

Joseph S. Merola Curriculum Vitae Highlights

Distinctive Contributions and Achievements

A. Honors

- Recipient of three College of Arts and Sciences Certificates of Teaching Excellence 1991, 1994, 1997
- Won University Alumni Award for Teaching Excellence 1997
- Inducted into Virginia Tech Academy of Teaching Excellence 1997 (Served as Secretary/Treasurer twice)
- Office of Residence Life Favorite Faculty Award 2011
- Alan F. Clifford Service Award from the Chemistry Department 2008
- Special Certificate of Appreciation from President Charles Steger and Provost Mark McNamee “For outstanding planning and leadership in restructuring the university.”
- Grand Master Alchemist Award from Alpha Chi Sigma, the Chemistry Fraternity for Outstanding Support to the Fraternity in Hosting the Biennial Meeting.
- University Wine Award for Excellence in Teaching 2013
- Second Induction into Academy of Teaching Excellence 2013
- Inducted into VT Academy of Faculty Service 2014
- Named Fellow of the American Association for the Advancement of Science, 2015
- Inducted into VT Academy of Faculty Leadership 2019
- Named Fellow of the American Chemical Society

B. Educational Contributions and Activities at Virginia Tech

- Taught over 4,000 students since 1987 at all levels of the curriculum.
- Overall average of 3.67 in overall SPOT scores since 1987
- Served multiple times on College and University Undergraduate Curriculum Committees
- Served multiple times on College and University Graduate Curriculum Committees
- Served as Graduate Director of the Chemistry Department
- Director of Undergraduate Research for Department of Chemistry
- Chaired Commission on Graduate Studies and Policies 1994
- Acting Dean of the Graduate School to oversee separation from Division of Research.
- Member of the VT-North Carolina Alliance for Minority Participation Advisory Board, 2009-present
- Member of the Virginia-North Carolina Alliance for Minority Participation Advisory Board, 2009-present
- Member of the College of Science Diversity Committee 2009-2011
- Reader of Names for Graduate Commencement Ceremony, 2005-present
- Reader of Names for College of Science Undergraduate Commencement Ceremony, 2008-present

C. Educational Contributions and Activities outside of Virginia Tech

- Member of Educational Testing Services Writers of the GRE in Chemistry, 2000-2006 (Chaired in 2006)
- Member of the Educational Testing Services Committee to write the Major Field Test in Chemistry, 2010 and 2014
- Member of Panels to Review NSF, NDSEG and SMART Scholarships, 2009-present
- Multiple demonstrations and presentations at K-12 schools throughout Southwestern Virginia
- Has been interviewed 24 times by the AAAS Radio Program “Science Update”. In several of the broadcasts, he is referred to as “Our favorite chemist.”
- Active participant in educational discussions in sites such as “LinkedIn”. Currently a “Top Contributor” in the “American Chemical Society” and “The Teaching Professor Groups.”

CURRICULUM VITAE

JOSEPH S. MEROLA

I. Personal Data

Title: Professor of Chemistry
Address: Department of Chemistry
Virginia Polytechnic Institute and State University
Blacksburg, Virginia 24061
Phone: (540)-231-4510 Home: (540)-961-1246

II. Education

Ph.D. Massachusetts Institute of Technology, May, 1978.
B.S. Carnegie-Mellon University, June, 1974.

III. Professional Experience

Professor of Chemistry, Virginia Tech Chemistry Department (Current)

Professor of Chemistry, Chair of the Chemistry Department (2004 - 2010)

Senior Administrative Fellow in charge of University Restructuring – Virginia Tech embarked upon a serious restructuring of its academic colleges and I was asked to lead this effort. May 2002 – August 2003

Acting Dean of the Graduate School, Virginia Polytechnic Institute and State University, January 2001 - May 2002

Associate Dean for Research and Outreach, College of Arts and Sciences, Virginia Polytechnic Institute and State University, January 1998- January 2001

Full Professor, Department of Chemistry, Virginia Polytechnic Institute and State University, September 1995-

Associate Professor, Department of Chemistry, Virginia Polytechnic Institute and State University, September 1991 - 1995.

Assistant Professor, Department of Chemistry, Virginia Polytechnic Institute and State University, August 1987 - August 1991

Visiting Associate, California Institute of Technology, Feb-March, 1984.

Corporate Research Science Laboratories, Exxon Research and Engineering Company.
Research Chemist, 7/78 to 7/82. Senior Chemist 7/82 to 6/86. Staff Chemist 6/86 to
8/87.

IV. Professional Organizations and Activities

Member, American Chemical Society and Inorganic Chemistry Division
Chair, American Chemical Society Local Section (1997)
Affiliate Member, International Union of Pure and Applied Chemistry
American Chemical Society Younger Chemists Committee (1983-1987)
Sigma Xi – Chapter President 2013-present
American Association for the Advancement of Science
Alpha Chi Sigma (Chapter Advisor 1989-1997)
Tau Beta Pi (Chapter Advisor 2014-present)

V. Publication and Presentation Summary over the period 1978-2014. (Complete list attached.)

- A. Refereed Journals: 110 publications h-index = 27
 - B. Non-refereed Journals: 3 publications
 - C. Book Chapters: 6
 - D. Patents: 2
 - E. Invited presentations: 35
 - F. Contributed presentations: 49
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VIII. Research Activities

- A. Research Grants (Active)
- B. Previous Research Awards

The Chemistry and Surface Behavior of Engine Fuel Additives, Demeter
Corporation, \$539,369
Upgrade of 300 MHz Solid State NMR, NSF, \$278,300
Special Research Award from President of Virginia Tech, \$100,000

\$403,268 from 1987-1996, principally from ACS Petroleum Research Fund and from the
National Science Foundation plus an additional \$500,000 in equipment grants.

IX. Teaching

Have taught courses ranging from large (300+) General Chemistry sections to upper level
undergraduate subjects to advanced graduate courses. Have an average 3.7 (out of 4.0) in
student teaching evaluations.

A. Honors and Awards

College of Arts and Sciences Certificate of Teaching Excellence, 1991.
College of Arts and Sciences Certificate of Teaching Excellence, 1994.
College of Arts and Sciences Certificate of Teaching Excellence, 1997.
University Alumni Award for Teaching Excellence, 1997.
Inducted into Virginia Tech Academy of Teaching Excellence, 1997.
University Wine Award for Excellence in Teaching, 2013
Second induction into Academy of Teaching Excellence, 2013

B. Students Supervised

18 Ph.D. and 6. M.S. Students
75 undergraduate research students

X. Service

(Multiple committees at the department level omitted for clarity. Served multiple times on graduate recruiting committee, undergraduate curriculum committee, graduate curriculum committee, personnel committee, executive committee, committee to write department governance document, etc.)

Received Department of Chemistry Alan F. Clifford Award for Outstanding Faculty Service

Member of Virginia Tech's University Council

Editorial Board, International Journal of Organic Chemistry

President of Faculty Senate, 2013-2014

Faculty Representative to Virginia Tech Board of Visitors, 2013-2014.

Member, Commission on Faculty Affairs, 2011-

Member, University Commencement Committee (COS representative) 2011-

Treasurer, Academy of Teaching Excellence, 2011-2012

Member, Intellectual Property Committee, 2008-present

Chair, IPC subcommittee on Policy 13000

Reader of Names, Graduate Commencement Ceremonies, 2005 to present.

Reader of Names, College of Science Commencement 2008-present

Member of the Virginia –North Carolina Alliance for Minority Participation Advisory Board

Member of the VT-North Carolina Alliance for Minority Participation Advisory Board.

Member of the College of Science Diversity Committee 2009-2011
Member of VT-Advance Campus Climate Committee
Member, Commission on Graduate Studies and Policies 1992-1995
Chair, Commission on Graduate Studies and Policies 1994-1995
Co-chair, Special Committee on Conflict of Interest 1995, 1998-2000 (Developed Conflict of Interest Policy for the University to bring into compliance with federal guidelines.)
Special assignment to facilitate restructuring of university 2002-2003.
Active in multiple outreach activities in bringing science education to K-12 as well as the general public.

Chaired ETS committee to write the Chemistry GRE Exam – member of the committee from 2000-2006. Continue to write and review questions.
Member of ETS Committee to write the Major Field Test in Chemistry, 2009-2010.

Joseph S. Merola

Publication List

A. Refereed Journals (reverse chronological order – 107 total)

1. Chuong, C.; DuChane, C. M.; Webb, E. M.; Rai, P.; Marano, J. M.; Bernier, C. M.; Merola, J. S.; Weger-Lucarelli, J. Noble Metal Organometallic Complexes Display Antiviral Activity against SARS-CoV-2. *Viruses* **2021**, *13* (6), 980. DOI: 10.3390/v13060980.
2. Bernier, C. M.; DuChane, C. M.; Martinez, J. S.; Falkinham III, J. O.; Merola, J. S. Synthesis, Characterization, and Antimicrobial Activity of Rh(III) and Ir(III) N-Heterocyclic Carbene Piano-Stool Complexes. *Organometallics* **2021**. <https://doi.org/10.1021/acs.organomet.1c00166>
3. Bernier, C. M.; Merola, J. S. Design of Iridium N-Heterocyclic Carbene Amino Acid Catalysts for Asymmetric Transfer Hydrogenation of Aryl Ketones. *Catalysts* **2021**, *11* (6), 671. <https://doi.org/10.3390/catal11060671>
4. Hobart, D. B., Jr.; Berg, M. A. G.; Rogers, H. M.; Merola, J. S. Synthesis, Characterization, and Non-Covalent Interactions of Palladium(II)-Amino Acid Complexes. *Molecules* **2021**, *26* (14), 4331. DOI: 10.3390/molecules26144331.
5. Karpin, G. W.; Merola, J. S.; Falkinham, J. O., 3rd. Identification of the Target for a Transition Metal- α -Amino Acid Complex Antibiotic Against Mycobacterium smegmatis. *Front Pharmacol* **2021**, *12*, 686358. DOI: 10.3389/fphar.2021.686358.
6. DuChane, C. M., & Merola, J. S. (2020). Hexafluoroacetylacetonate (hfac) as ligand for pentamethylcyclopentadienyl (Cp*) rhodium and iridium complexes: Some surprising results, including an Ir₃Na₁O₄ cubane structure. *Journal of Organometallic Chemistry*, *929*, 121552.

<https://doi.org/10.1016/j.jorganchem.2020.121552>

7. Bernier, C. M., DuChane, C. M., & Merola, J. S. (2020). Crystal structures of (η^4 -cycloocta-1,5-diene)bis(1,3-dimethylimidazol-2-ylidene)iridium(I) iodide and (η^4 -cycloocta-1,5-diene)bis(1,3-diethylimidazol-2-ylidene)iridium(I) iodide. *Acta Crystallographica Section E: Crystallographic Communications*, 76(I), 611–614. <https://doi.org/10.1107/S2056989020004235>
8. Hobart, Merola, Rogers, Saghal, Mitchell, Florio, & Merola. (2019). Synthesis, Structure, and Catalytic Reactivity of Pd(II) Complexes of Proline and Proline Homologs. *Catalysts*, 9(6), 515. <https://doi.org/10.3390/catal9060515>
9. Morris, D. M., & Merola, J. S. (2019). Octametallic Cluster of Cp*Ir(glycinato) Cations [Research-article]. *ACS Omega*, 4, 22126–22132. <https://doi.org/10.1021/acsomega.9b03267>
10. Hobart, D. B., Patel, V. G., Pendergrass, H., Florio, J., & Merola, J. S. (2019). Self-Assembly Motifs of Water in Crystals of Palladium β -Amino Acid Complexes Influenced by Methyl Substitution on the Amino Acid Backbone. *Crystals*, 9(11), 590. <https://doi.org/10.3390/cryst9110590>

11. DuChane, C. M., Karpin, G. W., Ehrich, M., Falkinham, J. O., & Merola, J. S. (2019). Iridium piano stool complexes with activity against *S. aureus* and MRSA: it is past time to truly think outside of the box. *MedChemComm*, *10*(8), 1391–1398. <https://doi.org/10.1039/c9md00140a>
12. DuChane, C. M., Brown, L. C., Dozier, V. S., & Merola, J. S. (2018). Synthesis, Characterization, and Antimicrobial Activity of Rh III and Ir III β -Diketonato Piano-Stool Compounds. *Organometallics*, *37*(4), 530–538. <https://doi.org/10.1021/acs.organomet.7b00742>
13. Brown, L., Marron, D., Smith, C., & Merola, J. (2018). Crystal structure of the tetramethyl(phenethyl)cyclopentadienylmolybdenumtri-carbonyl dimer. *Acta Crystallographica Section E: Crystallographic Communications*, *74*, 1017–1020. <https://doi.org/10.1107/S2056989018008885>
14. Brown, L. C.; Ressegue, E.; Merola, J. S. Rapid Access to Derivatized, Dimeric, Ring-Substituted Dichloro(cyclopentadienyl)rhodium(III) and Iridium(III) Complexes. *Organometallics* **2016**, *35*, 4014–4022.
15. Brown, L. C.; Duchane, C. M.; Merola, J. S. Mer-Trichloridotris(tetrahydrothiophene- κ S)iridium(III): Preparation and Comparison with Other Mer-Trichloridotris(tetrahydrothiophene- κ S)metal Complexes. *Acta Crystallogr. Sect. E Crystallogr. Commun.* **2016**, *72*.
16. Morris, D. M.; Merola, J. S.; Parkin, S. Serendipitous Preparation of Fac-(Acetonitrile- κ N) trichlorido[(1,2,5,6-G)-Cycloocta-1,5-Diene]-iridium(III). *Acta Crystallogr. Sect. E Struct. Reports Online* **2015**, *71*.
17. Karpin, G. W.; Morris, D. M.; Ngo, M. T.; Merola, J. S.; Falkinham Iii, J. O. Transition Metal Diamine Complexes with Antimicrobial Activity against *Staphylococcus Aureus* and Methicillin-Resistant *S. Aureus* (MRSA). *Medchemcomm* **2015**, *6*.
18. Merola, J. S.; Franks, M. A.; Parkin, S. Crystal Structures of Fac-Trichloridotris(trimethyl-Phosphane- κ P)rhodium(III) Monohydrate and Fac-Trichloridotris(trimethylphosphane- κ P)rhodium(III) Methanol Hemisolvate: Rhodium Structures That Are Isotypic with Their Iridium Analogs. *Acta Crystallogr. Sect. E Struct. Reports Online* **2015**, *71*.
19. Merola, J. S.; Slobodnick, C.; Houser, C. Crystal Structure of Di- μ -Chlorido-Bis[dichloridobis(methanol- κ O)iridium(III)] Dihydrate: A Surprisingly Simple chloridoiridium(III) Dinuclear Complex with Methanol Ligands. *Acta Crystallogr. Sect. E Crystallogr. Commun.* **2015**, *71*.
20. Ladipo, F. T.; Merola, J. S. Addition of N-H Bonds to Iridium: Synthesis and Characterization of N-Ir-H Complexes and the Observation That an Iridium N-Bonded Indole Ring Becomes Activated for Michael Addition to Alkynes.

Polyhedron **2015**, *90*.

21. Hobart, D. B., Jr.; Berg, M. A. G.; Merola, J. S. Bis-glycinato complexes of palladium(II): Synthesis, structural determination, and hydrogen bonding interactions. *Inorg. Chim. Acta* **2014**, *423*, 21-30.
22. Berg, M. A.; Davidson, J.; Merola, J. S., Trimethylphosphonium trans-tetrachloridobis(trimethylphosphane- κ P)iridate(III). *Acta Crystallogr., Sect. E: Struct. Rep. Online* **2014**, *70* (3), m103.
23. Merola, J.; Husebo, T. L., μ -Oxido-bis[hydridotris(trimethylphosphane- κ P)iridium(III)](Ir-Ir) bis(tetrafluoridoborate) dihydrate. *Acta Crystallogr., Sect. E: Struct. Rep. Online* **2014**, *70* (4), m122-m123.
24. Merola, J. S.; Roy, C. P., Reaction between [Ir(COD)(PMe₃)₃]Cl and 2-aminopent-4-enoic acid: Tridentate N, O and C bonding. *J. Organomet. Chem.* **2014**, *757*, 51-56.
25. Merola, J. S.; Slebodnick, C.; Berg, M.; Ritchie, M. K., mer-Hydridotris(trimethylphosphane- κ P)(d-valinato- κ^2 N,O)iridium hexafluoridophosphate dichloromethane 0.675-solvate. *Acta Crystallogr., Sect. E: Struct. Rep. Online* **2014**, *70* (3), m82.
26. Merola, J. S.; Ladipo, F. T., Alkyne reactions with trimethylphosphine complexes of iridium: Lessons for the catalysis of vinyl ester formation and alkyne dimerization. *Polyhedron* **2014**, *70*, 125-132.
27. Merola, J. S.; Roy, C. P., Hydrido(prolinato- κ^2 N,O)tris(trimethylphosphane- κ P)iridium(III) hexafluoridophosphate. *Acta Crystallogr., Sect. E: Struct. Rep. Online* **2014**, *70* (2), m73-m74.
28. Merola, J. S.; Knorr, J. R., Synthesis and reaction chemistry of boryliridium hydride complexes formed by oxidative addition of catecholborane to iridium(I): Lessons for metal-catalyzed hydroboration. *J. Organomet. Chem.* **2014**, *750*, 86-97.
29. Merola, J. S., N 1,N 2-Dimethylethane-1,2-diaminium dichloride. *Acta Crystallogr., Sect. E: Struct. Rep. Online* **2014**, *70* (2), o216.
30. Roy, C. P.; Boyer, P. M.; Merola, J. S., Aquabis(4-methylbenzenesulfonato- κ O)(η^5 -pentamethylcyclopentadienyl)rhodium(III) monohydrate. *Acta Crystallogr., Sect. E: Struct. Rep. Online* **2013**, *69* (5), m259-m260.
31. Merola, J. S.; Ngo, M.; Karpin, G. W., Bis[bis(pentamethylcyclopentadienyl)cobalt(III)] tetrachloridocobaltate(II) dichloromethane disolvate. *Acta Crystallogr., Sect. E: Struct. Rep. Online* **2013**, *69* (9), m504.

32. Merola, J. S.; Morris, D.; De Weerd, N., Di- μ -2-chlorido-bis[chlorido(η^5 -2,3,4,5-tetramethyl-1-propylcyclopentadienyl)iridium(III)]. *Acta Crystallogr., Sect. E: Struct. Rep. Online* **2013**, 69 (3), m176.
33. Merola, J. S.; Franks, M. A.; Frazier, J. F., Synthesis, reactivity and crystal structures of various solvates of fac-tris(trimethylphosphine)trichloroiridium. *Polyhedron* **2013**, 54, 67-73.
34. Merola, J. S.; Franks, M. A., The basicity of [tris-(trimethylphosphine) (cyclooctadiene)iridium(I)]. *J. Organomet. Chem.* **2013**, 723, 49-55.
35. Merola, J. S., Bis(η^2 -ethylene)(η^5 -indenyl)iridium(I). *Acta Crystallogr., Sect. E: Struct. Rep. Online* **2013**, 69 (10), m547.
36. Karpin, G. W.; Merola, J. S.; Falkinham, J. O., Transition metal- α -amino acid complexes with antibiotic activity against Mycobacterium spp. *Antimicrob. Agents Chemother.* **2013**, 57 (7), 3434-3436.
37. Hobart, D. B., Jr.; Merola, J. S., (S)- α -Benzyl-prolinium cis-[(S)- α -benzyl-prolinato]dichloridopalladium(II). *Acta Crystallogr Sect E Struct Rep Online* **2013**, 69 (Pt 5), m261-2.
38. Merola, J. S.; Husebo, T. L.; Selna, H. E., Dinuclear iridium complexes with unsupported Ir-Cl-Ir bridges. *Inorg. Chim. Acta* **2012**, 390, 33-36.
39. Merola, J. S.; Husebo, T. L.; Matthews, K. E., Aqueous Organometallic Chemistry of mer-Ir(H)₂(PMe₃)₃X Complexes. *Organometallics* **2012**, 31 (10), 3920-3929.
40. Hobart, D. B., Jr.; Merola, J. S., (2S,4R)-4-Fluoropyrrolidinium-2-carboxylate. *Acta Crystallogr., Sect. E: Struct. Rep. Online* **2012**, 68 (8), o2490.
41. Grieb, A. L.; Merola, J. S., Reactions of [Ir(COD)(PMe₃)₃]Cl with heteroaromatic compounds: Formation of an iridathiacycle, an iridaselenacycle and iridaazathiacycles. *J. Organomet. Chem.* **2012**, 713, 163-168.
42. Berg, M. A. G.; Ritchie, M. K.; Merola, J. S., Synthesis and crystal structures of 3-alkyl-2,4-pentanedionates and 3-phenyl-2,4-pentanedionate of palladium. *Polyhedron* **2012**, 38 (1), 126-130.
43. Gibson, H. W.; Wang, H.; Slebodnick, C.; Merola, J.; Kassel, W. S.; Rheingold, A. L., Isomeric 2,6-Pyridino-Cryptands Based on Dibenzo-24-crown-8. *J. Org. Chem.* **2007**, 72 (9), 3381-3393.
44. Gibson, H. W.; Berg, M. A. G.; Dickson, J. C.; Lecavalier, P. R.; Wang, H.;

- Merola, J. S., Diastereomeric Reissert compounds of isoquinoline and 6,7-dimethoxy-3,4-dihydroisoquinoline in stereoselective synthesis. *J Org Chem* **2007**, 72 (15), 5759-70.
45. Roy, C. P.; Huff, L. A.; Barker, N. A.; Berg, M. A. G.; Merola, J. S., Iridium(III) hydrido amino acid compounds: Chiral complexes and a helical extended lattice. *J. Organomet. Chem.* **2006**, 691 (10), 2270-2276.
46. Williams, R. B.; Norris, A.; Slebodnick, C.; Merola, J.; Miller, J. S.; Andriantsiferana, R.; Rasamison, V. E.; Kingston, D. G. I., Cytotoxic Sesquiterpene Lactones from *Vernonia pachyclada* from the Madagascar Rainforest. *J. Nat. Prod.* **2005**, 68 (9), 1371-1374.
47. Tyree, W. S.; Slebodnick, C.; Spencer, M. C.; Wang, G.; Merola, J. S.; Yee, G. T., Structure-property correlations in a family of decamethylmetallocenium charge-transfer salt magnets using dialkyl dicyanofumarates as the one-electron acceptors: Ferromagnetism versus metamagnetism. *Polyhedron* **2005**, 24 (16-17), 2133-2140.
48. Dandekar, S. A.; Greenwood, S. N.; Greenwood, T. D.; Mabic, S.; Merola, J. S.; Tanko, J. M.; Wolfe, J. F., Synthesis of succinimido[3,4-b]indane and 1,2,3,4,5,6-hexahydro-1,5-methano-3-benzazocine-2,4-dione by sequential alkylation and intramolecular arylation of enolates derived from N,N,N',N'-tetramethylbutanediamides and N,N,N',N'-tetramethylpentanediamides. *J. Org. Chem.* **1999**, 64 (5), 1543-1553.
49. Bryant, W. S.; Guzei, I. A.; Rheingold, A. L.; Merola, J. S.; Gibson, H. W., A Study of the Complexation of Bis(m-Phenylene) Crown Ethers and Secondary Ammonium Ions. *J. Org. Chem.* **1998**, 63 (22), 7634-7639.
50. Merola, J. S., Organic chemistry at an iridium center: unusual bond-making and bond-breaking reactions. *Curr. Org. Chem.* **1997**, 1 (3), 235-248.
51. Kooti, M.; Merola, J. S., Synthesis and characterization of aminocarboxylate iridium(III) complexes. *Iran. J. Chem. Chem. Eng.* **1997**, 16 (1), 4-7.
52. Nagvekar, D. S.; Delaviz, Y.; Prasad, A.; Merola, J. S.; Marand, H.; Gibson, H. W., Synthesis and Properties of Cholesteryl Esters Bearing 32- and 16-Membered Crown Ethers. *J. Org. Chem.* **1996**, 61 (4), 1211-18.
53. Boyer, P. M.; Roy, C. P.; Bielski, J. M.; Merola, J. S., Pentamethylcyclopentadienylrhodium bis-carboxylates: monohapto carboxylate coordination, dihapto carboxylate coordination, and water coordination to CpRh. *Inorg. Chim. Acta* **1996**, 245 (1), 7-15.
54. Merola, J. S.; Husebo, T. L.; Matthews, K. E.; Franks, M. A.; Pafford, R.;

- Chirik, P., Aqueous chemistry and catalytic activity of organometallic iridium complexes. *NATO ASI Ser., Ser. 3* **1995**, *5* (Aqueous Organometallic Chemistry and Catalysis), 33-45.
55. Hudlicky, T.; Butora, G.; Fearnley, S. P.; Gum, A. G.; Persichini, P. J., III; Stabile, M. R.; Merola, J. S., Intramolecular Diels-Alder reactions of the furan diene (IMDAF); rapid construction of highly functionalized isoquinoline skeletons. *J. Chem. Soc., Perkin Trans. 1* **1995**, (19), 2393-8.
56. Delaviz, Y.; Merola, J. S.; Berg, M. A. G.; Gibson, H. W., Syntheses, X-ray Structures, Complexation and Thermal Stability Studies of Bis(5-carbomethoxy-1,3-phenylene)-(3x + 2)-crown-x Compounds. *J. Org. Chem.* **1995**, *60* (3), 516-522.
57. Le, T. X.; Selnau, H. E.; Merola, J. S., An unusual trimerization reaction of an alkyne on iridium. *J. Organomet. Chem.* **1994**, *468* (1-2), 257-64.
58. Hudlicky, T.; Mandel, M.; Rouden, J.; Lee, R. S.; Bachmann, B.; Dudding, T.; Yost, K. J.; Merola, J. S., Microbial oxidation of aromatics in enantiocontrolled synthesis. Part 1. Expedient and general asymmetric synthesis of inositols and carbohydrates via an unusual oxidation of a polarized diene with potassium permanganate. *J. Chem. Soc., Perkin Trans. 1* **1994**, (12), 1553-67.
59. Frazier, J. F.; Anderson, F. E.; Clark, R.; Merola, J. S., Addition of carbanions to tris(trimethylphosphine)(cyclooctadiene)iridium(I) chloride: three different modes of reaction depending on the nature of the carbanion. *Inorg. Chim. Acta* **1994**, *222* (1-2), 135-43.
60. Bheda, M. C.; Merola, J. S.; Woodward, W. A.; Vasudevan, V. J.; Gibson, H. W., Crystal structures of 30-crown-10 and its tetrahydrate. *J. Org. Chem.* **1994**, *59* (7), 1694-702.
61. Smith, G. D.; Hanson, B. E.; Merola, J. S.; Waller, F. J., Palladium methoxide and carbomethoxy complexes: synthesis and molecular structure of (bipy)Pd(CO₂CH₃)₂. *Organometallics* **1993**, *12* (2), 568-70.
62. Selnau, H. E.; Merola, J. S., Reactions of iridium complex [Ir(COD)(PMe₃)₃]Cl with benzene, pyridine, furan, and thiophene: carbon-hydrogen cleavage vs. ring opening. *Organometallics* **1993**, *12* (5), 1583-91.
63. Selnau, H. E.; Merola, J. S., The chemistry of iridium hydride mer-(Me₃P)₃Ir(H) (2-furyl)(Cl): preferential reaction of an alkyne with an iridium-carbon bond in the presence of an iridium-hydrogen bond. *Organometallics* **1993**, *12* (10), 3800-1.
64. Merola, J. S.; Grieb, A.; Ladipo, F. T.; Selnau, H. E., Reactions of

- heterocyclic aromatic compounds with $[\text{Ir}(\text{COD})(\text{PMe}_3)_3]\text{Cl}$: carbon-hydrogen bond cleavage, nitrogen-hydrogen bond cleavage and ring-opening reactions. *Prepr. - Am. Chem. Soc., Div. Pet. Chem.* **1993**, 38 (3), 674-8.
65. Le, T. X.; Merola, J. S., Synthesis and reaction chemistry of water-soluble mer- $(\text{Me}_3\text{P})_3\text{Ir}(\text{H})(\text{H})\text{Cl}$: activation by water of alkyne insertion into an iridium-hydrogen bond. *Organometallics* **1993**, 12 (10), 3798-9.
66. Ladipo, F. T.; Merola, J. S., Synthesis, structural characterization, and reactivity of the $(\eta^2\text{-benzoato})\text{iridium(III)}$ hydride complex $[\text{mer-}(\text{Me}_3\text{P})_3\text{Ir}(\eta^2\text{-O}_2\text{CC}_6\text{H}_5)(\text{H})][\text{PF}_6]$. *Inorg. Chem.* **1993**, 32 (23), 5201-5.
67. Ladipo, F. T.; Kooti, M.; Merola, J. S., Oxidative addition of oxygen-hydrogen bonds to iridium(I): synthesis and characterization of (phenolato)- and (carboxylato)iridium(III) hydride complexes. *Inorg. Chem.* **1993**, 32 (9), 1681-8.
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B. Non-Refereed Journals

- 1*. Rhodium Hydroformylation Mechanisms. A. A. Oswald, D. E. Hendriksen, R. V. Kastrup, J. S. Merola, Preprints of the ACS Division of Petroleum Chemistry, 1982, 27, 292.
- 2*. Structure and Reactivity of Rhodium Complex Hydroformylation Catalysts. A. A. Oswald, D. E. Hendriksen, R. V. Kastrup, J. S. Merola, E. J. Mozeleski, J. C. Reisch, Preprints of the Division of Fuel Chemistry, 1983, 28, 191.
3. Reactions of Heterocyclic Aromatic Compounds with [Ir(COD)(PMe₃)₃]Cl: C-H Bond Cleavage, N-H Bond Cleavage and Ring-Opening Reactions. J. S. Merola, A. Grieb, F.T. Ladipo, and H. E. Selna, Petroleum Preprints, 1993, 38, 674-678.

C. Chapters in Books

1. Alkylidynetris(tricarbonylcobalt) Compounds--Organocobalt Complexes, D. Seyferth, M.O.Nestle, J.E.Hallgren, J.S.Merola, G.HWilliams, C.L.Nivert, Inorg. Syn., 1981, xxi.
- 2*. ³¹P NMR Studies of Catalytic Intermediates in Triphenylphosphine Rhodium Complex Hydroformylation Systems. A. A. Oswald, J. S. Merola, E. J. Mozeleski, R. V. Kastrup, J. C. Reisch, Phosphorus Chemistry, ACS Symposium Series, 1981, 171, 503-509.
- 3*. Phosphorus-31 NMR Studies of Equilibria and Ligand Exchange in Triphenylphosphine Rhodium Complex and Related Chelated Bisphosphine Rhodium Complex Hydroformylation Catalyst Systems, R.V. Kastrup, J.S. Merola, A.A. Oswald, Adv. Chem. Ser., 1982, 196, 43-64.
4. "Iridium: Organometallic Chemistry," Joseph S. Merola in Encyclopedia of Inorganic Chemistry, **1994**.
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6. "Iridium: Organometallic Chemistry," Joseph S. Merola in Encyclopedia of Inorganic Chemistry 2nd edition, **2006**.

D. Patents

1. Merola, J. S. Transition Metal Complexes of Amino Acids and Related Ligands and Their Use as Catalysts, Anti-Microbials, and Anti-Cancer Agents, 2014.
2. High Temperature Hydroformylation in the Presence of Triarylphosphine Rhodium Carbonyl Hydride Complex Catalyst Systems. A. A. Oswald, J. S. Merola, R. V. Kastrup, J. C. Reisch, U.S. Patent #4,528,404 (1985)

E. Presentations

1. ^{31}P NMR Studies of Equilibria and Ligand Exchange in Triphenylphosphine Rhodium Complex Hydroformylation Systems. R.V. Kastrup*, J.S. Merola, A.A. Oswald, 1980 Biennial Inorganic Chemistry Symposium, Guelph, Canada, June, 1980.
2. ^{31}P NMR Studies of Catalytic Intermediates in Triphenylphosphine Rhodium Hydroformylation Systems. A.A. Oswald*, R.V. Kastrup, J.S. Merola, E.J. Mozeleski, J.C. Reisch, 1981 Biennial International Conference on Phosphorus Chemistry, Durham, North Carolina, June, 1981.
3. Rhodium Hydroformylation Mechanisms. A.A. Oswald*, R.V. Kastrup, J.S. Merola, D.E. Hendriksen, J.C. Reisch, Spring Symposium, Joint New York-New England Catalysis Societies, New Haven, Connecticut, March 1982.
4. Rhodium Hydroformylation Mechanisms. A.A. Oswald, R.V. Kastrup, J.S. Merola*, D.E. Hendriksen, J.C. Reisch, National American Chemical Society Meeting, Las Vegas, Nevada, March 1982.
5. Titanium-Molybdenum Mixed Metal Complexes. J.S. Merola*, Sixth New England Workshop on Organometallic Chemistry, Mt. Kisco, New York, May, 1982.
6. Advances in Rhodium Hydroformylation. A.A. Oswald*, R.V. Kastrup, J.S. Merola, D.E. Hendriksen, Gordon Conference on Organic Reactions and Processes, New Hampton, New Hampshire, July, 1982.
7. A ^{31}P , ^{13}C , and ^1H NMR Study of Rhodium Hydroformylation Mechanisms. A.A. Oswald, R.V. Kastrup*, J.S. Merola, D.E. Hendriksen, J.C. Reisch, 24th Rocky Mountain Conference on Applied Spectroscopy, Denver, Colorado, August, 1982.

8. Bimetallic Titanium/Molybdenum Complexes Containing M-O-C-M' Bridges, J.S. Merola*, R.A. Gentile, G.B. Ansell, M.A. Modrick, S. Zentz, Poster, Gordon Conference on Organometallic Chemistry, Andover, New Hampshire, August, 1982.
9. Synthesis of Multimetallic Early Transition Metal Complexes: Possible Models for MetalCarbonyl/Lewis Acid Support Interactions. J.S. Merola*, Frontiers of Catalysis Symposium, California Institute of Technology, Pasadena, California, March, 1983.
10. Structure and Reactivity of Rhodium Complex Hydroformylation Catalysts. A.A. Oswald*, R.V. Kastrup, J.S. Merola, E.J. Mozeleski, D.E. Hendriksen, J.C. Reisch, American Chemical Society National Meeting, March, 1983.
11. The Synthesis of Polymetallic Early/Late Transition Metal Combination Complexes. J.S. Merola*, K.S. Campo, R.A. Gentile, M.A. Modrick, S. Zentz, National American Chemical Society Meeting, Washington, D.C., August, 1983.
12. Structure and Reactivity of t-Phosphine Rhodium Complex Hydroformylation Catalysts. A.A. Oswald, R.V. Kastrup, J.S. Merola*, E.J. Mozeleski, D.E. Hendriksen, J.C. Reisch, International Symposium on Heteroatoms for Organic Synthesis, Montreal, Canada, August, 1983.
13. Structure and Reactivity of t-Phosphine Rhodium Complex Hydroformylation Catalysts. A.A. Oswald*, R.V. Kastrup, J.S. Merola, E.J. Mozeleski, D.E. Hendriksen, J.C. Reisch, IUPAC International Conference on Phosphorus Chemistry, Nice, France, September, 1983.
14. Hydroformylation Catalyzed by Rhodium Complexes of Bis-Phosphines - $\text{Ph}_2\text{P}(\text{CH}_2)_n\text{PPh}_2$, $n = 2-10$. D.E. Hendriksen*, J.S. Merola, A.A. Oswald, R.V. Kastrup, National American Chemical Society Meeting, St. Louis, Missouri, April, 1984.
15. Photochemical C-H Activation with Ruthenium/Trimethylphosphine Complexes. J.S. Merola*, J.E. Bercaw, Poster, Gordon Conference on Organometallic Chemistry, Andover, New Hampshire, August, 1984.
16. The Chemistry of Indenylrhodium and Indenyliridium Compounds. J.S. Merola*, Ninth New England Workshop on Organometallic Chemistry, Andover, Massachusetts, May, 1985.
17. Hapticity Changes of the Indenyl Ligand in Indenyliridium Complexes. J.S. Merola*, Poster, Gordon Conference on Organometallic Chemistry, Antrim, New Hampshire, July, 1985.
18. Unusual Transformations of the Indenyl Ligand in Indenyl Iridium Chemistry. J.S. Merola*, National American Chemical Society Meeting, Chicago, Illinois, September, 1985.

19. Nucleophilic Attack on Cationic Cyclooctadiene Iridium Complexes. J.S. Merola*, R.T. Kacmarcik, National American Chemical Society Meeting, New York, New York, April, 1986.
20. C-H Activation of Benzene on Cationic Iridium Complexes and Further Reaction Chemistry. J.S. Merola*, Twentieth Central Regional Meeting of the American Chemical Society, Morgantown, West Virginia, June 1-3, 1988.
21. C-H Activation of Benzene on Cationic Iridium Complexes and Further Reaction Chemistry. J.S. Merola*, Poster, Gordon Conference on Organometallic Chemistry, Newport, Rhode Island, June 26- July 1, 1988.
22. Hydroformylation by Supported Aqueous Phase Catalysis. J.P. Arhancet, M.E. Davis*, J.S. Merola, B.E. Hanson, 11th North American Meeting of the Catalysis Society, Dearborn, Michigan, May 7-11, 1989.
23. An Unusual Acetylene Dimerization on Iridium: A Possible α -Hydride Elimination Process Leading to a Novel Complex Stabilized by an Agostic C-H-Ir Interaction. J.S. Merola*, C. Heltzel, Poster, Gordon Conference on Organometallic Chemistry, Newport, Rhode Island, July 16-21, 1989.
24. Free Radical Bromination of Cyclopropylarenes. Stereoelectronic Effects on Chemoselectivity. J. M. Tanko*, R. H. Mas, R. E. Drumright, J. S. Merola, 1989 Gordon Conference on Free Radical Reactions, June 1989, New London, NH.
25. Reactions of Trimethylphosphine(cyclooctadiene)iridium Complexes with Nucleophiles: Three Different Pathways Leading to Products. J.S. Merola*, F.E. Anderson, 198th National American Chemical Society Meeting, Miami Beach, FL September 14, 1989 INOR 328
26. Stereoselective Reissert Compound Chemistry. H.W. Gibson*, J. Clifton, M. Berg, J. S. Merola, P. Lacavalier, 199th National American Chemical Society Meeting, Boston, MA April 25, 1990 ORGN 244
27. Catalytic Hydroboration: The Synthesis and Reaction Chemistry of Hydrido Iridium Boron Complexes. J. R. Knorr, J.S. Merola, 199th National American Chemical Society Meeting, Boston, MA April 25, 1990 INOR 392
28. Unusual Reactions of Alkynes with Iridium Hydrides: C-H Activation, α -Hydride Elimination, and δ -Agostic Interactions. C. Heltzel, J.S. Merola*, 199th National American Chemical Society Meeting, Boston, MA. April 25, 1990 INOR 393.
29. B-H, C-H, and N-H Activation Chemistry on Iridium: Developing a Foundation for Metal-Assisted Hydroboration, Hydrocarbation, and Hydroamination Catalysts. J.S. Merola*, NSF Workshop on Organometallic Chemistry, Lexington, KY. May 18-21, 1990.

30. Catalytic Hydroboration: The Study of a Model Iridium System. J. R. Knorr, J.S. Merola*, Poster, Gordon Conference on Organometallic Chemistry, Newport, Rhode Island, June 24-29, 1990.
31. E-H Activation Chemistry: Marked Differences in Ir-H Reactivity in Complexes Resulting from B-H, C-H, N-H, AND O-H Additions to Iridium. J.S. Merola*, J.R. Knorr, F.T. Ladipo, H. Selnau, Poster, Gordon Conference on Organometallic Chemistry, Newport, Rhode Island, June 24-29, 1990.
32. Layered Compounds with Alternating Inorganic and Organic Layers: New Synthetic and Structural Results for Vanadyl Phenylarsonate. G. Huan*, J.W. Johnson, A.J. Jacobson, J.S. Merola, 200th National American Chemical Society Meeting, Washington, DC. August 26-31, 1990. INOR 19.
33. N-H Activation with Iridium Complexes: Synthesis, Characterization, and Reaction Chemistry of Pyrrole and Indole Iridium Hydride Compounds. J.S. Merola, F.T. Ladipo*, 200th National American Chemical Society Meeting, Washington, DC. August 26-31, 1990. INOR 423.
34. E-H Activation Chemistry: Marked Differences in M-H Reactivity in Complexes Resulting from C-H, B-H, N-H and O-H Oxidative Addition. J.S. Merola*, J.R. Knorr, F.T. Ladipo, H.R. Selnau, 200th National American Chemical Society Meeting, Washington, DC. August 26-31, 1990. INOR 424.
35. Reactions of Alkynes with Electrophilic Iridium(III) Hydride Complexes. H.E. Selnau*, J.S. Merola, 201st National American Chemical Society Meeting, Atlanta, GA., April 14-19, 1991. INOR 121
36. Synthesis and Reaction Chemistry of Some Novel Iridium(III) Hydride Complexes. T. X. Le*, J. S. Merola, 201st National American Chemical Society Meeting, Atlanta, GA., April 14-19, 1991. INOR 326.
37. Host-Guest Complexation and Rotaxanes: Polyrotaxane Model Studies. Y.X. Shen*, P. Engen, H.W. Gibson, J.S. Merola, 201st National American Chemical Society Meeting, Atlanta, GA., April 14-19, 1991. ORGN 325.
38. Synthesis and Characterization and Fluxional Behavior of $[\text{COD}]_M\{[\text{Ph}_2\text{P}(\text{S})]_n[\text{Ph}_2\text{P}(\text{O})]_{3-n}\text{C}\}$, where M = Rh and Ir and n = 1, 2, and 3. P.B. Kettler*, S.O. Grim, J. B. Thoden, J.S. Merola, Fourth Chemical Congress of North America, New York, NY, August 25-30, 1991. INOR 264
39. Novel Iridium(III) Carboxylato Hydride Complexes From the Oxidative Addition of Carboxylic Acids and Amino Acids to $[\text{Ir}(\text{COD})(\text{PMe}_3)_3]\text{Cl}$. C. P. Roy, F. T. Ladipo, J. S. Merola*, 203rd National American Chemical Society Meeting, San Francisco, CA., April 5-10, 1992. INOR 477.

40. Oxidative Addition Reactions of Aromatic Hydrocarbons to [Ir(COD)(PMe₃)₃]Cl. H. E. Selnau, J.S. Merola*, 203rd National American Chemical Society Meeting, San Francisco, CA., April 5-10, 1992. INOR 478.
41. Aqueous Chemistry of Some Novel Iridium(III) Hydride Complexes. T. X. Le, J. S. Merola, 203rd National American Chemical Society Meeting, San Francisco, CA., April 5-10, 1992. INOR 810.
42. Novel Iridium(III) Carboxylato Hydride Complexes from the Oxidative Addition of Amino Acids to [Ir(COD)(PMe₃)₃]Cl. C.P. Roy*, J.S. Merola, 204th National American Chemical Society Meeting, Washington, DC, August 23-28, 1992. INOR 193.
43. Thallium Complexes of tris(Diphenylthiophosphinoyl)methanide and its Oxygen Analogues. S.G. Smith*, S.O. Grim, J. S. Merola, J.B. Thoden, 204th National American Chemical Society Meeting, Washington, DC, August 23-28, 1992. INOR 193.
44. Reaction Chemistry of mer-(Me₃P)₃Ir(H)(H)(Cl) and [mer-(Me₃P)₃Ir(H)(pyr)(Cl)]Cl. K. E. Matthews*, G. Srinivasan, C. P. Roy and J. S. Merola, 206th National American Chemical Society Meeting, Chicago, Ill., August 22-27, 1993, INOR 188.
45. Some Aqueous Organometallic and Catalytic Chemistry of Iridium. M.A. Franks*, J.S. Merola, 215th National American Chemical Society Meeting, Dallas, TX, April 2, 1998, INOR 268.
46. Structure and Chemistry of Some Amino Acid Complexes of Iridium. J.S. Merola*, C.P. Roy, L.A. Huff, 215th National American Chemical Society Meeting, Dallas, TX, April 2, 1998, INOR 420.
47. Comparison of Two Isostructural ATH Catalysts with Different Metal Centers. D. M. Morris*, J.S. Merola, 63rd Southeast Regional Meeting of the American Chemical Society, Richmond, VA, United States, October 26, 2011, SERM-18
48. Organometallic Compounds with Potent Anti-microbial Properties. G.W. Karpin*, J.S. Merola, 63rd Southeast Regional Meeting of the American Chemical Society, Richmond, VA, United States, October 26, 2011, SERM-21
49. Palladium(II) Amino Acid Complexes: Synthesis, Structure and Catalytic Activity. D.B. Hobart, J.S. Merola*, 63rd Southeast Regional Meeting of the American Chemical Society, Richmond, VA, United States, October 28, 2011, SERM-497
50. Morris, D.; Merola, J. S. In *Asymmetric transfer hydrogenation of ketones catalyzed by metal complexes with simple amino acid ligands*, American Chemical Society: 2013; pp INOR-1022.

F. Invited Lectures

1. NMR Studies of Catalytic Intermediates in Triphenylphosphine and Chelating Bis-phosphine Rhodium Hydroformylation Systems. J.S. Merola, Department of Chemistry, Massachusetts Institute of Technology, Cambridge, Massachusetts, April 22, 1981.
2. Bimetallic Complexes of Titanium and Zirconium with Molybdenum, Cobalt, and Rhodium. J.S. Merola, Department of Chemistry, California Institute of Technology, Pasadena, California, February, 1984.
3. Transformations of the Indenyl Ligand. J.S. Merola, Department of Chemistry, University of Wisconsin, Madison, Wisconsin, April 22, 1985.
4. Indenyl Rhodium and Iridium Chemistry. J.S. Merola, Department of Chemistry, University of California at San Diego, San Diego, California, February 21, 1986.
5. Indenyl Rhodium and Iridium Chemistry. J.S. Merola, Department of Chemistry, University of California at Santa Barbara, Santa Barbara, California, February 24, 1986.
6. Organo-Iridium Chemistry. J.S. Merola, Department of Chemistry, Yale University, New Haven, Connecticut, October, 1986.
7. Plenary Lecture: Synthesis and Reactivity of Some Unusual Metal Complexes: Well Defined (But Not Necessarily Catalytic) Systems. J.S. Merola, Twenty-Seventh Annual Spring Symposium of the Pittsburgh-Cleveland Catalysis Society, Cleveland, Ohio, April 7, 1988.
8. The Chemistry of Cationic Iridium Olefin Complexes. J.S. Merola, Eastman Kodak Research Center, Rochester, New York, March 2, 1989.
9. Chemistry of Cationic Iridium Olefin Complexes. J.S. Merola, Department of Chemistry, University of Rochester, Rochester, New York, March 3, 1989.
10. E-H Activation with Trimethylphosphine Iridium Complexes. J.S. Merola, Department of Chemistry, University of Maryland, College Park, Maryland, September 25, 1990.
11. E-H Activation Chemistry: Oxidative Addition of B-H, C-H, N-H, and O-H Bonds to Iridium. J.S. Merola, Department of Chemistry, University of Pennsylvania, Philadelphia, Pennsylvania, October 1, 1991.
12. Carbon-Carbon Bond Forming Reactions of Alkynes with Electrophilic Ir(III) Hydride

- Complexes. J.S. Merola, 43rd Southeast Regional Meeting of the American Chemical Society, Symposium on Metal Catalysis for C-C Bond Formation, Richmond, Virginia, November 14, 1991.
13. Tales from the Iridium Woods: Making and Breaking Bonds on a Transition Metal. J.S. Merola, Highlands in Chemistry Seminar Series, Department of Chemistry, Virginia Tech, Blacksburg, Virginia, February 6, 1992.
14. E-H Activation Chemistry: Additions of Aromatic C-H Bonds to Iridium. J.S. Merola, Department of Chemistry, West Virginia University, Morgantown, West Virginia, April 1, 1992.
15. Bridging the Gap between Classical Inorganic Chemistry and Organometallic Chemistry. J. S. Merola, Department of Chemistry, Marshall University, Huntington, West Virginia, October 13, 1992.
16. Unusual Chemistry of Organometallic Iridium Compounds in Water. J.S. Merola, Union Carbide Corporation, Charleston, West Virginia, December 2, 1992.
17. Bridging the Gap between Classical Inorganic Chemistry and Organometallic Chemistry. J. S. Merola, Department of Chemistry, Virginia Commonwealth University, March 13, 1993.
18. Reactions of Heterocyclic Aromatic Compounds with $[\text{Ir}(\text{COD})(\text{PMe}_3)_3]\text{Cl}$: C-H Bond Cleavage, N-H Bond Cleavage and Ring-Opening Reactions. J. S. Merola, 206th ACS National Meeting, Chicago, Illinois, August 22-27, 1993, Symposium on HDS and HDN Chemistry, PETR 33.
19. Aqueous Chemistry of the Deceptively Simple $\text{mer}-(\text{Me}_3\text{P})_3\text{Ir}(\text{H})(\text{H})(\text{Cl})$ Complex, J.S. Merola, 206th ACS National Meeting, Chicago, Illinois, August 22-27, 1993, Symposium on Metal Hydride Chemistry, INOR 443
20. Reactions of Aromatic Molecules with $[\text{Ir}(\text{COD})(\text{PMe}_3)_3]\text{Cl}$: C-H Activation vs Ring-Opening Reactions, J. S. Merola, Department of Chemistry, Washington University, St. Louis, MO, October 7, 1993.
21. Bridging the Gap between Classical Inorganic Chemistry and Organometallic Chemistry. J. S. Merola, Department of Chemistry, Massachusetts Institute of Technology, Cambridge, MA, November 9, 1993.
22. The Aqueous Chemistry and Catalytic Activity of Organometallic Iridium Complexes, J.S. Merola, Advanced NATO Workshop on Organometallic Chemistry and Catalysis in Water, Debrecen, Hungary, Sept August 29 -September 1, 1994.
23. Bridging the Gap between Classical Inorganic Chemistry and Organometallic Chemistry. J. S. Merola, Department of Chemistry, Virginia Polytechnic Institute and State University, November 11, 1994.

24. Aqueous Organometallic Chemistry of Iridium: Catalysis of Olefin Hydrogenation and Oligomerization. J.S. Merola*, M.A. Franks, P. Chirik, R. Pafford, 209th ACS National Meeting, Anaheim, California, April 2-6, 1995. Symposium on Aqueous Organometallic Chemistry and Catalysis
25. The Aqueous Homogeneous Hydrogenation of Olefins and Acetylenes by Iridium-Amine and Rhodium-Amine Catalysts. P.J. Chirik and J.S. Merola, Tri-State Catalyst Club Spring Symposium on Heterogeneous and Homogeneous Catalysis, Charleston, West Virginia, April 12-13, 1995
26. The Aqueous Organometallic Chemistry of Iridium: Catalysis of Olefin Hydrogenation, Oligomerization, and Other Reactions. J.S. Merola, M.A. Franks, P. Chirik, R. Pafford. Tri-State Catalyst Club Spring Symposium on Heterogeneous and Homogeneous Catalysis, Charleston, West Virginia, April 12-13, 1995
27. The Organometallic Chemistry of Iridium in Water. J.S. Merola, Department of Chemistry, University of North Carolina, Chapel Hill, Chapel Hill, North Carolina, October 25, 1995.
28. Advances in the Organometallic Chemistry of Iridium in Water. J. S. Merola, 1995 International Chemical Congress of Pacific Basin Societies, Honolulu, Hawaii, December 17-22, 1995
29. Advances in the Organometallic Chemistry of Iridium in Water. J.S. Merola, Department of Chemistry, University of Kentucky, Lexington, Kentucky, January, 1996.
30. Oxidative Addition of Amino Acids to an Iridium(I) Center: Unusual Hydrido-iridium Amino Acid Complexes and Their Insertion Chemistry. L.A. Huff and J.S. Merola. Tri-State Catalyst Club Spring Symposium on Heterogeneous and Homogeneous Catalysis, Charleston, West Virginia, April 25-27, 1996
31. Aqueous Organometallic Chemistry of Iridium: Catalysts Based on Alkyliridiumtrimethylphosphine Complexes. M.A. Franks and J.S. Merola. Tri-State Catalyst Club Spring Symposium on Heterogeneous and Homogeneous Catalysis, Charleston, West Virginia, April 25-27, 1996
32. Aqueous Organometallic Chemistry and Catalysis of Iridium. J.S. Merola, P.J. Chirik, R. Pafford, K. Matthews and T. L. Husebo. Tri-State Catalyst Club Spring Symposium on Heterogeneous and Homogeneous Catalysis, Charleston, West Virginia, April 25-27, 1996
33. Aqueous Organometallic Chemistry of Iridium: Catalysis of Olefin Hydrogenation and Oligomerization. J.S. Merola, M.A. Franks, G. Yanochko, M.Richards. American Chemical Society Southeast Regional Meeting, Greenville, South Carolina, November, 1996.

34. The Chemistry of Electron-Rich Iridium Complexes: Breaking Bonds and Making Bonds. J.S. Merola. Tri-State Catalyst Club Spring Symposium on Heterogeneous and Homogeneous Catalysis, Charleston, West Virginia, April, 1998
35. Hydrogen Bonding Networks in Amino Acid complexes of Transition Metals. J. S. Merola. North Carolina A &T University, March 22, 2007.
36. A Radically New Approach to Anti-Microbial Compounds: Metal Complexes with Activity Against *Staphylococcus Aureus* (including MRSA) and *Mycobacteria*. J.S. Merola. West Virginia State University, September 29, 2015
37. Catalysts Doing Double-Duty: Asymmetric Transfer Hydrogenation and Anti-Microbial Activity. Kanawha Valley Section of the American Chemical Society, September 29, 2015.
38. Emission study of Ir(III)Cp* compounds and synthesis of of Ru(II)-Ir(III) Cp* bimetallic complex designed for anti-cancer activity. S. Molnar, J.S. Merola, A. Smith. Symposium Honoring Karen J. Brewer, A.C.S National Meeting, San Diego, CA, March 15, 2016.
39. Radically new compounds to combat methicillin resistant Staph. Aureus (MRSA): Metal complexes as antimicrobials. J.S. Merola, G. Karpin, D.M. Morris, C.M. DuChane, J.O. Falkinham, M. Ehrich. Symposium Honoring Karen J. Brewer, A.C.S National Meeting, San Diego, CA, March 16, 2016.

G. Publications and Presentations on Use of Technology in Education

1. Using the Network as an Integral Part of the Curriculum: You Can Walk Before You Run. J.S.Merola, CAUSE/CNI Conference on Teaching and Learning in Cyberspace, Roanoke, Virginia, September 12-13, 1996. See <http://www.arl.org/bm~doc/teaching.pdf>
2. Following the above presentation, I was invited to submit a paper on the subject to the Technology Source, an online peer-reviewed periodical on technology in education. Using the Network as an Integral Part of the Curriculum: You Can Walk Before You Run. Technology Source, June 1997. See http://technologysource.org/author/joseph_s_merola/
3. The above article was invited to be included in a special CD-ROM compiled and distributed by Microsoft entitled Technology Tools for Today's Campuses. The CD is out of print, but the contents can be found at <http://horizon.unc.edu/projects/monograph/CD/>
For my specific article see: http://horizon.unc.edu/projects/monograph/CD/Science_Mathematics/Merola.asp

4. Multiple Points of View of Distance Education in Chemistry: Chemist, Practitioner, Cursed Administrator. J.S. Merola, 1999 Summer
<http://www.chem.vt.edu/confchem/1999/b/merola/admin.htm>

5. Closing the Distance between Professor and Student in Large Lecture Halls: Teaching with an Untethered Tablet and Other Strategies. J.S. Merola, Third Annual Conference on Higher Education Pedagogy, Virginia Tech, Blacksburg, VA February 2, 2011

H. General Outreach Publications and Presentations

1. I have been a contributor to the Scientific American site called “Ask the Experts” to explain issues of chemistry to a general audience.

a. Chemiluminescence: See
http://www.sciam.com/askexpert_question.cfm?articleID=0005A1A8-5B7F-1C72-9EB7809EC588F2D7&sc=I100322

b. Air Bag Chemistry: See
http://www.sciam.com/askexpert_question.cfm?articleID=000A465C-59A7-1C72-9EB7809EC588F2D7&sc=I100322

c. Wave/Particle Duality: See
http://www.sciam.com/askexpert_question.cfm?articleID=00084D84-604A-1C71-9EB7809EC588F2D7&catID=3

2. Since 1997, I have been a regular, invited contributor to the AAAS Radio Program “Science Update”. Over this period, I have had 24 different interviews that have aired on this nationally syndicated program. For the latest contributions, see <http://www.scienceupdate.com/show.php?date=20070412> and listen to the April 12, 2005 program entitled “Where Do Heavy Elements Come From” or <http://www.scienceupdate.com/show.php?date=20060808> and listen to the August 88, 2006 story entitled “Why Is Snow White When Water and Ice Are Clear”. In many of the programs the narrator refers to me as their “favorite chemist.”