

Research Curriculum Vitae

Dong-Sheng Yang, Ph.D.

Current Position: Professor and University Research Professor

Research Profile

Experimental physical chemist with research focused on laser spectroscopy, electronic structure and dynamics of metal-containing molecules and complexes, and metal-mediated chemical reactions and catalysis. Research has resulted in an extensive record of peer-reviewed publications and has received sustained support from federal, national, state, and institutional programs. Principal Investigator on 28 sponsored projects, including six National Science Foundation awards, one U.S. Department of Energy Office of Basic Energy Sciences award, five American Chemical Society Petroleum Research Fund awards, five Kentucky Science & Engineering Foundation awards, and additional projects supported by the Kentucky Council on Postsecondary Education and the University of Kentucky. The research program has emphasized the development and application of advanced photoionization and photoelectron spectroscopic methods, supported by electronic-structure calculations, to understand chemical bonding, electronic structure, spin-orbit interactions, and chemical reactivity in transition-metal and lanthanide systems.

Peer-Reviewed Journal Articles

1. Y. Zhang and D. -S. Yang, "Spin Purity and Spin Mixing in Lanthanide-Cyclooctatetraene Complexes: SO-MCQDPT2 and Axial-Field Analysis," *J. Phys. Chem. A* **130**, 6576-6582 (2026).
2. L. Wu, M. Roudjane, and D. -S. Yang, "Structure and Bonding of Sc_3C_2 and La_3C_2 Clusters from MATI Spectroscopy and Theoretical Calculations," *J. Phys. Chem. A* **129**, 9019-9026 (2025).
3. S. Nyambo, Y. Zhang, and D. -S. Yang, "Reactions of La and Ce with Propylamine: Formation and Threshold Ionization of Lanthanide Imido Radicals," *J. Phys. Chem. A (Special Issue: Michael A. Duncan Festschrift)* **129**, 5570-5578 (2025).
4. T. Nakamura, G. Schoendorff, D. -S. Yang, and M. S. Gordon, "Systematic Investigation of Electronic States and Bond Properties of LnO , LnO^+ , LnS , and LnS^+ ($\text{Ln} = \text{La-Lu}$) by Spin-Orbit Multiconfiguration Perturbation Theory," *J. Chem. Theory Comput.* **21**, 267-282 (2025).
5. S. Nyambo, Y. Zhang, and D. -S. Yang, "Spectroscopic and Computational Characterization of Lanthanide-Mediated Bond Activation of Ethylamine," *J. Organomet. Chem.* (Special Issue on New Developments in Rare Earth Organometallic Chemistry) **1020**, 123330/1-8 (2024).

6. T. Nakamura, D. Dangi, L. Wu, Y. Zhang, G. Schoendorff, M. S. Gordon, and D. -S. Yang, "Spin-Orbit Coupling of Electrons on Separate Lanthanide Atoms in Pr_2O_3 and Its Singly Charged cation," *J. Chem. Phys.* **159**, 244303/1-12 (2023).DOI: 10.1063/5.0185579.
7. P. Karna, Z. Finfrook, J. Li, Y. Hu, and D.-S. Yang, "Water-Soluble Copper (I) Hydroxide Catalyst and its Formation in Ligand-Free Suzuki-Miyaura Cross-Coupling Reactions," *J. Phys. Chem. C* **127**, 5791-5799 (2023); DOI:10.1021/acs.jpcc.3c00268.
8. Y. Zhang, T. Nakamura, L. Wu, W. Cao, G. Schoendorff, M. S. Gordon, and D. -S. Yang, "Electronic States and Transitions of PrO and PrO^+ Probed by Threshold Ionization Spectroscopy and Spin-Orbit Multiconfiguration Perturbation Theory," *J. Chem. Phys.* **157**, 114304-1/9 (2022); DOI: 10.1063/5.0113741.
9. W. R. Silva, M. Fitian, and D. -S. Yang, "Probing La and Ce excited-State Reactions with Resonant Two-Photon Ionization Spectroscopy," *J. Phys. Chem. A*, **126**, 7613-7620 (2022); DOI:10.1021/acs.jpca.2c04458.
10. P. Karna, M. Okeke, D. Meira, Z. Finfrook, and D. -S. Yang, "Water-Soluble Palladium Nanoclusters as Catalysts in Ligand-Free Suzuki-Miyaura Cross-Coupling Reactions," *ACS Appl. Nano. Mater.* **5**, 3188-3193 (2022).
11. L. Wu, G. Schoendorff, Y. Zhang, M. Roudjane, M. S. Gordon, and D. -S. Yang, "Excited States of Lutetium Oxide and its Singly Charged Cation," *J. Chem. Phys.* **156**, 084303-1/7(2022).
12. S. Nyambo, Y. Zhang, and D. -S. Yang, "Vibronic Transitions and Spin-Orbit Coupling of Three-Membered Metallacycles formed by Lanthanide-Mediated Dehydrogenation of Dimethylamine," *J. Chem. Phys.* **155**, 034302-1/9 (2021).
13. W. Cao, Y. Zhang, L. Wu, and D. -S. Yang, "Threshold Ionization Spectroscopy and Theoretical Calculations of LnO ($\text{Ln} = \text{La}$ and Ce)," *J. Phys. Chem. A*. (Cheuk-Yiu Ng Festschrift), **125**, 1941-1948(2021).
14. S. Nyambo, Y. Zhang, and D. -S. Yang, "Spectroscopic and Computational Characterization of Lanthanide-Mediated N-H and C-H Bond Activation of Methylamine," *J. Chem. Phys.* **153**, 064304 (2020).
15. S. Wang, D. -S. Yang and F. Yang, "Nitrogen-Induced Shift of Photoluminescence from Green to Blue Emission for Xylose-Derived Carbon Dots," *Nano Express* **1**, 020018 (2020).
16. R. L. Calabro, P. Karna, D. Y. Kim and D.-S. Yang, "Controlled Synthesis and Characterization of $\text{NaYF}_4\text{:Yb/Er}$ Upconverting Nanoparticles Produced by Laser Ablation in Liquid," *J. Chem. Phys.* **153**, 064701 (2020).
17. Y. Zhang and D. -S. Yang, "Spin-Orbit Coupling and Vibronic Transitions of $\text{Ce}(\text{C}_3\text{H}_4)$ and $\text{Ce}(\text{C}_3\text{H}_6)$ formed by the Ce Reaction with Propene: Mass-Analyzed Threshold Ionization and Relativistic Quantum Computation," *J. Chem. Phys.* **152**, 144304 (2020).
18. S. Wang, W. Sun, D. -S. Yang, and F. Yang, "Soybean-Derived Blue Photoluminescent Carbon Dots," *Beilstein J. Nanotechnol.* **11**, 606-619 (2020).

19. Y. Zhang, W. Cao, and D. -S. Yang, "Spin-Orbit Coupling and Vibronic Transitions of Two Ce(C₄H₆) Isomers Probed by Mass-Analyzed Threshold Ionization and Relativistic Quantum Chemical Computation," *J. Chem. Phys.* **151**, 124307 (2019).
20. R. L. Calabro, D. -S. Yang, and D. Y. Kim, "Controlled Nitrogen Doping of Graphene Quantum Dots Through Laser Ablation in Aqueous Solutions for Photoluminescence and Electrocatalytic Applications," *ACS Appl. Nano. Mater.* **2**, 6948-6959 (2019).
21. S. Wang, W. Sun, D. -S. Yang, and F. Yang, "Conversion of Soybean Waste to Sub-micron Porous-Hollow Carbon Spheres via a Reagent and Template-Free Route," *Mater. Today Energy* **13**, 50-55 (2019).
22. W. Cao, Y. Zhang, and D. -S. Yang, "La-Mediated Dehydrogenation and C-C Bond Cleavage of 1,4-Pentadiene and 1-Pentyne: Spectroscopy and Formation of La(C₅H₆) and La(C₃H₄) Radicals," *J. Organomet. Chem. (Special Issue Dedicated to Richard J. Puddephatt's 75th Birthday)* **880**, 187-195 (2019).
23. Y. Zhang, S. Nyambo, and D.-S. Yang, "Mass-Analyzed Threshold Ionization Spectroscopy of lanthanide imide LnNH (Ln = La and Ce) Radicals from N-H Bond Activation of Ammonia," *J. Chem. Phys.* **149**, 234301/1-8 (2018).
24. R. L. Calabro, D. -S. Yang, and D. Y. Kim, "Liquid-Phase Laser Ablation Synthesis of Graphene Quantum Dots from Carbon Nano-Onions: Comparison with Chemical Oxidation," *J. Colloid Interface Sci.* **527**, 132-140 (2018).
25. W. Cao, D. Hewage, and D.-S. Yang, "Spectroscopy and Formation of Lanthanum-Hydrocarbon Radicals formed by Association and Carbon-Carbon Band Cleavage of Isoprene," *J. Chem. Phys.* **148**, 194302/1-9 (2018).
26. W. Cao, Y. Zhang, S. Nyambo, and D.-S. Yang, "Spectroscopy and Formation of Metal-Hydrocarbon Radicals from Lanthanum-Mediated C-H and C-C Band Activation of 1-Pentene and 2-Pentene," *J. Chem. Phys.* **149**, 034303/1-9 (2018).
27. W. Cao, D. Hewage, and D.-S. Yang, "Lanthanum-Mediated Dehydrogenation of Butenes: Spectroscopy and Formation of La(C₄H₆) isomer," *J. Chem. Phys.* **148**, 044312/1-8 (2018).
28. R. Silva, W. Cao, and D.-S. Yang, "Low-Energy Photoelectron Imaging Spectroscopy of La_n(benzene) (n = 1 and 2)," *J. Phys. Chem. A* **121**, 8440-8447 (2017).
29. W. Cao, D. Hewage, and D. -S. Yang, "Lanthanum-Mediated Dehydrogenation of 1- and 2-Butynes: Spectroscopy and Formation of La(C₄H₄) Isomers," *J. Chem. Phys.* **147**, 064303/1-9 (2017).
30. D. Hewage, W. Cao, S. Kumari, R. Silva, and D.-S. Yang, "Spectroscopy and Formation of Lanthanum-Hydrocarbon Radicals formed by C-C Bond Cleavage and Coupling of Propene," *J. Chem. Phys.* **146**, 184304/1-8 (2017).

31. S. Kumari, W. Cao, D. Hewage, R. Silva, and D. -S. Yang, "Mass-Analyzed Threshold Ionization Spectroscopy of Lanthanum-Hydrocarbon Radicals Formed by C-H Bond Activation of Propene," *J. Chem. Phys.* **146**, 074305/1-8 (2017).
32. D. Hewage, W. Cao, J. H. Kim, Y. Wang, Y. Liu, and D. -S. Yang, "Spectroscopic Characterization of Nonconcerted [4+2] Cycloaddition of 1,3-Butadiene with Lanthanacyclopentadiene to form Lanthanum-Benzene in the Gas Phase," *J. Phys. Chem. A* **121**, 1233-1239 (2017).
33. D. Hewage, W. Ruchira Silva, Wenjin Cao, and D. -S. Yang, "La-Activated Bicyclo-oligomerization of Acetylene to Naphthalene," *J. Am. Chem. Soc.*, **138**, 2468-2471 (2016).
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35. Y. Zhang, M. W. Schmidt, S. Kumari, M. S. Gordon, and D. -S. Yang, "Threshold Ionization and Spin-Orbit Coupling of Ceracyclopentadiene Formed by Ethylene Dehydrogenation" (Mark S. Gordon Festschrift), *J. Phys. Chem. A* **120**, 6963-6969 (2016).
36. D. Hewage, M. Roudjane, W. Ruchira Silva, S. Kumari, and D.-S. Yang, "Lanthanum-Mediated C-H Bond Activation of Propyne and Identification of La(C₃H₂) isomers," *J. Phys. Chem. A* **119**, 2857-2862 (2015).
37. L. Wu, C. Zhang, S. Krasnokutski, and D. -S. Yang, "Threshold Ionization, Structural Isomers, and Electronic States of M₂O₂ (M = Sc, Y, and La)," *J. Chem. Phys.* **140**, 124307/1-9 (2014).
38. S. Kumari and D. -S. Yang, "High-Resolution Electron Spectroscopy and Rotational Conformers of Group 6 Metal (Cr, Mo, and W) Bis(mesitylene) Sandwich Complexes" (Terry Miller Festschrift), *J. Phys. Chem. A* **117**, 13336-13344 (2013).
39. S. Kumari, B. Sohnlein, D. Hewage, M. Roudjane, J. Lee, and D. -S. Yang, "Binding Sites and Electronic States of Group 3 Metal-Aniline Complexes probed by High-Resolution Electron Spectroscopy," *J. Chem. Phys.* **138**, 224304/1-9 (2013).
40. X. Wang, J. Lee, and D. -S. Yang, "High-Resolution Electron Spectroscopy and Molecular Structures of Cu-(2,2'-bipyridine) and Cu-(4,4'-bipyridine)" *Can. J. Chem.* (Dennis Salahub Special Issue) **91**, 613-620 (2013).
41. S. Kumari, M. Roudjane, D. Hewage, Y. Liu, and D. -S. Yang, "High-Resolution Electron Spectroscopy of Lanthanide (Ce, Pr, and Nd) Complexes of Cyclooctatetraene: The role of 4f electrons," *J. Chem. Phys.* **138**, 164307/1-9(2013).
42. L. Wu, C. Zhang, S. Krasnokutski, and D. -S. Yang, "Mass-Analyzed Threshold Ionization and Electronic States of M₃O₄ (M = Sc, Y, and La)," *J. Chem. Phys.* **137**, 084312/1-7 (2012).
43. L. Wu, Y. Liu, C. Zhang, S. Li, D. A. Dixon, and D. -S. Yang, "Mass-Analyzed Threshold Ionization and Excited State of Lanthanum Dioxide," *J. Chem. Phys.* **137**, 034307/1-8 (2012).

44. Y. Lei, L. Wu, B. R. Sohnlein, and D. -S. Yang, "High-Spin Electronic States of Lanthanum-Arene Complexes: Nd(benzene) and Nd(naphthalene)," *J. Chem. Phys.* **136**, 204311/1-8 (2012).
45. M. Roudjane, S. Kumari, and D.-S. Yang, "Electronic States and Metal-Ligand Bonding of Gadolinium Complexes of Benzene and Cyclo-octatetraene," *J. Phys. Chem. A* **116**, 839-845 (2012).
46. Y. Liu, S. Li, B. R. Sohnlein, S. Kumari, M. Roudjane, and D. -S. Yang, "Electronic States and Pseudo Jahn-Teller Distortion of Heavy Metal-Monobenzene Complexes: $M(C_6H_6)$ ($M = Y, La, \text{ and } Lu$)," *J. Chem. Phys.* **136**, 134310/1-9 (2012).
47. J. Lee, S. A. krasnokutski, and D. -S. Yang, "High-Resolution Electron Spectroscopy, Preferential Metal-Binding Sites, and Thermochemistry of Lithium Complexes of Polycyclic Aromatic Hydrocarbons," *J. Chem. Phys.* **134**, 024301/1-9 (2011).
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50. J. S. Lee, Y. Lei, and D. -S. Yang, "Electron-Spin Multiplicities of Transition-Metal Aromatic Radicals and Ions: $M[C_6(CH_3)_6]$ and $M^+[C_6(CH_3)_6]$ ($M = Ti, V, \text{ and } Co$), *J. Phys. Chem A*, **115**, 6509-6517 (2011).
51. N. Mirsaleh-Kohan, W. D. Robertson, R. N. Compton, S. A. Krasnokutski, and D. -S. Yang, "Ionic and Vibrational Properties of an Ultra-Low Ionization Potential Molecule: Tetrakis(dimethylamino)ethylene," *Int. J. Mass Spectrom.* **304**, 57-65 (2011).
52. Y. Liu, C. Zhang, L. Wu, S. A. Krasnokutski, and D. -S. Yang, "Electronic States and Spin-Orbit Splitting of Lanthanum Dimer," *J. Chem. Phys.* **135**, 034309/1-7 (2011).
53. S. A. Krasnokutski, J. S. Lee, and D. -S. Yang, "High-Resolution Electron Spectroscopy and Structures of Lithium-Nucleobase (Adenine, Uracil, and Thymine) Complexes," *J. Chem. Phys.* **132**, 044304-1/8 (2010).
54. J. S. Lee, S. Kumari, and D. -S. Yang, "Conformational Isomers and Isomerization of Group 6 (Cr, Mo, and W) Metal-Bis(toluene) Sandwich Complexes Probed by Variable-Temperature Electron Spectroscopy," *J. Phys. Chem. A* (Klaus Mueller-Dethlefs Festschrift) **114**, 11277-84 (2010).
55. J. S. Lee, Y. Lei, S. Kumari, and D. -S. Yang, "Ring Deformation and π -Electron Redistribution of Methylbenzenes Induced by Metal Coordination," *J. Phys. Chem. A* **114**, 9136-43 (2010).
56. X. Wang and D. -S. Yang, "Bonding and Structures of Copper-Aminopyridine Complexes: High-Resolution Electron Spectroscopy and Ab Initio Calculations," *Can. J. Chem.* (R. J. Puddephatt Special Issue), **87**, 297-306 (2009).

57. B. Reed, C. –S. Lam, Y. –C. Chang, X. Xing, D. –S. Yang, and C. Y. Ng, "A High-Resolution Photoionization Study of ^{56}Fe Using A Vacuum Ultraviolet Laser," *Astrophys. J.* **693**, 940-945 (2009).
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59. C. Zhang, S. A. Krasnokutski, B. Zhang and D. –S. Yang, "Binding Sites, Rotational Conformers and Electronic States of $\text{Sc-C}_6\text{H}_5\text{X}$ ($\text{X} = \text{F}, \text{CH}_3, \text{OH}$ and CN) Probed by Pulsed-Field-Ionization Electron Spectroscopy," *J. Chem. Phys.* **131**, 054303-1/9 (2009).
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63. X. Wang, B. R. Sohnlein, S. Li, J. F. Fuller and D. –S. Yang, "Pulsed-Field Ionization Electron Spectroscopy and Molecular Structures of Copper-(Pyridine) $_{1,2}$," *Can. J. Chem.* (G. M. Bancroft Special Issue), **85**, 714-723 (2007).
64. B. R. Sohnlein, Y. Lei and D.-S. Yang, "Electronic States of Neutral and Cationic Bis(benzene)Titanium and Vanadium Sandwich Complexes Studied by Pulsed Field Ionization Electron Spectroscopy," *J. Chem. Phys.*, **127**, 114302/1-114302/10 (2007).
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Book Chapters

1. W. Cao and D. -S. Yang, "Lanthanide-Mediated C-H Activation: Spectroscopy, Structures, and Formation of Metal-Containing Intermediates," in *Handbook of CH-Functionalization* (D. Maiti, Ed.), Wiley-VCH, 2022. ISBN: 9783527834242.
<https://onlinelibrary.wiley.com/doi/epdf/10.1002/9783527834242.chf0092>
2. D.-S. Yang, "High-Resolution Photoelectron Spectroscopy," in *Comprehensive Coordination Chemistry III* (Edwin Constable, Gerard Parkin, Lawrence Que Jr., Eds), Vol. 2, Elsevier, 2021; pp 217-240. <https://dx.doi.org/10.1016/B978-0-12-409547-2.14641-4>. ISBN:978008102685

3. D.-S. Yang, "Photoelectron Spectroscopy," in *Comprehensive Coordination Chemistry II: From Biology to Nanotechnology*, (J. McCleverty and T. Meyers, Editors-in-Chief), Vol. 2, *Fundamentals*, (A. B. P. Lever, Ed.), Elsevier: Oxford, 2003, pp. 187-196.
4. D.-S. Yang, "Zero Electron Kinetic Energy Photoelectron Spectra of Metal Clusters and Complexes," in *Advances in Metal and Semiconductor Clusters, Vol. 5, Metal Ion Solvation and Metal-Ligand Interactions*, (M. A. Duncan, Ed.), Elsevier: Amsterdam, 2001, pp. 187-225.
5. B. Simard, S. A. Mitchell, D. M. Rayner and D.-S. Yang, "Structures, Energetics, and Reactivity of Metal Clusters and Metal-Ligand Species in the Gas Phase," in *Metal-Ligand Interactions in Chemistry, Physics, and Biology*, (N. Russo and D. R. Salahub, Eds.), Kluwer: Dordrecht, 2000, pp. 239-294.
6. A. Berces, M. Z. Zgierski and D.-S. Yang, "Study of the Electronic and Geometric Structures of Transition Metal Molecules and Cluster Compounds Using DFT Calculations and ZEKE Spectroscopy," in *Computational Molecular Spectroscopy*, (P. Jensen and P. R. Bunker, Eds.), John Wiley & Sons: New York, 2000, pp. 109-134.

Sponsored Projects as Principal Investigator

Department of Energy, Basic Energy Sciences

D. -S. Yang, "Spectroscopic and Computational Studies of Spin-Orbit Coupling of Lanthanide Oxides," (co-PI: Mark Gordon), Department of Energy (DE-SC0021227), \$607,812 (\$357,812 to Yang), 08/1/2020-07/31/2024.

National Science Foundation

1. D.-S. Yang, "Photoionization and Photoelectron Spectroscopy of Transient Organometallic Complexes," National Science Foundation (1800316), \$390,000, 08/15/2018 – 07/31/2022.
2. D. -S. Yang, "Spectroscopy and Imaging of Organometallic Complexes," National Science Foundation (CHE-1362102), \$439,000, 8/1/2014-7/31/2019.
3. D. -S. Yang, "Photoion and Photoelectron Spectroscopy of Metal Clusters and Complexes," National Science Foundation (CHE-1012351), \$445,650, 09/15/2010-08/31/2014.
4. D.-S. Yang, "Photoelectron and Photoionization Spectroscopy of Metal-Organic Complexes," National Science Foundation (CHE-0717968), \$406,516, 8/15/2007 - 7/31/2011.
5. D.-S. Yang, "Zero Electron Kinetic Energy Photoelectron Spectroscopy of Metal Association Complexes," National Science Foundation (CHE-0415682), \$335,600, 8/1/2004 - 7/31/2008.
6. D.-S. Yang, "Spectroscopic Studies of Weakly Bound Metal-Molecule Complexes," National Science Foundation (CHE-0111227), \$331,600, 8/15/2001 - 7/31/2005.

American Chemical Society Petroleum Research Fund

1. D.-S. Yang, "Spectroscopy and Structures of Transition Metal Oxide Clusters," American Chemical Society-Petroleum Research Fund (ACS-PRF # 49910-ND6), \$100,000, 1/1/2010 - 8/31/2012.
2. D.-S. Yang, "Spectroscopy and Structures of Group 3 and Group 4 Transition Metal Complexes of Polycyclic Aromatic Hydrocarbons," American Chemical Society-Petroleum Research Fund (PRF # 45367-AC6), \$80,000, 9/1/2006 - 8/31/2008.
3. D.-S. Yang, "Zero Electron Kinetic Energy Spectroscopy of Metal Complexes with Aromatic Ligands," American Chemical Society-Petroleum Research Fund (PRF # 41859-AC6), \$80,000, 9/1/2004 - 8/31/2007.
4. D.-S. Yang, "Spectroscopy of Weakly Bound Group 13-15 Complexes," American Chemical Society-Petroleum Research Fund (PRF # 37108-AC6), \$90,000, 9/1/2001 - 8/31/2004.
5. D.-S. Yang, "Spectroscopy and Structure of Transition Metal-Organic Reaction Intermediates," American Chemical Society-Petroleum Research Fund (PRF # 33504-G6), \$20,000, 9/1/1998 - 8/31/2000.

Kentucky Science and Engineering Foundation

1. D. -S. Yang, "Photoelectron Velocity-Map Imaging of Transition Metal-Benzene Clusters," Kentucky Science and Engineering Foundation (KSEF-3563-RDE-019), \$30,000, 07/01/2016-06/30/2017.
2. D.-S. Yang, "Spectroscopic Characterization of Metal-Mediated Hydrocarbon Activation," Kentucky Science and Engineering Foundation (KSEF-2775-RDE-016), \$30,000, 7/1/2013 - 6/30/2015.
3. D. -S. Yang, "High-Resolution Pulsed-Field-Ionization Ion Spectroscopy of Transition-Metal-Oxide Clusters," Kentucky Science and Engineering Foundation (KSEF-1863-RDE-012), \$100,000, 7/1/2009 - 6/30/2012.
4. D.-S. Yang, "Probing Metal Binding to DNA and RNA Nucleobases with High-Resolution Photoelectron Spectroscopy," Kentucky Science and Engineering Foundation (KSEF-1163-RDE-009), \$100,000, 1/1/2007 - 12/31/2009.
5. D.-S. Yang, "Laser Spectroscopic Characterization of Transition Metal-Aromatic Compounds," Kentucky Science & Engineering Foundation (KSEF-713-RDE-007), \$99,259, 5/1/2005 - 4/30/2008.

Kentucky Council for Postsecondary Education and University of Kentucky

1. D. -S. Yang, "Repair of Essential Equipment Within Individual Laboratory for Fundamental Research on Catalysis for Energy," UK Energy Research Priority Area (eRPA), \$22,722, 2/20/2025 – 6/30/2026.
2. D.-S. Yang, "A Pulsed Nanosecond Solid-State Laser System," University of Kentucky Research Equipment Competition, \$20,082, 5/19/2023.

3. D.-S. Yang, "A High Power Pulsed Solid-State Laser System," University of Kentucky Research Equipment Competition, \$54,970, 2/28/2017-6/30/2018
4. D.-S. Yang, "A High-Energy Solid-State Laser," University of Kentucky Major Research Equipment Initiative, \$53,720, 7/1/2008 – 6/30/2009.
5. D.-S. Yang, "Tunable Infrared Laser," University of Kentucky Major Research Equipment Initiative, \$47,900, 7/1/2006 – 6/30/2007.
6. D.-S. Yang, "Computational Spectroscopy of Unstable Metal-Aromatic Hydrocarbons," University of Kentucky Center for Computational Sciences, \$23,800, 7/1/2004 - 6/30/2005.
7. D.-S. Yang, "A Compact High Energy Pulsed Laser System," University of Kentucky Research Equipment Initiative, \$43,600, 7/1/2004-6/30/2005
8. D.-S. Yang, "Laser Desorption/Ionization Supersonic Jet Time-of-Flight Mass Spectrometer," University of Kentucky Research Equipment Initiative, \$50,000, 7/1/2002-6/30/2003
9. D.-S. Yang, "Computations of Photoelectron Spectra of Unstable Organometallic Complexes," University of Kentucky Center for Computational Sciences, \$37,666, 9/1/1999 - 12/31/2000.
10. D.-S. Yang, "A Pulsed Dye Laser System," Research Equipment Pool, Kentucky Council for Postsecondary Education, \$40,000, 1999 - 2000.
11. D.-S. Yang, "Structure and Energetics of Unstable Metal-Containing Species," University of Kentucky Summer Faculty Research Fellowship, \$5,000, 1999.

Research Presentations

Seminars and Conference Invitations

1. "Threshold Ionization and Spin-Orbit Coupling of Molecular Lanthanides," D.-S. Yang, Department of Chemistry, Korea Advanced Institute of Science & Technology (KAIST), Daejeon, South Korea, April, 17, 2024.
2. "Spin-Orbit Coupling of Molecular Lanthanides Probed by Laser-Based Spectroscopy," D.-S. Yang, Department of Chemistry, Tsinghua University, Beijing, China, May 14, 2024.
3. "Spin-Orbit Coupling of Molecular Lanthanides Probed by Laser-Based Spectroscopy," D.-S. Yang, Institute for Theoretical and Computational Sciences (QITCS), Shandong University, Qingdao, China, May 16, 2024.
4. "Spin-Orbit Coupling of Molecular Lanthanides Probed by Laser-Based Spectroscopy," D.-S. Yang, Dalian Institute of Chemical Physics, Chinese Academy of Sciences, Dalian, China, May 21, 2024.

5. "Spin-Orbit Coupling of Molecular Lanthanides Probed by High-Resolution Laser Spectroscopy," D. -S. Yang, Ganjiang Innovation Academy, Chinese Academy of Sciences, Ganzhou, China, May, 24, 2024.
6. "Spin-Orbit Coupling of Lanthanide Oxides," D.-S. Yang, 8th International Conference on Chemical Bonding, ICCB, July 20-24, 2023, Kauai, Hawaii.
7. "Spectroscopy, Structures, and Formation of Transient Radicals in Organometallic Reactions," D. -S. Yang, Institute of Chemistry, Chinese Academy of Science, Beijing, China, June 17, 2019.
8. "Metal Activation of Small Hydrocarbons and Laser Spectroscopy of Fleeting Molecules," D. -S. Yang, International Conference on Energy, Resources, Environment and Sustainable Development (ERESD2019), May 31 – June 3, 2019, Xuzhou, China.
9. "Threshold Ionization and Electron Imaging Spectroscopy of Organolanthanide Radicals," D. -S. Yang, The 70th ACS Southeastern Regional Meeting, October 31 - November 3, 2018, Augusta, GA.
10. "Spectroscopic Characterization of Metal-Assisted Hydrocarbon Activation," D. –S. Yang, The 5thInternational Conference on Chemical Bonding, ICCB, June 22-26, 2017, Kauai, Hawaii.
11. "Rare-Earth Organometallic Radicals Formed by Metal-Mediated Hydrocarbon Activation," D. –S. Yang, International Symposium on New Molecules and Clusters, May 28-30, 2016, Shanghai, China.
12. "Laser Spectroscopy and Electron Imaging of Metal-Hydrocarbon Radicals," Department of Physics, Tsinghua University, Beijing, China, May 23, 2016.
13. "Laser Spectroscopy and Electron Imaging of Organometallic Radicals," Institute of Chemistry, Chinese Academy of Science, Beijing, China, May 24, 2016.
14. "Laser Spectroscopy and Electron Imaging of Metal-Hydrocarbon Radicals," School of Physical Science and Technology, Shanghai Tech University, Shanghai, China, May 30, 2016.
15. "Lanthanum-Induced Bond Activation and Formation of Small Hydrocarbons in the Gas Phase," D. Hewage, S. Kumari, W. Cao, Y. Zhang, W. R. Silva, M. Roudjane, and D. -S. Yang, Oct 16-19, 2014, The 66th ACS Southeastern Regional Meeting, Nashville, TN.
16. "Characterization of Metal-Hydrocarbon Radicals with Zero-Energy Electrons and Threshold Ions," Department of Chemistry, University of Calgary, Canada, September 19, 2014.

17. "Spectroscopy and Structures of Small Transition Metal-Oxide Clusters," D. -S. Yang, July 18-23, 2013, The Six International Symposium on Atomic Cluster Collision, Wuhan-Chongqing, China.
18. "Probing Transient Organometallics with Zero Energy Electrons and Threshold Ions," Department of Chemistry, University of Louisville, KY, November 22, 2013.
19. "Metal-Induced Bond Rotation and Breaking," D.-S. Yang, June 10-14, 2011, The 12th National Conference on Chemical Dynamics, Chengdu, Sichuan, China. "High Resolution Electron and Ion Spectroscopy," Department of Chemistry, University of Science and Technology Beijing, Beijing China, June 22, 2011
20. "Experimental Quantum Chemistry with Zero Energy Electrons and Threshold Ions," Department of Chemistry, Peking University, Beijing, China, June 21, 2011.
21. "Laser Spectroscopy with Zero Energy Electrons and Threshold Ions," Advanced Research Institute, Nanchang University, Nanchang, Jiangxi, China, June 16, 2011.
22. "Spectroscopy of Organometallic Radicals with Zero Energy Electrons and Threshold Ions," Department of Chemistry, Brown University, Providence, RI, April 8, 2011.
23. "Metal Binding to Nucleobase Molecules from High-Resolution Electron and Ion Spectroscopy," D.-S. Yang, December 15-20, 2010, PACIFICHEM 2010, Honolulu, Hawaii.
24. "Spectroscopy, Structures, and Electronic States of Transition-Metal-Oxide Clusters," D.-S. Yang, December 15-20, 2010, PACIFICHEM 2010, Honolulu, Hawaii.
25. "Transition Metal-Arene Complexes: Spectroscopy, Structures and Electron Spin States," Department of Chemistry, Wayne State University, Detroit, MI, March 31, 2010
26. "Optimal Attachment of Metal Atoms/Ions to DNA/RNA Base Molecules," D. -S. Yang, August 3-7, 2009, The 6th Joint Meeting of The Chinese Physicists Worldwide International Conference on Physics Education and Frontier Research, Lanzhou, China.
27. "Metal Binding to Gas-Phase Nucleobases from ZEKE and IR-UV Spectroscopy," D. -S. Yang, August 16-20, 2009, 238th ACS National Meeting, Washington DC.
28. "Metal Binding to DNA/RNA Base Molecules probed by ZEKE and IR-UV Spectroscopy," D. -S. Yang, October 16-20, 2009, 2009 Asilomar Conference of American Society of Mass Spectrometry on Ion Spectroscopy, Pacific Grove, CA.
29. "Organometallic Radicals: Spectroscopy, Structures and Electronics States," Department of Chemistry, Fudan University, Shanghai, China, June 22, 2009.

30. Transition Metal-Arene Complexes: Spectroscopy, Structures, and Spin States,” Department of Chemistry, Wesleyan University, Middletown, CT, September 26, 2008.
31. “Aromatic Ring Rotation and Bend Induced by Metal Coordination,” D.-S. Yang, May 24-28, 2008, 91st Canadian Chemical Conference and Exhibition, Edmonton, AB, Canada.
32. "Spectroscopy and Structures of Transient Organometallic Complexes," D.-S. Yang, February 22-23, 2007, Chemical Physics Workshop, University of Tennessee, Knoxville, TN.
33. “Organometallic Radicals: Spectroscopy, Electronic States and Molecular Structures,” Canadian Light Source, Saskatoon, Canada, December 7, 2007.
34. “Probing Metal-Aromatic Complexes with Zero Kinetic Energy Electrons,” Department of Chemistry, Johns Hopkins University, Baltimore, MD, March 14, 2006.
35. "Probing Structures of Metal Organic Clusters Using ZEKE Spectroscopy,” D.-S. Yang, January 2006, Gordon Research Conference on Photoionization, Photoions and Photodetachment, Bulleton, CA.
36. "High Resolution Photoelectron Spectroscopy of Organometallics,” D.-S. Yang, February 2006, Mesilla Workshop on Organometallic Complexes: Energetics-Solvation-Reactions, Mesilla, NM.
37. "Spectroscopy from Diatomic Molecules to Organometallics," D.-S. Yang, June 27-30, 2006, The 5th Joint Meeting of The Chinese Physicists Worldwide International Conference on Physics Education and Frontier Research, Taipei, Taiwan.
38. "ZEKE Electron Spectroscopy of Metal-Aromatic Complexes," D.-S. Yang, March 2005, Gordon Research Conference on Gaseous Ions: Structures, Energetics, and Reactions, Ventura, CA.
39. “Pulsed Field Ionization Zero Electron Kinetic Energy (PFI-ZEKE) Spectroscopy of Metal-Organic Complexes,” Department of Chemistry, Emory University, Atlanta, GA, April 25, 2005.
40. “Probing Transient Molecular Structures with Stationary Electrons,” Institute of Chemistry, Chinese Academy of Sciences, Beijing, China, July 4, 2005.
41. “Probing Structures of Transient Molecules Using Zero Kinetic Energy Electrons,” Department of Physics, Tsinghua University, Beijing, China, July 5, 2005.
42. “Spectroscopy and Structures of Transient Molecules,” Department of Chemical Physics, University of Science and Technology of China, Hefei, China, July 7, 2005.

43. "Spectroscopy and Structures of Transient Molecules," Dalian Institute of Chemical Physics, Chinese Academy of Sciences, Dalian, China, July 27, 2005.
44. "Spectroscopy and Bonding of Transient Metal-Organic Complexes," W. R. Wiley Environmental Molecular Sciences Laboratory, Pacific Northwest National Laboratory, Richland, WA, October 4, 2005.
45. "Spectroscopy and Structures of Transient Metal-Organic Complexes," Department of Chemistry, Oregon State University, Eugene, OR, October 5, 2005.
46. "Spectroscopy and Structures of Transient Metal-Organic Complexes," Department of Chemistry, University of California at Davis, Davis, CA, October 6, 2005.
47. "High Resolution Electron Spectroscopy of Organometallic Complexes," D.-S. Yang, June 2005, American Chemical Society - Petroleum Research Foundation Summer School, University of Arizona, Tucson, AZ.
48. "Spectroscopy and Structures of Metal Clusters and Complexes," D.-S. Yang, September 2004, Gordon Research Conference on Molecular and Ionic Clusters, Aussois, FRANCE.
49. "Pulsed Field Ionization Photoelectron Spectroscopy of Weakly Bound Metal Complexes," D.-S. Yang, March 2003, 225th American Chemical Society National Meeting, New Orleans, LA.
50. "Laser spectroscopy of metal clusters and complexes," Department of Chemistry, Western Kentucky University, Bowling Green, KY, April 2002.
51. "High Resolution Photoelectron Spectra of Metal Clusters and Complexes," Department of Chemistry, University of Georgia, Athens, GA, November 2001.
52. "ZEKE-PFI Spectra of Metal-Ligand Complexes," D.-S. Yang, May 2000, Canadian Society for Chemistry National Meeting (CSC2000), Calgary, CANADA.
53. "High Resolution Photoelectron Spectra of Metal Clusters and Complexes," Department of Chemistry, University of Florida, Gainesville, FL, September 2000.
54. "Photoelectron Spectra and Structures of Transition Metal Clusters and Complexes," D.-S. Yang, October 1999, 51st American Chemical Society Southeast Regional Meeting, Knoxville, TN.
55. "Structure of Metal Clusters and Complexes," D.-S. Yang, M. Z. Zgierski, D. R. Salahub, A. Martinez and P. A. Hackett, September 1997, 214th ACS National Meeting, Las Vegas, NV.

56. "PFI-ZEKE Photoelectron Spectroscopy and Structures of Small Transition Metal Clusters," D.-S. Yang, March 1997, National Institute for Advanced Interdisciplinary Research Workshop on Cluster Sciences, Tsukuba, JAPAN.
57. Department of Chemistry, York University, Toronto, Canada, October 1997.
58. Department of Chemistry, University of Kentucky, Lexington, KY, September 1997.
59. Department of Chemistry, The University of British Columbia, Vancouver, Canada, January 1997.
60. Institute for Physical and Chemical Research (RIKEN), Wako, Saitama, Japan, March 1997.
61. Department of Chemistry, University of Keio, Kohoku-ku, Yokohama, Japan, March 1997.
62. "Structures of Ligated Niobium Clusters," D.-S. Yang, October 1996, Workshop on Clusters and Nano-Particles, National Research Council of Canada, Ottawa, CANADA.
63. Department of Chemistry, University of Arizona, Tucson, AZ, March 1995.
64. Institute for Physical and Theoretical Chemistry, Technical University of Munich, Garching, Germany, September 1995.
65. Department of Physics, University of Konstanz, Konstanz, Germany, October 1995.
66. Jülich Research Center, Jülich, Germany, October 1995.
67. Department of Chemistry, University of Western Ontario, London, Canada, November 1995.
68. Department of Chemistry, Hong Kong University of Science and Technology, Hong Kong, April 1994.
69. Xerox Research Centre of Canada, Mississauga, Canada, August 1992.

Contributed Presentations at Conferences

70. "Investigation of the Electronic Structure and Bonding Motifs of Lanthanide Chalcogenides" T. Nakamura, G. Schoendorff, M. S. Gordon, and D.-S. Yang, June 22-26, 2026, 79th International Symposium on Molecular Spectroscopy, Champaign-Urbana, IL.
71. "Water-Soluble Copper (I) Hydroxide Catalysts in Ligand-Free Suzuki-Miyaura Cross-Coupling Reactions," P. Karna, D. M. Meira, Z. Finrock, and D.-S. Yang, November 27-December 2, 2022, MRS Fall meeting, Boston, MA.

72. "Ligand-Free Suzuki-Miyaura Cross-Coupling Reactions Catalyzed by Water-Soluble and Stabilized Cu Species," P. Karna, M. Okeke, and D. -S. Yang, March 20-24, 2022, ACS Spring Meeting, San Diego, CA and Online.
73. "Vibronic Spectra of Group 13 Piperidine Complexes," J M. Okeke, P. Bhowmik, and D. -S. Yang, June 21-25, 2021, 76th International Symposium on Molecular Spectroscopy, Champaign-Urbana, IL.
74. "Chasing Pd active species in Suzuki-Miyaura cross-coupling reactions," P. Karna, M. Okeke, D.M. Meria, Z. Finfrock, and D.-S. Yang, April 5-30, 2021, ACS Spring Meeting 2021, <https://doi.org/10.1021/scimeetings.1c00162>.
75. "Synthesis and Photoluminescence Properties of Upconverting Nanomaterials Produced through Laser Ablation in Liquid" (poster), R. Calabro¹, P. Karna¹, D.-S. Yang, and D. Y. Kim, December 1-December 6, 2019, 2019 MRS Fall Meeting and Exhibit, Boston, MA.
76. "Threshold Ionization Spectroscopy and Spin-Orbit Coupling of CeC_3H_4 and CeC_3H_6 Formed in $\text{Ce} + \text{Propene}$ Reaction," Y. Zhang, W. Cao, and D. -S. Yang, June 17-21, 2019, 74th International Symposium on Molecular Spectroscopy, Champaign-Urbana, IL.
77. "Spectroscopy of $\text{Ln}(\text{OH})_2$ ($\text{Ln} = \text{La}$ and Ce) Formed by O-H Bond Activation of Water," S. Nyambo, J. Kim, P. Karna, Y. Zhang, and D. -S. Yang, June 17-21, 2019, 74th International Symposium on Molecular Spectroscopy, Champaign-Urbana, IL.
78. "Synthesis and Photoluminescence Properties of Upconverting Nanomaterials Produced Through Laser Ablation in Liquid" (poster), R. Calabro, D. -S. Yang, and D. Y. Kim, April 5, 2019, the 45th Annual Naff Symposium, Lexington, KY.
79. "Understanding the Photophysics, Synthesis, and Doping Effects of Graphene Quantum Dots," R. L. Calabro, D. -S. Yang, and D. Y. Kim, August 1-2, 2018, Kentucky Nanotechnology and Additive Manufacturing Symposium, Louisville, KY.
80. "Probing Spin-Orbit Coupling of Organocerium Radicals Formed in Ce Atom Reactions with Alkylamines," S. Nyambo, Y. Zhang, and D.-S. Yang, June 18-22, 2018, 73rd International Symposium on Molecular Spectroscopy, Champaign-Urbana, IL.
81. "Probing Selective Bond Activation in Alkylamines: Lanthanum-Mediated C-H and N-H Bond Activation Studied by MATI Spectroscopy," S. Nyambo, Y. Zhang, and D.-S. Yang, June 18-22, 2018, 73rd International Symposium on Molecular Spectroscopy, Champaign-Urbana, IL.
82. "Threshold Ionization Spectroscopy and Spin-Orbit Coupling of LnNH ($\text{Ln} = \text{La}$ and Ce) Formed by Ln reactions with Ammonia," Y. Zhang, S. Nyambo, and D. -S. Yang, June

- 18-22, 2018, 73rd International Symposium on Molecular Spectroscopy, Champaign-Urbana, IL.
83. "Understanding the Photophysics, Synthesis, and Doping Effects of Graphene Quantum Dots" (Oral), R. L. Calabro, D. -S. Yang, and D. Y. Kim, August 1-2, 2018, Kentucky Nanotechnology and Additive Manufacturing Symposium, Louisville, KY.
 84. "Controlled Photoluminescence of Graphene Quantum Dots through Liquid-Phase Laser Ablation" (Poster), R. L. Calabro, D. -S. Yang, and D. Y. Kim, November 26-December 1, 2017, 2017 MRS Fall Meeting and Exhibit, Boston, MA.
 85. "Upconverting Luminescent Nanomaterials—A Liquid-Phase Laser Ablation Approach" (poster), R. Calabro, D.-S. Yang, and D. Y. Kim, November 26-December 1, 2017, 2017 MRS Fall Meeting, Boston, MA.
 86. "Controlled Photoluminescence of Graphene Quantum Dots through Liquid-Phase Laser Ablation" (poster), R. Calabro, D.-S. Yang, and D. Y. Kim, November 26-December 1, 2017, 2017 MRS Fall Meeting, Boston, MA.
 87. "Upconverting Luminescent Nanomaterials Produced Through Liquid-Phase Laser Ablation" (Oral), R. Calabro, D.-S. Yang, and D. Y. Kim, November 3-4, 2017, KSA Annual Meeting, Murry, KY.
 88. "Spectroscopic and Computational Characterization of Lanthanum-Mediated C-H and N-H Bond Activation of Amines" (poster), S. Nyambo, Y. Zhang, D. -S. Yang, CCS² 2017 1st Annual Commonwealth Computational Summit, October 17, 2017, Lexington, KY
 89. "Threshold Ionization Spectroscopy of La(CH₃CN) and La(C₄H₉CN) Radicals Formed by La Reactions with Alkane Nitriles" A. Ullah, J. H. Kim, W. Cao, and D. -S. Yang, June 19-23, 2017, 72nd International Symposium on Molecular Spectroscopy, Champaign-Urbana, IL.
 90. "Threshold Ionization and Spin-Orbit Coupling of Cerium Monoxide," W. Cao, Y. Zhang, L. Wu, and D. -S. Yang, June 19-23, 2017, 72nd International Symposium on Molecular Spectroscopy, Champaign-Urbana, IL.
 91. "Mass-Analyzed Threshold Ionization Spectroscopy and Spin-Orbit Coupling of Cerium-Hydrocarbon Complexes," Y. Zhang, S. Kumari, M. W. Schmidt, M. S. Gordon, and D. -S. Yang, June 19-23, 2017, 72nd International Symposium on Molecular Spectroscopy, Champaign-Urbana, IL.
 92. "Liquid-Phase Laser Ablation for the Controlled Synthesis of Graphene Quantum Dots" (oral), R. Easterday, W. Cao, Y. Liu, D. Y. Kim, and D. -S. Yang, April 17-21, 2017, 2017 MRS Spring Meeting, Phoenix, AZ.

93. "Liquid-Phase Laser-Ablation Synthesis of Upconverting Lanthanide Nanoparticles" (poster), R. Easterday, D. Y. Kim, and D. -S. Yang, April 17-21, 2017, 2017 MRS Spring Meeting, Phoenix, AZ.
94. "Liquid-Phase Laser Ablation as a Method to Produce Upconverting Nanomaterials" (poster), R. Easterday, D. Y. Kim, D. -S. Yang, March 30, 2017, 2017 CCTS Spring Conference, Lexington, KY
95. "Threshold Ionization of $\text{La}(\text{C}_5\text{H}_8)$ Formed By La-Mediated Dehydrogenation of 1-Pentene" (oral), W. Cao, Y. Zhang, & D. -S. Yang, June 20-24, 2016, 71st International Symposium on Molecular Spectroscopy, Champaign-Urbana, IL.
96. "Ce-Promoted Bond Activation of Propene Probed by Mass-Analyzed Threshold Ionization Spectroscopy" (oral), Y. Zhang, S. Kumari, & D. -S. Yang, June 20-24, 2016, 71st International Symposium on Molecular Spectroscopy, Champaign-Urbana, IL.
97. "Yttrium-Assisted C-H and C-C Bond Activation of Ethylene Probed by Mass-Analyzed Threshold Ionization Spectroscopy" (oral), J. H. Kim & D. -S. Yang, June 20-24, 2016, 71st International Symposium on Molecular Spectroscopy, Champaign-Urbana, IL.
98. "Spectroscopic Identification of $\text{Y}(\text{C}_4\text{H}_6)$ Isomers Formed by Yttrium-Mediated C-H Bond Activation of Butenes" (oral), J. H. Kim & D. -S. Yang, June 20-24, 2016, 71st International Symposium on Molecular Spectroscopy, Champaign-Urbana, IL.
99. "Liquid-Phase Laser Ablation as a Controlled Method to Produce Graphene Quantum Dots" (poster), R. Easterday, W. Cao, Y. Liu, D. Y. Kim, and D. -S. Yang, March 6-10, 2016, Pittcon 2016, Atlanta, GA.
100. "Laser-Assisted Synthesis and Spectroscopic Characterization of Gadolinium Nanoparticles" (poster), S. deLeon, R. Easterday, W. Cao, & D. -S. Yang, April 22, 2016, Undergraduate Regional Poster Competition in Chemistry, University of Kentucky, Lexington, KY.
101. "Threshold Ionization Spectroscopic Characterization of La Atom Reaction with Isoprene"(oral), W. Cao, D.-S. Yang, June 22-26, 2015, 70th International Symposium on Molecular Spectroscopy, Champaign-Urbana, Illinois.
102. "Mass-Analyzed Threshold Ionization Spectroscopy of Cyclic $\text{La}(\text{C}_5\text{H}_6)$ Formed by La Atom Activation of Pentyne and Pentadiene" (oral), W. Cao, Y. Zhang, and D.-S. Yang, June 22-26, 2015, 70th International Symposium on Molecular Spectroscopy, Champaign-Urbana, Illinois.
103. "Ce-Promoted Bond Activation of Ethylene Probed By Mass-Analyzed Threshold Ionization Spectroscopy" (oral), Y. Zhang, S. Kumari, W. Cao, and D.-S. Yang, June 22-26, 2015, 70th International Symposium on Molecular Spectroscopy, Champaign-Urbana, Illinois.

104. "La Atom-Mediated Bond Activation, Coupling, and Cyclization of 1,3-Butadiene Probed by Mass-Analyzed Threshold Ionization Spectroscopy" (oral), D. Hewage, D. -S. Yang, June 16-20, 2014, 69th International Symposium on Molecular Spectroscopy, Champaign-Urbana, Illinois.
105. "Multiple Isomers of $\text{La}(\text{C}_4\text{H}_6)$ Formed in Reactions of La Atom with Small Hydrocarbons" (oral), W. Cao, D. Hewage, D. -S. Yang, June 16-20, 2014, 69th International Symposium on Molecular Spectroscopy, Champaign-Urbana, Illinois.
106. "Spectroscopic Characterization of Metal-Mediated Hydrocarbon Activation" (poster), W. Cao, D. Hewage, Y. Zhang, S. Kumari, R. Silva, M. Roudjane and D. -S. Yang, September 4, 2014, The 10th Kentucky Innovation and Entrepreneur Conference (KIEC), Louisville, KY.
107. "Slow Electron Velocity-Map Imaging of $\text{La}_2(\text{C}_6\text{H}_6)$ and $\text{La}(\text{C}_6\text{H}_6)_2$ " (oral), R. Silva and D. -S. Yang, June 17-21, 2013, 68th OSU International Symposium on Molecular Spectroscopy, Columbus, OH.
108. "C-C Bond Activation and Coupling of Propene Induced by La Atom" (oral), D. Hewage, H. Tao, R. Silva, S. Kumari, and D. -S. Yang, June 17-21, 2013, 68th OSU International Symposium on Molecular Spectroscopy, Columbus, OH.
109. "Mass-Analyzed Threshold Ionization of Lutetium Dimer" (oral), L. Wu, M. Roudjane, Y. Liu, and D. -S. Yang, June 17-21, 2013, 68th OSU International Symposium on Molecular Spectroscopy, Columbus, OH.
110. "Preferred Metal Binding Site of Aniline" (oral), S. Kumari, B. Sohnlein, and D. -S. Yang, June 18-22, 2012, 67th OSU International Symposium on Molecular Spectroscopy, Columbus, OH.
111. "Electron Spin States and Structures of Lanthanide (Ce, Pr, And Nd) Complexes of Cyclooctatetraene" (oral), S. Kumari, Y. Liu, M. Roudjane, and D.-S. Yang, June 18-22, 2012, 67th OSU International Symposium on Molecular Spectroscopy, Columbus, OH.
112. "C-O And O-H Bond Activation by Lanthanum Atom" (oral), R. Silva, D. Hewage, and D.-S. Yang, June 18-22, 2012, 67th OSU International Symposium on Molecular Spectroscopy, Columbus, OH.
113. "Mass Analyzed Threshold Ionization of M_2O_2 ($\text{M}=\text{Ce}$ and Pr)" (oral), L. Wu, B. Dangi, M. Rounjane, and D. -S. Yang, June 18-22, 2012, 67th OSU International Symposium on Molecular Spectroscopy, Columbus, OH.
114. "Cyclopolymerization of Acetylene To Benzyne and Naphthalene" (oral), D. Hewage, R. Silva, and D.-S. Yang, June 18-22, 2012, 67th OSU International Symposium on Molecular Spectroscopy, Columbus, OH.

115. “High-Resolution Pulsed-Field-Ionization Ion Spectroscopy of Transition-Metal-Oxide Clusters” (poster), L. Wu, Lydia Liu, M. Roudjane, J. Lee, C. Zhang, S. Krasnokutski, B. Dangi, and D. –S. Yang, June 1, 2012, The 8th Annual Kentucky Innovation and entrepreneurship (KIEC) Conference, Louisville, KY.
116. “Dehydrogenation of Ethylene: Spectroscopy and Structures of $\text{La}(\text{C}_2\text{H}_2)$ and $\text{La}(\text{C}_4\text{H}_6)$ Complexes” (oral), S. Kumari, M. Roudjane, and D. –S. Yang, June 20-24, 2011, 66th OSU International Symposium on Molecular Spectroscopy, Columbus, OH.
117. “Dehydrogenation and C-H Bond Insertion of Propene: $\text{La}(\eta^2\text{-C}_3\text{H}_4)$ and $\text{HLa}(\eta^3\text{-C}_3\text{H}_5)$ ” (oral), S. Kumari, M. Roudjane, and D. –S. Yang, June 20-24, 2011, 66th OSU International Symposium on Molecular Spectroscopy, Columbus, OH.
118. “Observation of Two $\text{La}(\text{C}_3\text{H}_2)$ Isomers formed by Dehydrogenation of Propyne” (oral), D. Hewage, M. Roudjane, and D. –S. Yang, June 20-24, 2011, 66th OSU International Symposium on Molecular Spectroscopy, Columbus, OH.
119. “Mass-Analyzed Threshold Ionization and Structures of M_3C_2 ($\text{M}=\text{Sc}, \text{La}$)” (oral), L. Wu, M. Roudjane, and D. –S. Yang, June 20-24, 2011, 66th OSU International Symposium on Molecular Spectroscopy, Columbus, OH.
120. “Vibrational and Geometric Structures of $\text{La}_3\text{C}_2\text{O}$ And $\text{La}_3\text{C}_2\text{O}^+$ from Masse-Analyzed Threshold Ionization” (oral), M. Roudjane, L. Wu, and D. –S. Yang, June 20-24, 2011, 66th OSU International Symposium on Molecular Spectroscopy, Columbus, OH.
121. “Electronic Transitions and Spin-Orbit Splitting of Lanthanum Dimer” (oral), Y. Liu, L. Wu, C. Zhang, and D. –S. Yang, June 20-24, 2011, 66th OSU International Symposium on Molecular Spectroscopy, Columbus, OH.
122. “High-Resolution Pulsed-Field-Ionization Ion Spectroscopy of Transition-Metal-Oxide Clusters” (poster), L. Wu, M. Roudjane, Y. Liu, J. Lee, C. Zhang, S. Krosnokutski, and D. –S. Yang, May 26, 2011, The 7th KIEC & 16th KY EPSCoR Joint Conference, Louisville, KY.
123. “Pulsed-Field Ionization Electron Spectroscopy of Lanthanide (Lu, Gd) Benzene complexes” (oral), M. Roudjane, S. Kumari, and D. –S. Yang, June 21-25, 2010, 65th OSU International Symposium on Molecular Spectroscopy, Columbus, OH.
124. “Rotational Conformers of Group VI Metal (Cr, Mo, And W) Bis(mesitylene) Sandwich Complexes” (oral), S. Kumari, and D. –S. Yang, June 21-25, 2010, 65th OSU International Symposium on Molecular Spectroscopy, Columbus, OH.
125. “Photoelectron and Photoion Spectroscopy of Scandium-Methylbenzene Complexes” (oral), J. Lee, Y. Lei, S. Kumari, and D. –S. Yang, June 21-25, 2010, 65th OSU International Symposium on Molecular Spectroscopy, Columbus, OH.

126. "Mass-Analyzed Threshold Ionization of LaO_2 " (oral), L. Wu, C. Zhang, S. Krasnokutski, and D. -S. Yang, June 21-25, 2010, 65th OSU International Symposium on Molecular Spectroscopy, Columbus, OH.
127. "ZEKE Spectroscopy of Lanthanum Cyclooctatetraene" (poster) M. Lucas and D. -S. Yang, April 16-18, 2009, 23rd National Conference on Undergraduate Research (NCUR), University of Wisconsin-La Crosse, La Crosse, WI.
128. "Rotational Conformers of Group VI (Cr, Mo, And W) Metal Bis(Toluene) *Sandwich* Complexes" (oral), J. S. Lee, S. Kumari, and D. -S. Yang, June 22-26, 2009, 64th OSU International Symposium on Molecular Spectroscopy, Columbus, OH.
129. "Mass-Analyzed Threshold Ionization of Lanthanum Oxide Clusters: La_2O_2 and La_3O_4 " (oral), L. Wu, C. Zhang, S. Krasnokutski, and D. -S. Yang, June 22-26, 2009, 64th OSU International Symposium on Molecular Spectroscopy, Columbus, OH.
130. "Half-Sandwich Complexes of Group III (Sc, Y, And La) Metals with Cyclooctatetraene" (oral), S. Kumari, J. S. Lee, and D. -S. Yang, June 22-26, 2009, 64th OSU International Symposium on Molecular Spectroscopy, Columbus, OH.
131. "High Resolution Photoelectron Spectroscopy of Li-pyridazine" (poster), A. Imberi, S. Krasnokutski, and D. -S Yang, April 6-10, 2008, 235th ACS National Meeting, New Orleans, LA.
132. "PFI-ZEKE Spectroscopy of $\text{Sc-C}_6\text{H}_5\text{X}$ ($\text{X}=\text{F}$, OH, and CH_3) Complexes" (oral), C. Zhang, Serge A. Krasnokutski, and D. -S. Yang, June 16-20, 2008, 63rd OSU International Symposium on Molecular Spectroscopy, Columbus, OH.
133. "Pulsed-Field Ionization Electron Spectroscopy and Ab Initio Calculations of Metal (Li, Ca) Complexes with Pyridine and Pyridazine" (oral), Serge A. Krasnokutski, and D. -S. Yang, June 16-20, 2008, 63rd OSU International Symposium on Molecular Spectroscopy, Columbus, OH.
134. "Mass-Analyzed Threshold Ionization Spectroscopy of Metal Clusters" (oral), Serge A. C. Zhang, and Krasnokutski, and D. -S. Yang, June 16-20, 2008, 63rd OSU International Symposium on Molecular Spectroscopy, Columbus, OH.
135. "Clamshell Structures of Hafnium and Zirconium Biphenyl Complexes Determined by Pulsed Field Ionization Electron Spectroscopy" (oral), J.S. Lee, Y. Lei, and D. -S. Yang, June 16-20, 2008, 63rd OSU International Symposium on Molecular Spectroscopy, Columbus, OH.
136. "Half-Sandwich Structures of Scandium and Titanium Cyclo-Octatetraene Complexes" (oral), J.S. Lee, Y. Lei, and D. -S. Yang, June 16-20, 2008, 63rd OSU International Symposium on Molecular Spectroscopy, Columbus, OH.

137. "Electronic States of Nd-Benzene and Nd-Naphthalene: High-Resolution Photoelectron Spectroscopy and Ab Initio Calculations" (oral), Y. Lei, B. R. Sohnlein, and D. -S. Yang, June 16-20, 2008, 63rd OSU International Symposium on Molecular Spectroscopy, Columbus, OH.
138. "IR-UV Resonant Two-Photon Ionization Spectroscopy of $\text{Sc}_n(\text{Benzene})_m$ ($n=1, 2$; $m=1-3$) and $\text{Sc}(\text{Biphenyl})$ " (oral), Y. Lei, J. S. Lee, and D. -S. Yang, June 16-20, 2008, 63rd OSU International Symposium on Molecular Spectroscopy, Columbus, OH.
139. "Pulsed Field Ionization Electron Spectroscopy of Cyclopentadienyl Aluminum" (oral), Y. Lei and D.-S. Yang, June 19-23, 2006, 601st Ohio State University International Symposium on Molecular Spectroscopy, Columbus, OH.
140. "Infrared-Ultraviolet Photoionization and Photoelectron Spectroscopy of Group 6 Metal Bis(benzene) Sandwich Complexes" (poster), D. Hensley, Y. Lei, and D. -S. Yang, March 25-29, 2007, 233rd ACS National Meeting, Chicago, IL.
141. "Molecular Structures and Electronic States of Sc-Terphenyl Complexes Determined by Pulsed Field Ionization-Zero Electron Kinetic Energy Photoelectron Spectroscopy" (oral), Y. Lei and D.-S. Yang, June 18-22, 2007, 62nd Ohio State University International Symposium on Molecular Spectroscopy, Columbus, OH.
142. "Infrared-Ultraviolet Photoionization and Depletion Spectroscopy of Al- And Cu-Ethylenediamine Complexes" (oral), Y. Lei, J. S. Lee, and D.-S. Yang, June 18-22, 2007, 62nd Ohio State University International Symposium on Molecular Spectroscopy, Columbus, OH.
143. "Pulsed Field Ionization-Zero Electron Kinetic Energy Photoelectron Spectroscopy of Lithium Perylene and Coronene Complexes" (oral), J. S. Lee, S. Krasnokutski and D.-S. Yang, June 18-22, 2007, 62nd Ohio State University International Symposium on Molecular Spectroscopy, Columbus, OH.
144. "Spectroscopy and Molecular Structures of Al And Li Complexes of DNA and RNA Bases" (oral), S. Krasnokutski, J. S. Lee and D.-S. Yang, June 18-22, 2007, 62nd Ohio State University International Symposium on Molecular Spectroscopy, Columbus, OH.
145. "Pulsed-Field Ionization Electron and Photoionization Spectroscopy of Li-Naphthalene and Anthracene Complexes" (oral), S. Krasnokutski, J. S. Lee and D.-S. Yang, June 18-22, 2007, 62nd Ohio State University International Symposium on Molecular Spectroscopy, Columbus, OH.
146. "Clam Structures of Metal-Biphenyl Complexes: $\text{M-C}_{12}\text{H}_{10}$ ($\text{M} = \text{Sc}, \text{La}, \text{Ti}$)" (oral), B. R. Sohnlein, , Y. Lei and D.-S. Yang, June 2006, 61st Ohio State University International Symposium on Molecular Spectroscopy, Columbus, OH.

147. "PFI-ZEKE Spectroscopy and Electronic States of Bis(benzene) Titanium and Vanadium Sandwich Complexes" (oral), B. R. Sohnlein, Y. Lei and D.-S. Yang, June 2006, 601st Ohio State University International Symposium on Molecular Spectroscopy, Columbus, OH.
148. "PFI-ZEKE Spectroscopy of Aluminum Imidazole and Pyrimidine Complexes" (oral), J. S. Lee, X. Wang, S. Krasnokutskiy and D.-S. Yang, June 2006, 601st Ohio State University International Symposium on Molecular Spectroscopy, Columbus, OH.
149. "Pulsed-Field Ionization Electron Spectroscopy of Aluminum-Uracil" (oral), S. Krasnokutskiy and D. -S. Yang, June 19-23, 2006, 60th Ohio State University International Symposium on Molecular Spectroscopy, Columbus, OH.
150. "Pulsed-Field Ionization Electron Spectroscopy of Copper-Pyrazine, -Pyrimidine, and -Pyridazine Complexes" (oral), X. Wang and D.-S. Yang, June 19-23, 2006, 61st Ohio State University International Symposium on Molecular Spectroscopy, Columbus, OH.
151. "A Tridentate Binding Structure of Cu-(2,2N:6N,O-Terpyridine)" (oral), X. Wang and D.-S. Yang, June 19-23, 2006, 61st Ohio State University International Symposium on Molecular Spectroscopy, Columbus, OH.
152. "ZEKE Spectroscopy of Aluminum and Gallium Complexes of Piperidine" (oral), P. Bhowmik, S. Li, B. R. Sohnlein, J. F. Fuller, X. Wang and D.-S. Yang, June 2004, 59th Ohio State University International Symposium on Molecular Spectroscopy, Columbus, OH.
153. "How Does Scandium Atom Bind to 1-Phenyl Naphthalene" (oral), B. R. Sohnlein, J. F. Fuller and D.-S. Yang, June 20-24, 2005, 60th International Symposium on Molecular Spectroscopy, Columbus, OH.
154. "PFI-ZEKE Spectroscopy of Group VIB $M(C_6H_6)_2$ ($M = Cr, Mo, W$) Sandwich Complexes" (oral), B. R. Sohnlein and D.-S. Yang, June 20-24, 2005, 60th International Symposium on Molecular Spectroscopy, Columbus, OH.
155. "Copper Binding with Methyl Substituted Ethylenediamine" (oral), X. Wang and D.-S. Yang, June 20-24, 2005, 60th International Symposium on Molecular Spectroscopy, Columbus, OH.
156. "Ground Electronic States of Ni-(2,2'-Bipyridine) and Its Monocation" (oral), X. Wang and D.-S. Yang, June 20-24, 2005, 60th International Symposium on Molecular Spectroscopy, Columbus, OH.
157. "Spectroscopic and Computational Study of Copper Diamine Complexes" (poster), F. B. Isaacs, R. L. Rebecca, A. C. Goren, X. Wang, and D. -S. Yang, March 28-April 1, 2004, 227th ACS National Meeting, Anaheim, CA.

158. "PFI-ZEKE Spectroscopy of Metal-Polycyclic Aromatic Hydrocarbons: Sc-Pyrene and Sc-Naphthalene" (oral), J. F. Fuller, B. R. Sohnlein and D.-S. Yang, June 2004, 59th Ohio State University International Symposium on Molecular Spectroscopy, Columbus, OH.
159. "Monodentate Binding of Ethylenediamine to Copper from PFI-ZEKE Spectroscopy" (oral), X. Wang and D.-S. Yang, June 2004, 59th Ohio State University International Symposium on Molecular Spectroscopy, Columbus, OH.
160. "PFI-ZEKE Spectroscopy of Copper-Aromatic Nitrogen Heterocyclic Complexes" (oral), X. Wang, J. F. Fuller and D.-S. Yang, June 2004, 59th Ohio State University International Symposium on Molecular Spectroscopy, Columbus, OH.
161. "PFI-ZEKE Spectroscopy of Alkali Metal-Ether Complexes" (oral), B. R. Sohnlein, J. F. Fuller, S. Li and D.-S. Yang, June 2004, 59th Ohio State University International Symposium on Molecular Spectroscopy, Columbus, OH.
162. "PFI-ZEKE Study of Metal-B Interactions in Transition Metal-Benzene Complexes: $M(C_6H_6)$ ($M = Sc, Y, La$)" (oral), B. R. Sohnlein, S. Li, J. F. Fuller, X. Wang, P. Bhowmik and D.-S. Yang, June 2003, 58th Ohio State University International Symposium on Molecular Spectroscopy, Columbus, OH.
163. "ZEKE Spectroscopy of $Al(C_5H_5N)$: A Study of Metal- Φ Interaction with A Heterocyclic Aromatic Ligand" (oral), X. Wang, S. Li, J. F. Fuller, P. Bhowmik, B. R. Sohnlein and D.-S. Yang, June 2003, 58th Ohio State University International Symposium on Molecular Spectroscopy, Columbus, OH.
164. "ZEKE Spectroscopy of Gallium-Methylamine Complexes: $Ga-NH_n(CH_3)_{3-n}$ ($n = 0-2$)" (oral), P. Bhowmik, S. Li, J. F. Fuller, B. R. Sohnlein, X. Wang and D.-S. Yang, June 2003, 58th Ohio State University International Symposium on Molecular Spectroscopy, Columbus, OH.
165. "ZEKE Spectroscopy of Metal Complexes with A Multidentate Ligand: $M(H_2NCH_2CH_2NH_2)$ ($M = Al, Ga, In$)" (oral), S. Li, J. F. Fuller, B. R. Sohnlein, X. Wang, P. Bhowmik and D.-S. Yang, June 2003, 58th Ohio State University International Symposium on Molecular Spectroscopy, Columbus, OH.
166. "Spectroscopy of Metal Phosphine and Arsine Complexes" (oral), S. Li, G. K. Rothschof, B. R. Sohnlein and D.-S. Yang, January 2002, Gordon Research Conference on Molecular and Ionic Clusters, Ventura, CA.
167. "Pulsed Field Ionization of Gallium and Indium Complexes with Trimethylphosphine" (oral), S. Li, G. K. Rothschof, B. R. Sohnlein and D.-S. Yang, June 2002, 57th Ohio State University International Symposium on Molecular Spectroscopy, Columbus, OH.

168. "PFI-ZEKE Spectroscopy of $M-N(CH_3)_3$ ($M = Sc, Y, La$)" (oral), J. F. Fuller, G. K. Rothschof, S. Li and D.-S. Yang, June 2002, 57th Ohio State University International Symposium on Molecular Spectroscopy, Columbus, OH.
169. "Photoelectron Spectra of Copper Complexes with Amine, Phosphine, and Arsine" (oral), B. R. Sohnlein, S. Li, G. K. Rothschof, J. F. Fuller and D.-S. Yang, June 2002, 57th Ohio State University International Symposium on Molecular Spectroscopy, Columbus, OH.
170. "Electronic Spectra of Metal-Diligand Complexes: $Cu(NH_3)_2$ and $Cu(ND_3)_2$," (oral), S. Li, B. R. Sohnlein and D.-S. Yang, June 2002, 57th Ohio State University International Symposium on Molecular Spectroscopy, Columbus, OH.
171. "Spectroscopy of Weakly Bound Group 13-15 Complexes" (oral), G. K. Rothschof, S. Li, S. Perkins, D. Pillai and D.-S. Yang, February 2001, Gordon Research Conferences on Gaseous Ions, Ventura, CA.
172. "Photoelectron and Photoionization Studies of Titanium, Vanadium, and Yttrium Complexes" (oral), S. Li, G. K. Rothschof and D.-S. Yang, February 2001, Gordon Research Conferences on Gaseous Ions, Ventura, CA.
173. "ZEKE Spectroscopy of Weakly Bound Group IIIA-VA Complexes" (oral), D.-S. Yang, G. K. Rothschof, S. Li, S. Perkins and D. Pillai, April 2001, 221st American Chemical Society National Meeting, San Diego, CA.
174. "High Resolution Photoelectron Studies of Amine and Ether Complexes with Early Transition Metal Atoms" (oral), D.-S. Yang, G. K. Rothschof and S. Li, April 2001, 221st American Chemical Society National Meeting, San Diego, CA.
175. "Zero Electron Kinetic Energy Spectra of $Ga-NH_3$ and $Ga-NH_2CH_3$ " (oral), S. Li, G. K. Rothschof, D. Pillai, B. Wilson, B. Sohnlein and D.-S. Yang, June 2001, 56th Ohio State University International Symposium on Molecular Spectroscopy, Columbus, OH.
176. "Metal-Molecule Interactions in $In^+-NH_2CH_3$, $In^+-NH(CH_3)_2$, $In^+-N(CH_3)_3$ and Their Neutral Radicals" (oral), G. K. Rothschof, S. Li and D.-S. Yang, June 2001, 56th Ohio State University International Symposium on Molecular Spectroscopy, Columbus, OH.
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