (2017–2018)
- Dr. Jiangrong Zhang, Associate Professor, Southwest University (2016)

**Undergraduate Students (12 worked for one or more semesters; 6 coauthored one or more peer-reviewed articles):**

Bradley Edmonds (1 publication), George Salomons (2 publications), Felicia Wang, Charles Nettles (1 publication), Thomas Rick, Niraj K. Palsule, Daniela Sanchez, Catherine Feng, Elizabeth Stafford (1 publication), Ronald LaCour (2 publications), Matthew Kapes (current), McEachin Joshua (1 publication)

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