

John D. Protasiewicz

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A. Professional Preparation

Michigan Technological University	B.S. Chemistry	1985
Research with G. D. Mendenhall (radical chemistry of di- <i>tert</i> -butyl-hyponitrite)		
Cornell University	Ph.D. Inorganic-Organometallic Chemistry	1990
Graduate thesis title “ <i>A Direct Comparison of the Rates of Electron, Proton, and Hydrogen Atom Transfer Between Inorganic Complexes</i> ” with K. H. Theopold (currently at U. of Delaware)		
Massachusetts Institute of Technology	Postdoctoral Assoc. Organometallic Chemistry	1990-1993
Postdoc with S. J. Lippard (reductive coupling of unsaturated ligands by metal centers)		
Oxford University (England)	Sabbatical	Jan-June 2004
Sabbatical with Philip Mountford (transitional metal complexes for catalysis)		

B. Appointments

Case Western Reserve University	Hurlbut Professorship of Chemistry	7-17-present
Case Western Reserve University	Chair of Chemistry	7-17-7-20
Case Western Reserve University	Associate Chair of Chemistry	7-08-7-17
Case Western Reserve University	Prof. of Macromolecular Science & Eng.	7-09-present
Case Western Reserve University	Professor of Chemistry	7-04-present
Case Western Reserve University	Associate Professor of Chemistry	7-99 to 7-04
Case Western Reserve University	Assistant Professor of Chemistry	7-93 to 7-99
Massachusetts Institute of Technology	Visiting Professor of Chemistry	Spring 2007

C. Past and Current Graduate Students (degree) *current (or last known) position*

1. Eugenijus (Eugene) Urnezis (Ph.D. 1999), *Assistant Professor of Chemistry, University of Portland*
2. Shashin Shah (Ph.D. 2001), *Business Analyst in the Chemicals Division (Management Consulting) for Charles Rivers Associates*
3. Bindu V. Meprathu (Ph.D. 2001), *Adjunct, Santa Rosa Junior College*
4. Dainius Macikenas (Ph.D. 2000), *Senior Scientist, Pfizer Global Research & Development*
5. Rhett C. Smith (Ph.D. 2004) *Associate Professor at Clemson University.*
6. Xufang Chen (Ph.D. 2004) *Senior Engineer at Intematix Corporation (Fremont, CA)*
7. Robert Woloszynek (Ph.D. 2007) *Research Scientist at Goodyear*
8. Lisa Beth Gleason (start date 7/2002) *Scientist at Proctor & Gamble*
9. Liqing Ma (Ph.D. 2007) *Research Scientist at Goodyear*
10. Vittal Babu Gudimetla (Ph. D. 2009) *Postdoctoral associate at Rice University*
11. Marlena Washington (Ph. D. 2010) *Assistant Professor, Clifflin University*
12. John Payton (Ph. D. 2010, co-advise w/Simpson) *Postdoctoral associate at Penn State University*
13. Feng (Phoenix) Li (Ph. D. 2012) *Scientist, Ferro Corporation.*
14. Michael Rectenwald (Ph. D. 2014, Scientist, Sherwin Williams Corporation)

15. Shanshan Wu (Ph. D. 2014, Assistant Professor, Anhui University of Science and Technology, China)
16. Alexandra Beckman (Ph.D. 8/2016)
17. Joshua Gaffen (Ph.D. 11/2017)
18. Andrew Kollar (MS 12/2016)
19. Jerod Kieser (Ph.D. 2019)
20. Kai Wang (start date 9/2015)
21. Zakary Ekstrom (start date 9/2016)
22. Frank Youmbi (MS 12/2017)
23. Guobi Li (start date 9/2017)
24. Emalyn Delgado (start date 9/2018)

D. Postdocs and Visiting Faculty

1. Dr. Dong Zhao (Postdoc, 1994-1995)
2. Dr. Michael Justik, (Postdoc 2000-2001, Visiting Professor, CWRU (2001-2005), (*currently Associate Professor, Penn State Erie*))
3. Dr. Thirupathi Natesan (Postdoc, 2002-2003), (*currently Reader, University of Delhi, India*)
4. Professor Stan Duraj, Cleveland State University (Visiting Faculty, 2004) (*Sabbatical stay*)
5. Professor Paul Challen, John Carroll University (Visiting Faculty, 2007) (*as summer ACS-PRF fellow*)
6. Dr. Andrew Shaffer (Postdoc, 2009-2011)
7. Professor Emel Yildiz, Cukurova University, Turkey (visiting Faculty, summer 2011)
8. Dr. Adam Kois (Postdoc, 2012-2013), Sherwin Williams
9. Dr. Robert Gilliard (Postdoc, 2015-2017) (Assistant Professor, University of Virginia)
10. Dr. Sloane Evariste (Postdoc, 2016-2017)
11. Dr. Zacharias Kinney (Postdoc, 2018-2020)

E. Past and Current Undergraduate & High School Students* in the PI's labs

Shawn Burdette, John C. Fondran, Michelle Boucher, Ronald Cicero, Greg Lohman, Richard Mimna, Jason M. Schmeltzer, Jonathan Rudick, Muralidar Jatla, Brian Lucas, Jennifer Iniman, Benjamin Sherry, Glen Alliger, Alison Donnelly, Meredith Earl, Phil Imbesi, Steve Wobser, John Thuermer, Dana Duan, Mark Lipke, Catherine Smith, Andrew Long, Robert J. Gilliard, James Heckler, Sarah Bixler, Josiah Roberts, Neal Sachar, Tadeas Liska, David Hildebrandt, Ryan Kowalski, Nathan Bruker, Katherine Miller, Mathew Porter, Alexandra McNully, Camrinn Chance Hanley*, Andrew Hodowanec, Yishaya Bension, Jenna Mancuso, Youssaf Rouiha*, Lexi Harrison*, Chandana Pandurangi, Oliver Westcott, Nehal Chigurupati*, Jonathan Matsuura.

F. Some Professional, Leadership, Service, and other Synergistic Activities

1. Departmental

Chair, Department of Chemistry, (2017-)
Associate Chair, Department of Chemistry (2008-2017)
Chair, Green Team (proposal reviewing for junior faculty, 2008-)
Chair Chemistry Safety Committee (2013)
Director Chemistry GAANN program (2011-)
Led Chemistry Departmental Strategic Planning process (2004-2005)
Chair, Inorganic Faculty Search Committee (2002-2003, 2003-2004)
Chair, Chemical Biology Faculty Search Committee (2007-2008)
Chair, Energy & Materials Faculty Search Committee (2007-2008)
Chair, Chemistry Undergraduate Recruiting (2001-2003)
Secondary Advisor to AXΣ Chemistry Fraternity (1995-)
Departmental Crystallographer (1993-)
Chair, Undergraduate Committee (2006-2007)
With co-PI Professor M. C. Simpson established Chemistry GANN program (Graduate Assistance in Areas of National Need) to provide fellowships for graduate students having interests in teaching careers.
Chair, Chemistry Graduate Recruiting (1995-1997)
Member, Chemistry Graduate Recruiting (1993-1994)

2. College & University

Member, Cleveland Center for Membrane and Structural Biology Advisor Board (2018-)
Member, CUE Culture and Climate Thinking Group (2017-2018)
Member, College of Arts and Sciences Executive Committee (2012-2015)
Chair, College of Arts and Sciences Executive Committee (2014-2015)
Member, University Safety Committee (2014-)
Member, CWRU Engineering Strategic Hiring Initiative for Advanced Materials Search Committee (2010-2011)
Member, College of Arts and Science Strategic Planning & Steering Committee (2010-2012)
Member, CWRU SAGEs Fellows Search Committee (2010, 2012)
Member College of Arts and Sciences Executive Committee (2007-2010)
Chair, College of Arts and Sciences Executive Committee (2008-2009)
Member, College of Arts & Sciences College, College Strategic Planning Steering Committee (2009-2012)
Advanced Materials Alliance Planning Group, CWRU (2009-2012)
Member, College of Arts & Sciences Strategic Task Force on Graduate Education (2007-2008)
College of Arts Sciences Leadership-Representative, Provost Lunch Series (2005-2006)
Case Presidential Advisory Committee on Tenure and Promotion (2009-2010)
Ad Hoc Committee Member for College of Arts & Sciences Committee on non-tenure track Faculty (2006)
Ad Hoc Chair for College of Arts & Sciences Committee on Faculty Bylaws Revisions (2005)
College of Arts & Sciences University Faculty Senator Representative (2004-2005)
Glennan Fellowship to develop web based learning methods (1996)
Member, College of Arts & Sciences Committee on Educational Programs (2001-2003)
Chair, College of Arts & Sciences Committee on Educational Programs (2003)
Member College of Arts and Sciences Executive Committee (2003-2006)
Case Presidential Advisory Committee on Tenure and Promotion (2005)

3. National & Professional

past-Chair, Division of Inorganic Chemistry (2018)
Chair, Division of Inorganic Chemistry (2017)
ACS PRF Advisory Board (2017-2020)
Chair-elect, Division of Inorganic Chemistry (2016)
Fellow, Royal Society of Chemistry (2014-)
ACS Fellow (2013-)
International Scientific Committee of the 5th International Conference on Hypervalent Iodine Chemistry (ICHIC 2016)
Chair, Cleveland Section of the American Chemical Society (2011)
Secretary, Division of Inorganic Chemistry, ACS (2010-2013, 2013-2015)

Member, Division of Inorganic Chemistry Strategic Planning Group (2014)
Board of Consulting Editors for the 2012 McGraw-Hill Yearbook of Science & Technology (2011-2016)
Member of Visiting Committee to review Department of Chemistry, University of Minnesota, Duluth (2011)
Chair-Elect, Cleveland Section of the American Chemical Society (2010)
Secretary-Elect, Division of Inorganic Chemistry, ACS (2010)
NSF Committee of Visitors (2010)
Organizer for Inorganic Symposia, 2009 Central Regional ACS Meeting, Cleveland, Ohio
Chair and Organizer, Ohio Inorganic Weekend (2009)
Member of Editorial Advisory Board for the ACS journal *Organometallics* (2010-2011)
Member of Editorial Advisory Board for the RSC journal *Dalton Transactions* (2012-2013)
ACS Cleveland Section, Board of Trustees (2007-2009)
Alternative Councilor, ACS Cleveland Section (2005-2006)
Maintain Ohio Inorganic Chemistry Website (2006-)
http://www.cwru.edu/artsci/chem/faculty/protasiewicz/group/Protasiewicz/Ohio_Inorganic_Website.html
ACS Cleveland Section Treasurer (2000-2002)
National ACS Awards Nominating Committee Chair for Creative Work in Iodine Chemistry (2004)
Chair and Organizer, ACS Meeting in Miniature (2002)
Grand Judge for 2003 Intel International Science and Engineering Fair in Cleveland
Organizer for Main Group Symposia, 1998 Central Regional ACS Meeting, Cleveland, Ohio

G. Recent Collaborators

Professor Barry Dunietz (Kent State University) Computational Crystallography
Professor Jayaraman Sivaguru (Bowling Green State University) Photochemical reactivity studies
Professor Alexander Tarnovsky (Bowling Green State University) Ultrafast Spectroscopy studies
Professor Hansjörg Grützmacher (ETH Zurich, Switzerland) Synthesis of conjugated phosphorus compounds
Professor Arnold L. Rheingold (University of Delaware, U. of California, San Diego) X-ray Crystallography
Professor Cather M. Simpson (University of New Zealand, Auckland/CWRU) Examining vibrational influences upon branching ratios in photoinitiated reactions, such as photoisomerization, using ultrafast laser equipment (100's fs to ~25 ps) and time-resolved spectroscopic methods in diphosphenes and phosphalkenes.
Professor Daniel Scherson (CWRU) Li-ion battery chemistry
Professor Thomas Gray (CWRU) Computational Chemistry (DFT and TDDFT)
Professor Paul Challen (John Carroll University) Transition Metal Pincer Complexes
Professor Man Lung Kwan (John Carroll University) Transition Metal Pincer Complexes
Professor Michael Justik (Penn State Erie, The Behrend College) Hypervalent Iodine Chemistry
Professor Daniel Mindiola (Indiana University) Phosphinidene Transfer Chemistry
Professor Emel Yildiz (Cuhurova University, Turkey) Pincer Complexes & X-ray crystallography
Professor Lee Higham (Newcastle University, UK) Computational studies on stability of primary phosphines

H. Reviewing Activity

Proposal and Award Reviewer for:

National Science Foundation (including panel member for several different programs and on-site reviews), American Chemical Society-Petroleum Research Fund, Research Corporation (& Cottrell Scholars Program), Dreyfus Foundation, Jeffrees Memorial Trust (Nations Bank), NSERC (National Science and Engineering Council for Canada), Korean Ministry of Education, Science, and Technology (KOSEF), Israel Science Foundation, Foundation for Polish Science, Netherlands Foundation for Fundamental Research on Matter (FOM), CWRU internal grants

Journal Reviewer for:

Journal of the American Chemical Society, Science, Angewandte Chemie, J. Chem. Soc. Chemical Communications, Chemistry Reviews, Inorganic Chemistry, Organometallics, Organic Letters, Journal of Organic Chemistry, Canadian Journal of Chemistry, Chemistry: A European Journal, Coordination Chemistry Reviews, Crystal Growth and Design, European Journal of Inorganic Chemistry, European Journal of Organic Chemistry, Heteroatom Chemistry, Inorganic Chemistry Communications, Inorganica Chimica Acta, Journal Polymer Science A., Journal of Organometallic Chemistry, Phosphorus, Sulfur, and Silicon and the Related Elements, Macromolecules, Main Group Chemistry, New Journal of Chemistry, Synthesis, Synlett, Structure Reactivity in Inorganic Chemistry, Tetrahedron, Tetrahedron Letters, Current Organic Chemistry, Journal of the Electrochemical Society, Polyhedron, Journal of Molecular Structure, Journal of Molecular Catalysis A, ACS Symposium Series, Journal of Cluster Science, Photochemistry and Photobiology, Chemical Physics Letters, Applied Organometallic Chemistry, Journal of Sulfur Chemistry, Australian Journal of Chemistry, Beilstein Journal of Organic Chemistry.

NSF Panelist (in Washington & for Site Visits)

for single investigator grants, instrumentation grants, and center proposals and site visits

External Reviewer for number of Tenure Evaluations

CWRU President's Advisory Committee on Tenure and Promotion

External Thesis Reader & Examiner Activity

2001, Sept. 27, External Thesis Reader & On-site Examiner: Aaron Hoskin, "*Synthesis and heteroatom-hydrogen activation studies of the anionic zirconocene trihydride [Cp*₂ZrH₃]⁻*" Department of Chemistry and Biochemistry, University of Windsor, Advisor Professor Douglas Stephan

2002, May 3, External Thesis Reader & On-site Examiner for 3 Senior Honors Theses: Calvin Barnes, Richard Pierce, Chelsea Martinez, Department of Chemistry Oberlin College, Advisor Professor Sarah Stoll

2008, External Thesis Reader: Bronwyn H. Gillon, "*Structure and Reactivity of Poly(methylenephosphine)s*" Department of Chemistry, University of British Columbia, Advisor Professor Derek P. Gates,

2008, Feb.12, External Thesis Reader & On-site Examiner: Abdurahmman "Abi" Atesin "*Synthesis and chemistry of iridium complexes containing chiral diphosphine ligands: Oxidative addition to iridium(I) systems and catalytic activity of the electrophilic iridium(III) complexes*" Department of Chemistry University of Rochester, Advisor Rich Eisenberg

2010, March 30, External Thesis Reader & On-site Examiner: Nathalie Lavoie, "*Disubstituted 1,8-Diaminonaphthalene as Supporting Ligands for High Oxidation State Early Transition Metal and Lanthanide Complexes*" Department of Chemistry, University of Ottawa, Advisor Dr. Darrin Richeson.

2011, April 29, External Thesis Reader & On-site Examiner: Stefan Durben "*Phosphorus-bridged 2,2'-Bithiophenes, Phenylpyridines and 4,4'-Bipyridines – Versatile Material for Organic Electronics*" Department of Chemistry, University of Calgary, Advisor Professor Thomas Baumgartner

2012, External Thesis Reader: Matthew Philip Duffy "*Advancing the chemistry of monovalent phosphorus*" Division of Chemistry and Biological Chemistry, Nanyang Technological University (NTU), Singapore, Advisor Professor Mathey Francois

2013, June 14, External Thesis Reader & On-site Examiner (Opponent): Anna Arkhypchuk (Respondent) "*Novel Approaches to Phosphorus-containing Heterocycles and Cumulenes*" Department of Chemistry; Uppsala University, Sweden, Advisor Dr. Sascha Ott

2014, External Thesis Reader: Feny Ho "*New Aspects of Phosphirane Chemistry*", Division of Chemistry and Biological Chemistry, Nanyang Technological University (NTU), Singapore, Professor Mathey Francois

2017, Dec. 8, External Thesis Reader & On-site Examiner: Stephanie Kosnik "*Building New Low Valent Phosphorus Molecules by P⁺ Transfer*" Department of Chemistry and Biochemistry, University of Windsor, Canada, Advisor Professor Charles L. B. Macdonald,

I. Courses Taught

Semester	Course Number & Title	Credit Hours
Fall 1993:	CHEM 331: Laboratory Methods and Techniques III	3
Fall 1994:	CHEM 331: Laboratory Methods and Techniques III	3
Spring 1995:	CHEM 414: Organometallic Reactions and Structures	3
Fall 1995:	CHEM 331: Laboratory Methods and Techniques III	3
Spring 1996:	CHEM 415: Chemical Applications of Group Theory	3
Fall 1997:	CHEM 331: Laboratory Methods and Techniques III	3
Spring 1997:	CHEM 414: Organometallic Reactions and Structures	3
Fall 1997:	CHEM 330 Computers in Chemistry Laboratory	3
Spring 1998:	CHEM 331: Laboratory Methods and Techniques III	3
Fall 1998:	CHEM 331: Laboratory Methods and Techniques III	3
Spring 1999:	CHEM 414: Organometallic Reactions and Structures	3
Fall 1999:	CHEM 331: Laboratory Methods and Techniques III	3
Fall 2000:	CHEM 331: Laboratory Methods and Techniques III	3
Spring 2001:	CHEM 414: Organometallic Reactions and Structures	3
Fall 2001:	CHEM 331: Laboratory Methods and Techniques III	3
Spring 2002:	CHEM 111: Principles of Chemistry for Engineers	3
Fall 2002:	CHEM 331: Laboratory Methods and Techniques III	3
Spring 2003:	CHEM 414: Organometallic Reactions and Structures	3
Fall 2003:	CHEM 331: Laboratory Methods and Techniques III	3
Fall 2003	USFS 100: First Seminar-Life of the Minds (SAGES course)	4
Spring 2004	-SABBATICAL (Oxford University, England)	-
Fall 2004	USFS 100: First Seminar-Life of the Minds (SAGES course)	4
Spring 2005	CHEM 414: Organometallic Reactions and Structures	3
Fall 2005	USFS 100: First Seminar-Life of the Minds (SAGES course)	4
Fall 2005	CHEM 605/395: Colloquium Seminar Class	1
Spring 2006	CHEM 413: Advanced Inorganic II	3
Fall 2006	CHEM 331: Laboratory Methods and Techniques III	3
Spring 2007	CHEM 479: X-ray Crystallography	3
Spring 2007	MIT 5.05: Advanced Inorganic Chemistry III (at MIT)	3
Fall 2007	CHEM 331: Laboratory Methods in Inorganic Chemistry	3
Spring 2008	CHEM 414: Organometallic Reactions and Structures	3
Fall 2008	CHEM 331: Laboratory Methods in Inorganic Chemistry	3
Fall 2009	CHEM 331: Laboratory Methods in Inorganic Chemistry	3
Spring 2010	CHEM 414: Organometallic Reactions and Structures	3
Fall 2010	CHEM 331: Laboratory Methods in Inorganic Chemistry	3
Fall 2011	CHEM 331: Laboratory Methods in Inorganic Chemistry	3
Spring 2012	-SABBATICAL (University of New Zealand, Auckland)	-
Fall 2012	CHEM 331: Laboratory Methods in Inorganic Chemistry	3
Spring 2013	CHEM 414: Organometallic Reactions and Structures	3
Fall 2013	CHEM 331: Laboratory Methods in Inorganic Chemistry	3
Fall 2014	CHEM 331: Laboratory Methods in Inorganic Chemistry	3
Spring 2015	CHEM 316/416: Frontiers in Inorganic Chemistry (2 modules)	3
Fall 2015	CHEM 331: Laboratory Methods in Inorganic Chemistry	3
Spring 2016	CHEM 414: Organometallic Reactions and Structures	3
Fall 2016	CHEM 331: Laboratory Methods in Inorganic Chemistry	3
Spring 2017	CHEM 414: Organometallic Reactions and Structures	3
Fall 2017	CHEM 331: Laboratory Methods in Inorganic Chemistry	3

J. Current, Pending, and Selected Recent Past Funding Activity

NSF funding on numerous single PI grants since 1997 NSF CAREER award, including a 2-year NSF award for special creativity. Have also written successful NSF grant for cyber-enabled single crystal X-ray diffractometer (NSF 0541766).

K. Publications

- Protasiewicz, J. D.; Mendenhall, G. D. "Di-*tert*-butyl Hyponitrite as a Source of Alkoxy Radicals for Dimerization" *J. Org. Chem.* **1985**, *50*, 3220.
- Protasiewicz, J. D.; Schulte, G.; Theopold, K. H. "Electron-Transfer Rates of a Co(-I)/Co(O) Couple and Crystal-Structure of the Tetrakis(Trimethyl Phosphite)Cobaltate(-I) Ion" *Inorg Chem* **1988**, *27*, 1133-1136.
- Protasiewicz, J. D.; Lippard, S. J. "Vanadium-Promoted Reductive Coupling of CO and Facile Hydrogenation to Form Cis-Disiloxyethylenes" *J. Am. Chem. Soc.* **1991**, *113*, 6564-6570.
- Protasiewicz, J. D.; Bianconi, P. A.; Williams, I. D.; Liu, S. C.; Rao, C. P.; Lippard, S. J. "Synthesis and Structural Characterization of Low-Valent Group-V Phosphine Complexes" *Inorg Chem* **1992**, *31*, 4134-4142.
- Carnahan, E. M.; Protasiewicz, J. D.; Lippard, S. J. "15 Years of Reductive Coupling - What Have We Learned?" *Acc. Chem. Res.* **1993**, *26*, 90-97.
- Protasiewicz, J. D.; Theopold, K. H. "A Direct Comparison of the Rates of Degenerate Transfer of Electrons, Protons, and Hydrogen-Atoms Between Metal-Complexes" *J. Am. Chem. Soc.* **1993**, *115*, 5559-5569.
- Protasiewicz, J. D.; Masschelein, A.; Lippard, S. J. "Kinetic, Spectroscopic, and Structural Evidence for Carbene Carbyne Intermediates in Carbyne/CO Coupling" *J. Am. Chem. Soc.* **1993**, *115*, 808-810.
- Mendenhall, G. D.; Protasiewicz, J. D.; Brown, C. E.; Ingold, K. U.; Luszytk, J. "5-Endo Closure of the 2-Formylbenzoyl Radical" *J. Am. Chem. Soc.* **1994**, *116*, 1718-1724.
- Protasiewicz, J. D.; Bronk, B. S.; Masschelein, A.; Lippard, S. J. "Electrophile-Promoted Carbyne CO Coupling at a Tantalum Center" *Organometallics* **1994**, *13*, 1300-1311.
- Bronk, B. S.; Protasiewicz, J. D.; Pence, L. E.; Lippard, S. J. "Reactions of Low-Valent Group-V Dicarboxyl Phosphine Complexes with Carbon-Based Electrophiles to Produce Metal Alkyl, Acyl, Carbyne, and Acetylene Complexes" *Organometallics* **1995**, *14*, 2177-2187.
- Bronk, B. S.; Protasiewicz, J. D.; Lippard, S. J. "Reductive Coupling of Group-5 Dicarboxyls to Disiloxyacetylene Complexes - Ring Formation and Effects of Increasing Steric Demands" *Organometallics* **1995**, *14*, 1385-1392.
- Cicero, R.; Protasiewicz, J. D. "Is π -Backbonding Important for σ -Bound Aldehyde & Ketone Complexes? Synthesis and Structural Characterization of Aromatic Aldehyde Complexes of the $[\text{CpFe}(\text{CO})_2]^+$ Cation" *Organometallics* **1995**, *14*, 4792.
- Laplaza, C. E.; Odom, A. L.; Davis, W. M.; Cummins, C. C.; Protasiewicz, J. D. "Cleavage of the Nitrous-Oxide NN Bond by a 3-Coordinate Molybdenum(III) Complex" *J. Am. Chem. Soc.* **1995**, *117*, 4999-5000.
- Lin, C.; Protasiewicz, J. D.; Smith, E. T.; Ren, T. "Redox Tuning of the Dimolybdenum Compounds at the Ligand Periphery: A Direct Correlation with the Hammett Constant of the Substituents" *J. Chem. Soc. Chem. Comm.* **1995**, 2257.
- Odom, A. L.; Cummins, C. C.; Protasiewicz, J. D. "Nitric-Oxide Cleavage - Synthesis of Terminal Chromium(VI) Nitrido Complexes via Nitrosyl Deoxygenation" *J. Am. Chem. Soc.* **1995**, *117*, 6613-6614.
- Protasiewicz, J. D. "Reduction of Intermolecular Association in the Sterically Encumbered (Dichloroiodo)Arene Aricl(2) (Ar=2,6-bis(3,5-Dichloro-2,4,6-Trimethylphenyl)Benzene)" *J. Chem. Soc. Chem. Commun.* **1995**, 1116, 1115-1116.
- Cicero, R. L.; Zhao, D.; Protasiewicz, J. D. "Polymorphism of (Tosyliminoiodo)*o*-toluene: Two New Modes of Polymeric Association for ArINTs" *Inorg. Chem.* **1996**, *35*, 275.

- Lin, C.; Protasiewicz, J. D.; Ren, T. "Electronic Tuning Using Remote Substituents in Tetrakis(μ -N,N'-diarylformamidinato)nickel. Linear Free Energy Relationships in Dinuclear Compounds. 3" *Inorg. Chem.* **1996**, *35*, 7455-7458.
- Lin, C.; Protasiewicz, J. D.; Smith, E. T.; Ren, T. "Linear Free Energy Relationships in Dinuclear Compounds. 2. Inductive Redox Tuning via Remote Substituents in Quadruply Bonded Dimolybdenum Compounds." *Inorg. Chem.* **1996**, *35*, 6422.
- Protasiewicz, J. D. "(Tosyliminoiodo)benzene at 298 K" *Acta. Cryst. C* **1996**, 1570.
- Urnezius, E.; Protasiewicz, J. D. "Synthesis and Structural Characterization of New Hindered Aryl Phosphorus Centers (Aryl = 2,6-Dimesitylphenyl)" *Main Group Chemistry* **1996**, *1*, 369-372.
- Boucher, M.; Macikenas, D.; Ren, T.; Protasiewicz, J. D. "Secondary Bonding as a Force Dictating Structure and Solid-State Aggregation of the Primary Nitrene Sources (Arylsulfonylimino)iodoarenes (ArINSO₂Ar)" *J. Am. Chem. Soc.* **1997**, *119*, 9366-9376.
- Garner, P.; Cox, P. B.; Anderson, J. T.; Protasiewicz, J.; Zaniewski, R. "Use of Silicon-Based Tethers to Control Diastereofacial Selectivity in Azomethine Ylide Cycloadditions" *J. Org. Chem.* **1997**, *62*, 493-498.
- Gopal, D.; Macikenas, D.; Sayre, L. M.; Protasiewicz, J. D. "Structural Determination of a Dimeric Side-Product Accompanying Dihydropyrazine Preparation" *Acta. Chem. Scand.* **1997**, *51*, 938-941.
- Shah, S.; Burdette, S. C.; Swavey, S.; Urbach, F. L.; Protasiewicz, J. D. "Alkali Metal Induced Rupture of a Phosphorus-Phosphorus Double Bond. Electrochemical and EPR Investigations of New Sterically Protected Diphosphenes and Radical Anions [ArPPAr]" *Organometallics* **1997**, *16*, 3395-3400.
- Macikenas, D.; Meprathu, B. V.; Protasiewicz, J. D. "Solubilization of the Primary Nitrene Sources (Tosyliminoiodo)arenes (ArINTs)" *Tetrahedron Lett.* **1998**, *39*, 191-194.
- Ren, T.; Lin, C.; Amalberti, P.; Macikenas, D.; Protasiewicz, J. D.; Baum, J. C.; Gibson, T. L. "Bis(μ -N,N'- η 2-N,O- η 2-N,O'-di(o-methoxyphenyl)-formamidinato)disilver(I): An Interesting Coordination Geometry for Silver(I) and Room Temperature Fluorescence" *Inorg. Chem. Commun.* **1998**, *1*, 23-26.
- Shah, S.; Yap, G. P. A.; Protasiewicz, J. D. "'Phospha-Wittig' Reactions Using Isolable Phosphoranylidene phosphines ArP=PR₃ (Ar = 2,6-Mes₂C₆H₃ or 2,4,6-Bu₃C₆H₂)" *J. Chem. Soc. Chem. Commun.* **1998**, 1585-1586.
- Macikenas, D.; Skrzypczak-Jankun, E.; Protasiewicz, J. D. "A New Class of Iodonium Ylides Engineered as Soluble Primary Oxo and Nitrene Sources" *J. Am. Chem. Soc.* **1999**, 7164-7165.
- Meprathu, B. V.; Diltz, S.; Walsh, P. J.; Protasiewicz, J. D. "Hypervalent Iodine Nitrene Precursors Bearing N-Heterocyclic Rings" *Tetrahedron Lett.* **1999**, *40*, 5459-5460.
- Shah, S.; Protasiewicz, J. D. "Phosphoranylidene phosphines (R₃P=PR) as Phospha-Wittig Reagents" *Phosphorus, Sulfur* **1999**, 343.
- Urnezius, E.; Shah, S.; Protasiewicz, J. D. "Diphosphene and Phosphoranylidene phosphine Formation from a Terminal Phosphinidene Complex" *Phosphorus, Sulfur* **1999**, 137-139.
- Macikenas, D.; Skrzypczak-Jankun, E.; Protasiewicz, J. D. "Redirecting Secondary Bonds to Control Molecular and Crystal Properties of an Iodosylbenzene and an Iodoxybenzene" *Angew. Chem. Int. Ed. Engl.* **2000**, *11*, 2007-2010.
- Macikenas, D.; Skrzypczak-Jankun, E.; Protasiewicz, J. D. "Richtungsändernde Nebenbindungen, die molekulare und kristalline Eigenschaften von Iodosyl- und Iodoxybenzolen kontrollieren" *Angew. Chem.* **2000**, *112*, 2063-2066.
- Mandal, S.; Macikenas, D.; Protasiewicz, J. D.; Sayre, L. M. "Novel *tert*-Butyl Migration in Copper Mediated Phenol *o*-Oxygenation Implicates a Mechanism Involving Conversion of a 6-Hydroperoxy-2,4-cyclohexadienone Directly to an *o*-Quinone" *J. Org. Chem.* **2000**, *65*, 4804-4809.
- Shah, S.; Yap, G. P. A.; Protasiewicz, J. D. "Crystal Structure of the Phosphoranylidene- σ^4 -phosphosphine DmpP=PMe₃ (Dmp = 2,6-Mes₂-C₆H₃) and Reactions with Electrophiles" *J. Organomet. Chem.* **2000**, *608*, 12-20.
- Shah, S.; Protasiewicz, J. D. "'Phospha-variations' On The Themes Of Staudinger and Wittig: Phosphorus analogs of Wittig Reagents" *Coord. Chem. Rev.* **2000**, *210/1*, 181-201.
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L. Patents and Invention Disclosures & Related Activities

- (1) **Invention Disclosure** "Latent, Cationic, Organic Acid Based, Phosphine Palladium Initiators for the Polymerization of Functionalized Norbornenes" filed with CWRU **2003**
- (2) **Provisional Patent** "Latent, Cationic, Organic Acid Based, Phosphine Palladium Initiators for the Polymerization of Functionalized Norbornenes" **2004**, Promerus LLC.
- (3) **Patent Filing** Bell, A.; Amoroso, D.; Protasiewicz, J.; Thirupathi, N. Single component cationic palladium proinitiators for the latent polymerization of cycloolefins. 2004-US37983 2005042147, 20041029., **2005**.
- (4) **Provisional Patent/Patent Filing** Scherson, D. A.; Protasiewicz, J. D. "Charge Storage Nanoparticles Incorporating Functional Conductive Surfactants" **2004**.

M. Seminars and Conferences

1985 Protasiewicz, J. D.; Mendenhall, G. D., **Undergraduate Research Symposium, Eue Claire, WI**, "*Di-tert-butyl-hyponitrite as a source of radicals for dimerization*", submitted talk.

1988 Protasiewicz, J. D.; Theopold, K. H., **ACS National Meeting, Toronto, Canada**, "*Rates of Degenerate Electron and Hydrogen Transfer in Low Valent Cobalt Phosphite Complexes*", submitted talk.

1991 Protasiewicz, J. D.; Lippard, S. J., **Organometallic Gordon Conference, Newport, RI**, "*Vanadium Promoted CO Reductive Coupling Reactions*", submitted poster.

1994 Protasiewicz, J. D., **Workshop on Xray Diffraction & Shelxtl, Madison, WI**, "*Workshop on Xray Diffraction & Shelxtl*", workshop participant.

1994 Protasiewicz, J. D., **Workshop on Computers in Chemical Education, CWRU**, "*Use of Bibliographic Database Software in Chemistry*", invited speaker.

1995 Cicero, R. L.; Zhao, D.; Protasiewicz, J. D., **ACS National Meeting, Anaheim, CA**, "*New Transition-Metal Promoted Ketone and Aldehyde Epoxidation Reactions*", submitted talk.

1995 Protasiewicz, J. D., **ACS National Meeting, Anaheim, CA**, "*Sterically Encumbered Iodosylarenes*", submitted talk.

1995 Protasiewicz, J. D., **ACS National Meeting, Chicago**, "*Structural Details of the Primary Nitrene Source (Tosylimino)iodo]benzene (PhI=NTS) and Related Organoiodine(III) Species*", submitted talk.

1995 Protasiewicz, J. D., **University of Akron**, "*Structural Details of the Primary Nitrene Source (Tosylimino)iodo]benzene (PhI=NTS) and Related Organoiodine(III) Species*", invited speaker.

1995 Protasiewicz, J. D., **Kent State University**, "*Polyvalent Iodine Derivatives*", invited speaker.

1996 Cicero, R. L.; Zhao, D.; Protasiewicz, J. D.; Ren, T., **ACS National Meeting, New Orleans, LA**, "*Structural diversity in the primary nitrene sources - [(Tosylimino)iodo]arenes ArINTs*", submitted talk.

1996 Lin, C.; Ren, T.; Harvey, P. D.; Protasiewicz, J. D.; Eglin, J. L., **ACS National Meeting, New Orleans, LA**, "*Cuprous compounds supported by formamidinate ligands: Equilibrium, structural and photophysical properties*", submitted talk.

1996 Lin, C.; Smith, E. T.; Ren, T.; Protasiewicz, J. D., **ACS National Meeting, New Orleans, LA**, "*Redox tuning at the ligand periphery: Dimolybdenum and dinickel compounds*", submitted talk.

- 1996 Protasiewicz, J. D., **Florida Institute of Technology**, "*Structural Details of the Primary Nitrene Source (Tosylimino)iodobenzene (PhI=NTS) and Related Organoiodine(III) Species*", invited speaker.
- 1996 Urnezis, E.; Protasiewicz, J. D., **ACS National Meeting, New Orleans, LA**, "*Sterically encumbered meta-terphenyl phosphines, phosphaketenes, and complexes*", submitted talk.
- 1997 Boucher, M. A.; Macikenas, D.; Protasiewicz, J. D., **ACS National Meeting, San Francisco, CA**, "*Structural and solution chemistry of the primary nitrene sources [(tosylimino)iodo]arenes ArINSO₂Ar'*." submitted talk.
- 1997 Protasiewicz, J. D., **1997 NSF Inorganometallic Chemistry Workshop, Sante Fe, NM**, "*Relationships Between Phosphinidenes Complexes & Diphosphenes*", workshop participant and invited speaker.
- 1997 Protasiewicz, J. D., **University of Delaware**, "*Diphosphenes and Phosphinidene Complexes: Low Coordinate Phosphorus Centers Stabilized By Sterically Encumbered meta-Terphenyls*", invited speaker.
- 1997 Protasiewicz, J. D., **University of North Dakota**, "*Diphosphenes and Phosphinidene Complexes: Low Coordinate Phosphorus Centers Stabilized By Sterically Encumbered meta-Terphenyls Phosphorus*", invited speaker.
- 1997 Protasiewicz, J. D., **North Dakota State University**, "*Diphosphenes and Phosphinidene Complexes: Low Coordinate Phosphorus Centers Stabilized By Sterically Encumbered meta-Terphenyls Phosphorus*", invited speaker.
- 1997 Protasiewicz, J. D., **Massachusetts Institute of Technology**, "*Diphosphenes and Phosphinidene Complexes: Low Coordinate Phosphorus Centers Stabilized By Sterically Encumbered meta-Terphenyls*", invited speaker.
- 1997 Protasiewicz, J. D., **University of Chicago**, "*Diphosphenes and Phosphinidene Complexes: Low Coordinate Phosphorus Centers Stabilized By Sterically Encumbered meta-Terphenyls*", invited speaker.
- 1997 Protasiewicz, J. D., **CWRU Glennan Fellows Program, Case Western Reserve University**, "*Visualizing Molecules and Molecular Bonding Using the World Wide Web*", invited speaker.
- 1997 Protasiewicz, J. D.; Meprathu, B. V., **ACS Cleveland Local Section Meeting, John Carrol University, OH**, "*Solubilization of Hypervalent Iodine Reagents*", submitted talk.
- 1997 Protasiewicz, J. D.; Shah, S.; Urnezis, E., **Canadian Society for Chemistry CSC97, Windsor, Ontario**, "*New Sterically Encumbered Meta-Terphenyl Phosphorus Centres and Diphosphenes*", invited speaker.
- 1997 Shah, S.; Protasiewicz, J. D., **ACS National Meeting, San Francisco, CA**, "*Sterically encumbered meta-terphenyl diphosphenes*", submitted talk.
- 1997 Urnezis, E.; Protasiewicz, J. D., **ACS National Meeting, San Francisco, CA**, "*Zirconocene phosphido- and phosphinidene complexes*", submitted talk.
- 1998 Protasiewicz, J. D., **Ohio State University**, "*Relationships Between Diphosphenes, Phosphinidene Complexes and PhosphinePhosphinidenes*", invited speaker.
- 1998 Protasiewicz, J. D., **ACS National Meeting, Boston**, "*Is foresight ever 20/20? Some hindsights for younger faculty*", invited speaker.
- 1998 Protasiewicz, J. D., **Organometallic Gordon Conference, Newport, RI**, "*Relationships Between Diphosphenes, Phosphinidene Complexes, and Phosphine-Phosphinidenes*", invited speaker.
- 1998 Protasiewicz, J. D., **University of Windsor**, "*Transition Metal and Main Group Phosphinidine Complexes as Synthetic Tools*", invited speaker.
- 1998 Protasiewicz, J. D., **University of Missouri-St. Louis**, "*Transition Metal and Main Group Phosphinidine Complexes as Synthetic Tools*", invited speaker.
- 1998 Protasiewicz, J. D., **Washington University**, "*Transition Metal and Main Group Phosphinidine Complexes as Synthetic Tools*", invited speaker.
- 1998 Shah, S.; Protasiewicz, J. D., **ACS National Meeting, Boston, MA**, "*Phospha-Wittig chemistry of phosphoranylidene-phosphines (R₃P=PR)*", submitted talk.
- 1998 Shah, S.; Protasiewicz, J. D., **XIV International Conference on Phosphorus Chemistry, Cincinnati, OH**, "*Phosphoranylidene phosphines (R₃P=PR) as Phospha-Wittig Reagents*", submitted poster.
- 1998 Urnezis, E.; Shah, S.; Protasiewicz, J. D., **XIV International Conference on Phosphorus Chemistry, Cincinnati, OH**, "*Diphosphene and Phosphoranylidene phosphine Formation from a Terminal*

- Phosphinidene Complex*", submitted talk.
- 1998 Urnezis, E.; Shah, S.; Protasiewicz, J. D., **ACS National Meeting, Boston, MA**, "*Reactions of zirconocene phosphinidene complexes with dichlorophosphines - Mechanistic studies*", submitted talk.
- 1998 Urnezis, E.; Shah, S.; Protasiewicz, J. D., **ACS Central Regional Meeting, Cleveland, Ohio**, "*Relationships Between Phosphinidene Complexes and Diphosphenes*", invited speaker.
- 1999 Protasiewicz, J. D., **Case Western Reserve University**, "*Is Phosphorus a Carbon Copy? Recent Efforts to Develop New Materials with pi-Bonds to Phosphorus*", invited speaker.
- 1999 Protasiewicz, J. D., **SUNY University of Buffalo**, "*Development of New Iodosylbenzenes (PhI=O) and (Tosyliminoiodo)benzenes (PhI=NTs) as Soluble Oxygen Atom and Nitrene Sources in Catalysis*", invited speaker.
- 1999 Protasiewicz, J. D., **Youngstown State University**, "*Development of New Iodosylbenzenes (PhI=O) and (Tosyliminoiodo)benzenes (PhI=NTs) as Soluble Oxygen Atom and Nitrene Sources in Catalysis*", invited speaker.
- 1999 Protasiewicz, J. D.; Shah, S., **ACS National Meeting, New Orleans, LA**, "*Difunctional main-group and transition metal-phosphinidene complexes for synthesis of new materials*", submitted talk.
- 1999 Protasiewicz, J. D.; Macikenas, D., **ACS National Meeting, New Orleans, LA**, "*Soluble analogs of iodosylbenzene (PhI=O) and (tosyliminoiodo)benzene (PHI=NTS) for homogeneous catalysis*", submitted talk.
- 2000 Protasiewicz, J. D., **University of Minnesota, Duluth**, "*New Soluble Iodosylbenzenes (PhI=O) and (Tosyliminoiodo)benzenes (PhI=NTs) for Catalysis*", invited speaker.
- 2000 Protasiewicz, J. D., **Ferro Corporation, MCCT Symposium**, "*Learning to Control Inorganic Versions of Hydrogen-Bonds by X-ray Studies of Hypervalent Compounds*", invited speaker.
- 2000 Protasiewicz, J. D., **Purdue University**, "*Is Phosphorus a Carbon Copy? Main Group and Transition Metal Phosphinidene Complexes for Synthesis of New Materials*", invited speaker.
- 2000 Protasiewicz, J. D., **Indiana University Bloomington**, "*Is Phosphorus a Carbon Copy? Main Group and Transition Metal Phosphinidene Complexes for Synthesis of New Materials*", invited speaker.
- 2000 Protasiewicz, J. D., **Wayne State University**, "*Is Phosphorus a Carbon Copy? Main Group and Transition Metal Phosphinidene Complexes for Synthesis of New Materials*", invited speaker.
- 2000 Protasiewicz, J. D., **Northwestern University**, "*Is Phosphorus a Carbon Copy? Main Group and Transition Metal Phosphinidene Complexes for Synthesis of New Materials*", invited speaker.
- 2000 Protasiewicz, J. D., **University of California, Riverside**, "*Is Phosphorus a Carbon Copy? Main Group and Transition Metal Phosphinidene Complexes for Synthesis of New Materials*", invited speaker.
- 2000 Protasiewicz, J. D., **Boston College**, "*Is Phosphorus a Carbon Copy? Main Group and Transition Metal Phosphinidene Complexes for Synthesis of New Materials*", invited speaker.
- 2000 Protasiewicz, J. D., **Buffalo State College**, "*Is Phosphorus a Carbon Copy? Main Group and Transition Metal Phosphinidene Complexes for Synthesis of New Materials*", invited speaker.
- 2000 Protasiewicz, J. D., **Organometallic Gordon Conference, Newport, RI**, "*Construction of PPV-like Materials Incorporating Multiply-bonded Phosphorus Centers*", submitted poster.
- 2000 Protasiewicz, J. D., **Inorganic Gordon Conference, Newport, RI**, "*Construction of PPV-like Materials Incorporating Multiply-bonded Phosphorus Centers*", submitted poster.
- 2000 Protasiewicz, J. D.; Shah, S., **ACS National Meeting, San Francisco, CA**, "*Novel bis-phosphaalkenes and bis-diphosphenes*", submitted talk.
- 2000 Protasiewicz, J. D.; Shah, S., **Lippard Inorganic Chemistry Symposium, Cambridge, MA**, "*Novel bis-phosphaalkenes and bis-diphosphenes*", submitted poster.
- 2000 Protasiewicz, J. D.; Mepathu, B. V., **Inorganic Chemistry Weekend, Ohio State University, Columbus, OH**, "*Development of Soluble Organoiodine Oxidants for Transition Metal Catalyzed Reactions*", submitted talk.
- 2000 Protasiewicz, J. D.; Macikenas, D.; Mepathu, B. V., **ACS National Meeting, New Orleans, LA**, "*Soluble hypervalent iodine oxo and nitrene precursors*", submitted talk.
- 2000 Protasiewicz, J. D.; Shah, S., **ACS National Meeting, New Orleans, LA**, "*Novel bis-phosphaalkenes and*

- bis-diphosphenes*",
- 2001 Protasiewicz, J. D., **Society for Applied Spectroscopy and Cleveland ACS Annual May Conference, John Carroll University, Ohio**, "*Study of Inorganic Versions of Hydrogen Bonds by X-ray Diffraction*", invited speaker.
- 2001 Protasiewicz, J. D., **2001 NSF Inorganic Chemistry Workshop, Shanty Creek, MI**, "*Free Phosphinidenes as Reactive Intermediates in Inorganic Chemistry*", workshop participant and invited speaker.
- 2001 Protasiewicz, J. D., **Oberlin College**, "*Is Phosphorus a Carbon Copy? Phosphorus Analogues of Conjugated Organic Polymers*", invited speaker.
- 2001 Protasiewicz, J. D., **Southern Methodist University**, "*Is Phosphorus a Carbon Copy? Main Group and Transition Metal Phosphinidine Complexes for Synthesis of New Materials*", invited speaker.
- 2001 Protasiewicz, J. D., **Texas Christian University**, "*Is Phosphorus a Carbon Copy? Main Group and Transition Metal Phosphinidine Complexes for Synthesis of New Materials*", invited speaker.
- 2001 Protasiewicz, J. D., **New Mexico State University**, "*Is Phosphorus a Carbon Copy? Main Group and Transition Metal Phosphinidine Complexes for Synthesis of New Materials*", invited speaker.
- 2001 Protasiewicz, J. D., **Cleveland State University**, "*Is Phosphorus a Carbon Copy? Main Group and Transition Metal Phosphinidine Complexes for Synthesis of New Materials*", invited speaker.
- 2001 Protasiewicz, J. D., **University of Akron**, "*Is Phosphorus a Carbon Copy? Main Group and Transition Metal Phosphinidine Complexes for Synthesis of New Materials*", invited speaker.
- 2001 Protasiewicz, J. D.; Shah, S.; Simpson, M. C.; Smith, R. C., **National ACS Meeting, Chicago, IL**, "*Photocleavage of phospho-Wittig reagents as a new route to free phosphinidenes*", submitted talk.
- 2001 Protasiewicz, J. D.; Shah, S.; Simpson, M. C.; Smith, R. C., **XV International Conference on Phosphorus Chemistry, Sendai, Japan**, "*Photocleavage of phospho-Wittig reagents as a new route to free phosphinidenes*", submitted talk.
- 2001 Shah, S.; Smith, R. C.; Dutan, C.; Chou, S.; Geoffroy, M.; Protasiewicz, J. D., **XV International Conference on Phosphorus Chemistry, Sendai, Japan**, "*Development of new ligands for the simultaneous protection of two low coordinate phosphorus centers*", submitted poster.
- 2001 Shah, S.; Protasiewicz, J. D., **Society for Applied Spectroscopy and Cleveland ACS Annual May Conference, John Carroll University, Ohio**, "*Application of X-ray Crystallography in the Synthesis and Characterization of Low-Coordinate Phosphorus Compounds*", submitted talk.
- 2002 Protasiewicz, J. D.; Shah, S.; Simpson, M. C.; Smith, R. C., **National ACS Meeting, Boston, MA**, "*Photochemical and thermal routes to possible phosphinidene intermediates*", submitted talk.
- 2002 Smith, R. C.; Ren, T.; Protasiewicz, J. D., **ACS National Meeting, Boston, MA**, "*Robust, reactive, and remarkably simple to prepare sterically encumbered meta-terphenyl ligand*", submitted talk.
- 2002 Smith, R. C.; Ren, T.; Protasiewicz, J. D., **Inorganic Gordon Conference, Newport, RI**, "*Robust, reactive, and remarkably simple to prepare sterically encumbered meta-terphenyl ligand*", submitted poster.
- 2003 Natesan, T.; Amoroso, D.; Bell, A.; Protasiewicz, J. D., **Inorganic Gordon Conference, Newport, RI**, "*Unusual Thermal Chemistry of Cationic Palladium Complexes*", submitted poster.
- 2003 Protasiewicz, J. D., **University of California, San Diego**, "*Phosphorus Analogues of Wittig Reagents, Carbenes, Olefins, and pi-Conjugated Materials*", invited speaker.
- 2004 Protasiewicz, J. D. "*Towards New Plastics Featuring Main Group Elements*" **Cleveland State University**, invited speaker.
- 2004 Protasiewicz, J. D. "*New Conjugated Oligomers and Polymers Featuring Main Group Elements Participating in $p\pi-p\pi$ Conjugation*" **12th National Science Foundation Workshop on Materials and Nanochemistry, Boulder, Colorado**, invited speaker.
- 2004 Protasiewicz, J. D. In *Introduction of Main Group Elements into the Backbone of Conjugated Polymers*, **Oxford University**, invited speaker.
- 2004 Protasiewicz, J. D. "*Introduction of Main Group Elements into the Backbone of Conjugated Polymers*" **Oxford University (Bayley Research Group)** invited speaker.
- 2004 Protasiewicz, J. D. "*Introduction of Main Group Elements into the Backbone of Conjugated Polymers*" **University of Texas at Austin**, invited speaker.

- 2004 Protasiewicz, J. D. "*Introduction of Main Group Elements into the Backbone of Conjugated Polymers*" **Texas A&M University**, invited speaker.
- 2004 Protasiewicz, J. D. "*Introduction of Main Group Elements into the Backbone of Conjugated Polymers*" **Rice University**, invited speaker.
- 2005 Woloszynek, R. A.; Ma, L.; Smith, R. C.; Protasiewicz, J. D. "*meta-Terphenyls as Platforms for Catalysis*" **Inorganic Gordon Conference, Newport, RI**, submitted poster
- 2005 Smith, R. C.; Woloszynek, R. A.; Chen, X.; Gudimetla, V.; Protasiewicz, J. D. "*Main Group Containing Conjugated Polymers and Materials*" **Inorganic Gordon Conference; Newport, RI**, submitted poster
- 2005 Protasiewicz, J. D. "*Applications of meta-Terphenyls in Materials and Catalysis Chemistry*" **University of California, Berkeley**, (Oct. 28) invited speaker.
- 2005 Protasiewicz, J. D. "*Applications of meta-Terphenyls in Materials and Catalysis Chemistry*" **University of California, Davis**, (Oct. 27) invited speaker.
- 2005 Protasiewicz, J. D. "*Introduction of Main Group Elements into the Backbone of Conjugated Polymers*" **PACIFICHEM05, Hawaii**, (December 20) invited speaker.
- 2006 Protasiewicz, J. D. "*Applications of meta-Terphenyls in Materials and Catalysis Chemistry*" **University of Toledo**, (Feb. 8) invited speaker.
- 2006 Ma, L.; Woloszynek, R. A.; Protasiewicz, J. D. "*meta-Terphenyls as Ligand Platforms*" **Inorganic Gordon Conference, Newport, RI**, submitted poster
- 2006 Woloszynek, R. A.; Smith, R. C.; Chen, X.; Gudimetla, V.; Protasiewicz, J. D. "*Towards new electronically interesting plastics and materials featuring low-coordinate phosphorus*" **Inorganic Gordon Conference; Newport, RI**, submitted poster
- 2006 Protasiewicz, J. D. "*Applications of meta-Terphenyls in Materials and Catalysis Chemistry*" **John Carroll University**, (Nov. 26) invited speaker.
- 2006 Protasiewicz, J. D. "*Towards new electronically interesting plastics and materials featuring main group elements*" **John Carroll University**, (Nov. 26) invited speaker.
- 2007 Protasiewicz, J. D. "*Towards new electronically interesting plastics and materials featuring main group elements*" **Hope College**, (Jan. 26) invited speaker.
- 2007 Protasiewicz, J. D. "*Towards new electronically interesting plastics and materials featuring main group elements*" **Connecticut College**, (March 6) invited speaker.
- 2007 Protasiewicz, J. D. "*New electronically interesting plastics and materials featuring main group elements*" **University of Connecticut**, (March 14) invited speaker.
- 2007 Protasiewicz, J. D. "*New electronically interesting plastics and materials featuring main group elements*" **McMaster University**, (April 19) invited speaker.
- 2007 Protasiewicz, J. D. "*New electronically interesting plastics and materials featuring main group elements*" **Brock University**, (April 20) invited speaker.
- 2007 Protasiewicz, J. D. "*New electronically interesting plastics and materials featuring main group elements*" **University of Vermont**, (May 3) invited speaker.
- 2007 Protasiewicz, J. D. "*New electronically interesting plastics and materials featuring main group elements*" **90th Canadian Chemical Conference**, (May 29) invited plenary speaker.
- 2007 Protasiewicz, J. D. "*Conjugated polymers and materials featuring main group elements*" **University of Dayton** (Sept. 20) invited speaker.
- 2007 Protasiewicz, J. D. "*Conjugated polymers and materials featuring main group elements*" **Indiana University**, (Sept. 21) invited speaker.
- 2008 Protasiewicz, J. D. "*Conjugated polymers and materials featuring main group elements*" **Youngstown State University**, (March 28) invited speaker.
- 2008 Protasiewicz, J. D. "*Capitalizing on Terphenyl Scaffolds for Ligands and Catalysts*" **Central Regional ACS Meeting**, (June 11) invited speaker.
- 2008 Protasiewicz, J. D. **NSF Workshop on Cyber-Enabled Instrumentation**, (July 16-18) workshop participant.

- 2008 Protasiewicz, J. D. “*Gold complexes of low coordinate phosphorus compounds*” **Inorganic Gordon Conference; Newport, RI**, (June 13-16) submitted poster.
- 2009 Protasiewicz, J. D. “*Conjugated polymers and materials featuring main group elements*” **Kent State University**, (Feb. 22) invited speaker.
- 2009 Protasiewicz, J. D. “*meta-Terphenyl anchored pincer complexes*” **National ACS Meeting, Salt Lake City**, (March 22) contributed talk.
- 2009 Protasiewicz, J. D. “*Phospha-PPVs and phospha-OPVs: Materials featuring phosphorus as participatory element in pi-conjugation*” **National ACS Meeting, Salt Lake City**, (March 22) contributed talk.
- 2009 Protasiewicz, J. D. “*Gold adducts of diphosphenes, phospha-Wittig reagents, and phosphines*” **National ACS Meeting, Salt Lake City**, (March 23) contributed talk.
- 2009 Protasiewicz, J. D. “*Twisted and Nonplanar Pincer Complexes: Structures and Catalysis*” **92nd Canadian Chemical Conference**, (June 30) invited plenary speaker.
- 2009 Protasiewicz, J. D. “*Development of Multiply Bonded Main Group-Based Materials with Novel Photophysical Properties*” **Inorganic Gordon Conference; Biddeford, ME**, (June 21-26) submitted poster.
- 2010 Protasiewicz, J. D. “*Twisted and Nonplanar Pincer Complexes: Structures and Catalysis*” **University of Ottawa, Canada**, (March 30) invited speaker.
- 2010 Protasiewicz, J. D. “*New Conjugated Materials Featuring Low Coordinate Phosphorus*” **International Symposium on Functional Pi Electron Systems 9 (F-Pi-9); Atlanta, GA**, (May 23-28) submitted poster.
- 2010 Protasiewicz, J. D. “*Phosphorus as a Carbon-Copy and as a Photo-Copy: Rise of New Conjugated Materials*” **Inorganic Gordon Conference; Biddeford, ME**, (June 20-25) invited speaker.
- 2010 Protasiewicz, J. D. “*Phosphorus as a Carbon-Copy and as a Photo-Copy*” **National ACS Meeting, Boston, MA**, (August 22-26) submitted talk to Lippard Symposium.
- 2010 Protasiewicz, J. D. “*Multiply bonded low coordinate phosphorus in pi-conjugated materials*” **Pacificchem; Honolulu, Hawaii**, (Dec. 15-20) invited speaker.
- 2011 Protasiewicz, J. D. “*Fly Fishing In Ireland: Lough Corrib World Varsities Trout Fly Fishing Competition*” **North Coast Fly Fishers, Ohio** (Jan. 15) invited speaker.
- 2011 Protasiewicz, J. D. “*FRIONs: Flame retardant ions for safer lithium ion batteries*” **National ACS Meeting, Anaheim, CA**, (April 30) contributed talk.
- 2011 Protasiewicz, J. D. “*Phosphorus as a carbon copy and as a photocopy for conjugated polymer chemistry*” **National ACS Meeting, Anaheim, CA**, (April 28) contributed talk.
- 2011 Protasiewicz, J. D. “*Development of soluble hypervalent organoiodine reagents for homogenous transition metal catalyzed reactions*” **National ACS Meeting, Anaheim, CA**, (April 28) invited speaker for V. Zhdankin Award Symposium.
- 2011 Protasiewicz, J. D. “*Design and Synthesis of Conjugated Materials For Optoelectronic Applications Featuring Phosphorus*” **Moravian College**, (April 6) invited speaker.
- 2011 Protasiewicz, J. D. “*Phosphorus as a carbon copy and as a photocopy for conjugated polymer chemistry*” **University of Calgary, Canada**, (April 29) invited speaker.
- 2011 Protasiewicz, J. D. “*Coordination Chemistry of Low Coordinate Phosphorus Compounds*” **Zing Conference on Coordination Chemistry, Cancun, Mexico**, (December 13) invited speaker.
- 2012 Protasiewicz, J. D. “*“Phun” with Phosphorus. New Conjugated Materials Featuring Multiply Bonded Phosphorus Atoms*” **Cleveland State University**, (February 24) invited speaker.
- 2012 Protasiewicz, J. D. “*FRIONs: Flame retardant ions for safer lithium ion batteries*” **National ACS Meeting, San Diego, CA**, (March 27) contributed talk.
- 2012 Protasiewicz, J. D. “*Phosphorus as a carbon copy and as a photocopy for conjugated materials chemistry*” **National ACS Meeting, San Diego, CA**, (March 25) contributed talk.
- 2012 Protasiewicz, J. D. “*Phosphorus as a carbon copy and as a photocopy for conjugated polymer chemistry*” **University of North Carolina, Charlotte**, (April 26) invited speaker.
- 2012 Protasiewicz, J. D. “*“Phosphorus as a Carbon-Copy and as a Photo-Copy: Rise of New Conjugated*

- Materials Featuring Multiply Bonded Phosphorus*” **International Conference on Heteroatom Chemistry, Kyoto, Japan**, (March) invited speaker.
- 2012 Protasiewicz, J. D. "*Phosphorus as a carbon copy and as a photocopy for conjugated polymer chemistry*" **University of North Carolina, Charlotte**, (April 26) invited speaker.
- 2012 Protasiewicz, J. D. "*Phosphorus as a carbon copy and as a photocopy for conjugated polymer and materials chemistry*" **University of New Zealand, Auckland**, (June 4) invited speaker.
- 2012 Protasiewicz, J. D. "*Phosphorus as a Carbon-Copy and as a Photo-Copy: New Conjugated Materials Featuring Multiply Bonded Phosphorus*" **National ACS Meeting, Philadelphia, PA**, (August 20) invited talk.
- 2012 Protasiewicz, J. D. "*Phosphorus as a Carbon-Copy and as a Photo-Copy: New Conjugated Materials Featuring Multiply Bonded Phosphorus*" **Zhengzhou Workshop, Zhengzhou, China**, (Sept. 17) invited talk.
- 2013 Protasiewicz, J. D. "*Phosphorus as a Carbon-Copy and as a Photo-Copy: New Conjugated Materials Featuring Multiply Bonded Phosphorus*" **Uppsala University, Uppsala, Sweden**, (June. 13) invited talk.
- 2013 Protasiewicz, J. D. "*FRIONs: Flame retardant ions for safer lithium ion batteries*" **National ACS Meeting, Indianapolis, IN**, (Sept. 11) invited talk.
- 2013 Protasiewicz, J. D. "*Fluorescent phospho-acenes as new electronically interesting materials*" **National ACS Meeting, Indianapolis, IN**, (Sept. 9) contributed talk.
- 2013 Protasiewicz, J. D. " π -Conjugated Materials Featuring Phosphorus-Carbon Multiple Bonds" **Zing Conference on Coordination Chemistry, Cancun, Mexico**, (Dec. 5) invited speaker.
- 2014 Protasiewicz, J. D. "*Materials for Energy Applications Based on Main Group Chemistry*" **University of Akron**, (Jan. 22) invited speaker.
- 2014 Protasiewicz, J. D. "*Hypervalent iodine compounds for transition metal catalyzed oxidation reactions*" **International Conference on Hypervalent Iodine Chemistry, Narita, Japan**, (July 3) invited speaker.
- 2015 Protasiewicz, J. D. "*Carbon- and Photo-Copying Organic Conjugated Materials with Phosphorus*" **Carnegie Mellon University**, (April 16) invited speaker.
- 2015 Protasiewicz, J. D. "*Benzoxaphospholes and Related Compounds as Luminescent Materials*" **International Conference on Heteroatom Chemistry, Caen, France**, (June 15) invited speaker.
- 2015 Protasiewicz, J. D. "*Luminescent materials featuring multiply bonded phosphorus groups*" **National ACS Meeting, Boston, MA**, (Aug. 16) contributed talk.
- 2015 Protasiewicz, J. D. "*Phospho-acenes*" **Pacificchem Meeting, Honolulu, HI**, (De. 16) contributed talk.
- 2015 Protasiewicz, J. D. "*Advances in luminescent materials containing multiply bonded phosphorus*" **Pacificchem Meeting, Honolulu, HI**, (Dec. 19) invited talk.
- 2016 Protasiewicz, J. D. "*Phosphorus as a Carbon-Copy and as a Photo-Copy: Rise of New Conjugated Materials Featuring Multiply Bonded Phosphorus*" **European Workshop on Phosphorus Chemistry, Berlin, Germany**, (March 8) invited talk.
- 2016 Protasiewicz, J. D. "*Luminescent Benzoxaphospholes as Ligands for Transition Metals*" **Gordon Research Conference on Inorganic Chemistry, Biddeford, ME**, (June 20) contributed poster.
- 2016 Protasiewicz, J. D. "*Tailoring Hypervalent Iodine Compounds for Catalysis*" **International Conference on Hypervalent Iodine Chemistry, Les Diablerets, Switzerland**, (July 5) invited talk.
- 2016 Protasiewicz, J. D. "*Luminescent Benzoxaphospholes as Ligands for Transition Metals*" **National ACS Meeting, Philadelphia, PA**, (Aug. 24) contributed talk.
- 2017 Protasiewicz, J. D. "*Synthesis of benzoylphosphine via insertion of sodium phosphoethynolate (Na[OCP]) into a zirconium benzyne complex*" **National ACS Meeting, San Francisco**, (April 3) contributed talk.
- 2017 Protasiewicz, J. D. "*New Routes to π -Conjugated Organophosphorus Materials*" **International Conference on Heteroatom Chemistry, Vancouver, Canada**, (June 13) invited talk.
- 2017 Protasiewicz, J. D. "*Benzoxaphospholes & Related Compounds as Luminescent Materials*" **National ACS Meeting, San Francisco**, (August 22) invited talk.
- 2017 Protasiewicz, J. D. "*Conjugated Luminescent Materials Featuring Multiply Bonded Phosphorus Atoms*" **Bowling Green State University**, (Sept. 13) invited talk.

- 2017 Protasiewicz, J. D. “Phosphorus as an element for hybrid inorganic-organic materials having interesting optoelectronic properties” **Colorado State University**, (October 3) invited talk.
- 2017 Protasiewicz, J. D. “Phosphorus as an element for hybrid inorganic-organic materials having interesting optoelectronic properties” **University of Windsor, Canada**, (Dec. 8) invited talk.
- 2017 Protasiewicz, J. D. “Fly Fishing Out West in Colorado, Wyoming and Montana” **North Coast Fly Fishers, Ohio** (Nov. 1) invited speaker.
- 2018 Protasiewicz, J. D. “Phosphorus as an Element for Hybrid Inorganic-Organic Materials Having Interesting Optoelectronic Properties” **Youngstown State University**, (Feb. 9) invited talk.
- 2018 Protasiewicz, J. D. “Phosphorus as an Element for Hybrid Inorganic-Organic Materials Having Interesting Optoelectronic Properties” **Lehigh University**, (May 2) invited talk.
- 2018 Protasiewicz, J. D. “Phosphorus as an Element for Hybrid Inorganic-Organic Functional Materials” **Lubrizol Corporation**, (May 24) invited talk.
- 2018 Protasiewicz, J. D. “Advances in the Synthesis and Photophysics of 1,3-Benzoxaphospholes and Related Materials” **International Conference on Phosphorus Chemistry, Budapest, Hungary**, (July 10) contributed talk.
- 2018 Protasiewicz, J. D. “1,3-Benzoxaphospholes and Related Compounds as Luminescent Materials” **National ACS Meeting, Boston**, (Aug. 21) invited talk.
- 2019 Protasiewicz, J. D. “Carbenes and phosphalkenes-reactivity and applications in photoactive materials ” **National ACS Meeting, Orlando**, (April 2) invited talk.
- 2019 Protasiewicz, J. D. “Impact of Stable Carbenes on π -Conjugated Nitrogen and Phosphorus Compounds” **International Conference on Heteroatom Chemistry, Prague, Czech Republic**, (July 4) contributed talk.
- 2019 Protasiewicz, J. D. “Benzoxaphospholes as Ligands for Transition Metals ” **Southeastern Regional Meeting of the ACS (SERMACS), Savannah, GA**, (Oct. 20) invited talk.
- 2019 Protasiewicz, J. D. “Impact of Stable Carbenes on the Photophysics of Heterocyclic Nitrogen and Phosphorus Compounds” **Selected Problems of Chemistry of Acyclic and Cyclic Heteroorganic Compounds Conference, Czestochowa, Poland** (Nov. 21) invited talk.
- 2019 Protasiewicz, J. D. “Impact of Stable Carbenes on the Photophysics of Heterocyclic Nitrogen and Phosphorus Compounds” **Advances in the Chemistry of Heteroorganic Compounds Conference, Lodz, Poland** (Nov. 21) invited talk.
- 2020 Protasiewicz, J. D. “Phosphorus as an Element for Hybrid Inorganic-Organic Functional Materials” **John Carroll University**, (Jan. 22) invited talk.
- 2020 Protasiewicz, J. D. “Phosphorus as an Element for Hybrid Inorganic-Organic Functional Materials” **Cleveland State University**, (Feb. 28) invited talk.

A Special note in Phosphorus History from the compendium on phosphorus chemistry, *Phosphorus 2000*, that provides a timeline of milestones (see 1998 entry for recognition of some of our work):

10 **Phosphorus 2000 : INTRODUCTION AND HISTORICAL BACKGROUND** 1.3

Table 1.2 continued

1986	<u>Power et al</u>	First boraphosphenes P=B compounds
	<u>Appel</u>	Synthesis of first $\lambda^6\sigma^3$ carbophosphene
	<u>Brown & Chow</u>	Development of calcium phosphate dental cements
	<u>Cech</u>	Enzymatic action of RNA ('ribozymes') discovered
1987	<u>Scherer et al</u>	Cyclo-P _n triple decker metallophosphorus compound made
	<u>Lappert et al</u>	Synthesis of first metallophosphene compound with a M=P bond
	<u>Davis & Power</u>	Boraphosphabenzene derivative synthesised
1988	<u>Baudler</u>	Cyclopentadienide anion P ₅ ⁻ characterised
	<u>Bertrand</u>	First stable $\lambda^5\sigma^3$ phosphalkyne obtained
	<u>Niecke</u>	Iminophosphenium cation [R-N=P] ⁺ obtained
1990	<u>Schnick & Lucke</u>	Characterisation of PN ₄ ⁷⁻ anion
	-----	Start of human genome project
	<u>Cowley</u>	Synthesis of first metallophosphyne compound with an M=P bond
1991	<u>Schnick & Berger</u>	Characterisation of P ₄ N ₁₀ ¹⁰⁻ anion
	<u>Mathey et al</u>	Synthesis of first biphosphinine derivative
1992	<u>Fisher & Krebs</u>	Nobel prize for work on reversible protein phosphorylation
1993	<u>Ang et al</u>	Synthesis of first $\lambda^6\sigma^4$ P compound
1994	<u>Jacobs & Golinski</u>	P(NH) ₄ ³⁻ anion characterised
	<u>Angelici & Jun</u>	Cyaphide anion [C≡P] ⁻ characterised
	<u>Niecke et al</u>	Synthesis of first $\lambda^6\sigma^5$ phosphazene
	<u>Woodward</u>	Isolation of DNA from an 80×10 ⁶ year old bone fragment
1995	<u>Cummins & Schrock</u> (independently)	Synthesis of terminal metallophosphyne M=P complexes
1996	-----	Genetically engineered food (wheat) becomes commercially available
1997	<u>Wilmot</u>	First successful cloning of the sheep 'Dolly'
	<u>Boyer & Walker, & Skou</u>	Nobel Prizes for discovery & elucidation of action of ATP-ase in ATP synthesis
	(633 authors !)	Entire genome of 12 × 10 ⁶ bases in Yeast is elucidated
1998	<u>Shah & Protasiewicz</u>	First synthesis of phosphoranylidene phosphines, ArP=PR ₃
	<u>Mathey & Le Floch</u>	First synthesis of 2:2' biphosphinine
1999	<u>Minkwitz & Schneider</u>	Tetrahydroxyphosphonium P(OH) ₄ ⁺ cation finally characterised