

Dr. R. Tom Baker

Emeritus Professor

*Department of Chemistry and Biomolecular Sciences and
Centre for Catalysis Research and Innovation, University of Ottawa*

10 Marie Curie, Ottawa, ON K1N 6N5 Canada

Phone: 250-218-3330 E-mail: rbaker@uottawa.ca

Professional Preparation

- University of British Columbia, Vancouver, BC, Canada, B.Sc. in Chemistry (Honours), 1975.
- University of California at Los Angeles, Los Angeles, CA, Ph.D. in Inorganic Chemistry with M. Frederick Hawthorne, 1980.
- Pennsylvania State University, College Park, PA, postdoctoral work in metal-atom chemistry and theory of ESR spectroscopy with Philip S. Skell, 1980-1981.

Appointments

- 09/2023-present: Emeritus Professor, Department of Chemistry and Biomolecular Sciences, University of Ottawa. Co-supervising PhD student with Prof. Deryn Fogg.
- 2008–2023: Full Professor, Department of Chemistry and Biomolecular Sciences, University of Ottawa. Research was focused on metal organofluorine chemistry and mechanisms of ligand-assisted catalysis. Typically worked with ten graduate student and postdoctoral co-workers and four undergraduates.
- 2008-2022: Tier 1 Canada Research Chair in Catalysis Science for Energy Applications. Research was focused first on base metal-catalyzed amine-borane hydrogen storage then on catalytic applications for biomass conversion to chemicals.
- 2008–2015: Director, Centre for Catalysis Research and Innovation.
- 2008–2011: Guest scientist at Los Alamos National Laboratory (LANL).
- 1996–2008: Senior research chemist in the Inorganic, Isotopes and Actinides Group, Chemistry Division, LANL. Led technical projects in multifunctional catalysis for alkane functionalization and chemical hydrogen storage, less studied catalytic transformations, and supporting science for biomass conversion utilizing catalysis in alternative media. Typically worked with one technician and four postdoctoral researchers.
- 1981–1996: Research chemist in Homogeneous Catalysis group, DuPont CR&D. Developed new projects in transition metal diorganophosphide complexes and unsaturated, heterobimetallic catalysts, B-H addition catalysis, homogeneous catalysis for CFC replacements, paramagnetic metal complexes, and metal-catalyzed alkene amidation in support of Nylon, Fluoroproducts, and Titanium Dioxide business units. Typically supervised one or two technicians and one Master's level scientist and served as Team Leader for homogeneous catalysis scouting, 1993-1996.

Honours and Awards

- President's International Fellowship for Distinguished Scientists, Chinese Academy of Sciences, 2024
- International Fellow of the Industrial and Engineering Chemistry Division of the American Chemical Society, 2019
- Fellow of the Chemical Institute of Canada, 2017
- Fellow of the Royal Society of Chemistry, 2016
- Visiting Professor (3 months), Institute of Chemical Research of Catalonia (ICIQ) and Universitat Rovira i Virgili, Tarragona, Spain, 2016
- Visiting Professor (3 months), University of California, Santa Barbara, USA, 2016
- Kalev Pugi Award from Canada Chapter of Society for Chemical Industry, 2013

- Visiting Professor (1 month), ENS Lyon, France, 2012
- Canadian Green Chemistry and Engineering Award, 2011
- Fellow of the American Association for the Advancement of Science, 2009

Management

- Leadership Institute, LANL, 2000.
- Innovation Through Teaming Workshop, LANL, 2002.
- Project Coordinator for LANL's Carbon Management research portfolio, 1998–2002. Worked with colleagues in Biosciences, Chemistry, Computational Science, Earth Sciences, Engineering, Physics, and Systems Analysis groups to build new research programs, and with DOE, NASA and industrial sponsors to fund new programs. Helped program office build LANL's carbon management research portfolio to \$15M.
- LANL Program Manager for DOE's Industrial Technologies Program, 2003-2005. Managed eight research projects (ca. \$4M total), ensuring milestones and deliverables were met and reports issued promptly. Secured additional funds for promising projects and helped PIs with project renewals.
- Tier Coordinator, DOE Chemical Hydrogen Storage Center of Excellence, 2005-2008. Coordinated ca. 40% of Center work (ca. \$3M) with partners at two National Labs, four universities and two companies.
- CCRI Director, 2008-2015. CCRI is a capability-based center that had 7 staff and 37 faculty participants from Science, Engineering and Medicine and an annual budget of ca. \$600K. Managed facilities included materials characterization, rapid throughput experimentation and computational chemistry.
- Theme leader for Catalytic Processing, NSERC Biomaterials and Chemicals Strategic Research Network, 2010-2015. Coordinated the work and presentations of 6 PIs at UBC, Toronto, École Polytechnique and St. Mary's.
- uOttawa coordinator, Laboratoire International Associé with CNRS and ENS Lyon, 2013-2020. Research personnel exchange for 10 PIs and their students.
- Advisory Board, US Department of Energy's Energy Frontier Research Centers on Molecular Electrocatalysis, Pacific Northwest National Laboratory, Richland, WA, 2011-2022, Center for Catalytic Hydrocarbon Functionalization, University of Virginia, Charlottesville, VA, 2013-14, and Center for Inorganometallic Catalyst Design, University of Minnesota, MN, 2014-2022.
- Advisory Board, US National Science Foundation's CenSURF Center for Chemical Innovation, University of California, Santa Barbara, 2013-2015.
- Advisory Board, Society for Chemical Industry, Canada, 2018-2023.
- Technical Advisory Board, GreenCentre Canada, 2012-present and Canadian Green Chemistry and Engineering Network, 2016-present.
- International Advisory Board, International Symposium on Homogeneous Catalysis, 2017-present.
- One of 2-3 Canadian representatives to Pacificchem conference, 2016-present and Scientific Program Chair for Pacificchem 2025.

Educational Activities

- External examiner for Ph.D. candidates at University of Delaware (1989), Waterloo (1990), New Brunswick (2002), Dalhousie (2004, 2010, 2017, 2023), IIT Madras, India (2004), New Mexico (2007), Guelph, Western Ontario, and University of Victoria (2009), Université de Montréal (2010), Brock (2011 and 2017), Queen's, Memorial (2011), University of Alberta (2011, 2019), University of Toronto (2012, 2014, 2018), Oxford, Laval and Saskatchewan

(2015), Rochester and British Columbia (2016), Bologna, Italy (2017), McGill (2019), McMaster (2020).

- Guest lecturer, University of Pennsylvania Department of Chemistry, 1994.
 - Member of ACS Ad Hoc Committee for Environmental Chemistry Instructional Materials, 1995.
 - Guest lecturer, University of New Mexico Department of Chemistry, 1998.
 - Adjunct Professor of Chemistry, University of New Mexico, 1998 - present.
 - Guest lecturer, Greyhills Navajo High School, 2004.
 - Inorganic Chemistry Exchange mentor, 2009-2011, 2017, 2019, 2020; National Coordinator, 2018-present.
 - Lecturer and co-organizer, CENTC Summer School on Organometallic Catalysis, University of Washington, 2008; co-organizer, CENTC Summer School on Perspectives in Catalysis, University of Washington, 2010.
 - Instructor, ACS Green Chemistry Summer School, McGill University, 2011
 - Virtual Researcher On Call's On the Fly program with London, Ontario high school, 2012
 - Master Class 2 instructor on Sustainable Chemistry and Catalysis, ENS Lyon, 2014
 - Science Forum speaker Longfields-Davidson Heights Secondary School, Ottawa, ON, 2018
 - Instructor, XIIth International School on Organometallic Chemistry, Castellon, Spain, 2019
 - National Coordinator, Inorganic Chemistry Exchange Program, 2018-present.
- *Teaching at uOttawa*: Organometallic Chemistry (4th yr undergrad, 2009-2013, 2015, 2016)
Sustainable Chemistry and Catalysis (3rd yr undergrad + lab, 2013, 2015, 2018, 2020 X 2, 2022, 2023)
Chemistry for Renewable Energy (4th year undergrad, 2014, 2019)
Industrial Homogeneous Catalysis (grad, Fall 2010)
Strategies for Molecular Catalyst Separation and Recycle (grad, Winter 2013)
Catalysis for Renewable Resource Conversion (grad, Winter 2017)
Tandem Catalysis (grad, Winter 2018)
Metal Organofluorine Chemistry (grad, Fall 2019)
21st Century Chemistry Lab and Catalysis (grad, Fall 2022)

Technical Organizing

Conference Chair, Canadian Catalysis Symposium, Ottawa, 2016; Canadian Society of Chemistry National Meeting, Ottawa, 2015; Vice-Chair, 19th International Conference on Homogeneous Catalysis, Ottawa, 2014; Scientific Program Chair, Canadian Catalysis Symposium, Quebec, 2011; Co-Chair, 1989 Organometallic Chemistry Gordon Research Conference; NSF Inorganic Chemistry Workshop, 2004-2006; Inorganic Chemistry Exchange symposium, Ottawa, 2019; Co-organizer, 2012 IMEBORON in Niagara Falls, Ontario; 2011 Green Chemistry and Engineering Conference in Washington, DC; 2010, 2011 Entretiens Jacques Cartier catalysis colloquia in Lyon, France (2010) and Ottawa (2011); 2010 IUPAC Green Chemistry Conference in Ottawa; 2007 LANSCE Neutron Summer School, Los Alamos, NM; 2004 International Conference on Coordination Chemistry, Merida, Mexico; US DOE-SC-BES Catalysis contractor's meeting, Chicago, IL, 2002; and DOE National Labs Catalysis Conference, Albuquerque, NM, 1999. Symposium Chair, 2003 New Orleans Spring ACS National Meeting, Symposium Co-Chair, Pacificchem 1995, 2005 and 2015; 5th Chemical Congress of North America (1997); 2001 San Diego and 2010 San Francisco ACS National Meetings, 2002 New Orleans Spring AIChE national meeting; 2012 Canadian Society of Chemistry National Meeting, 2021 Joint IUPAC-Canadian Chemistry Conference. Session

Chair, 2023 ACS Winter Fluorine conference, 2022 Green Chemistry Gordon Research Conference, 2018 Lignin Gordon Research Conference, 2013 Gordon Research Conferences on Inorganic Reaction Mechanisms and Organometallic Chemistry.

Professional Service

Alternate Councilor, ACS Division of Inorganic Chemistry, 1989-91; Chair, Organometallic Subdivision, ACS Division of Inorganic Chemistry, 1999; C-H Bond Activation Review panel for U. S. Department of Energy (1992); Review panel for NRC's Steacie Institute (Canada, 1994), DOE's Ames Lab, Iowa (2004), Pacific Northwest National Lab's Catalysis Center (2009) and Lawrence Berkeley National Lab's Chemistry (2010) and Catalysis (2014) programs; Committee of Visitors for US DOE Chemical Sciences (2011); Council for Chemical Research Chemical Synthesis team member, 1996, LANL rep, 1999-2006, program committee for 2003 national meeting; ACS-PRF Advisory Board, 1998-2004; program committee (2003-2008) and Chair (2009), Novel Chemistry with Industrial Applications sub-division of Industrial and Engineering Chemistry division of ACS; NSERC (Canada) GSC24 member, 2003-2005; College of Reviewers, Canada Research Chairs, 2004-present; Secretary-Treasurer of CIC Catalysis Division, 2010; Vice-Chair, 2012; Chair, 2016; Executive Committee, ACS Fluorine Division, 2018-present; Editorial board member for *Inorganic Chemistry*, *Organometallics*, *Canadian Journal of Chemistry* and *Encyclopedia of Catalysis* (formerly), *Advanced Synthesis and Catalysis* (2001-2013), *Topics in Catalysis* and *Catalysis Letters* (2013 to 2021), *ChemistrySelect*, *Chemical Society Reviews* (2016 to present), *Frontiers of Chemistry* (2020 to present).

Presentations as Independent Researcher (* = 380 invited) (Incomplete 1993-96)

- 1) Mid-Atlantic Regional ACS Meeting, Poconos, PA (1983)
- 2) Inorganic Chemistry GRC (poster), Hampton School, NH (1983)
- 3) Fall National ACS meeting, Washington, DC (1983)
- 4) ICOMC, Pine Mountain, GA (1983)
- 5) *Bell Labs, Murray Hill, NJ (1983)
- 6) ****US west coast university tour: Caltech, USC, UCLA, UC Irvine (1983)
- 7) ****US midwest university tour: Wisconsin, Michigan, Minnesota, Northwestern (1984)
- 8) *Mid-Atlantic Regional ACS Meeting, Rutgers-Newark, NJ (1984)
- 9) Platinum Group Metals (poster), Edinburgh, Scotland (1984)
- 10) *Penn, Philadelphia, PA (1984)
- 11) ****US southwest university tour: Los Alamos National Lab, Houston, Texas A&M, Texas (1984)
- 12) ***Upstate New York university tour: SUNY Buffalo (invited by students), Rochester, Syracuse (1985)
- 13) ***US midwest university tour: Illinois, Purdue, Ohio State (1985)
- 14) Inorganic Chemistry GRC (3 posters), Wolfeboro Academy, NH (1985)
- 15) *Fall National ACS meeting (symposium + 2 contributed), Chicago, IL (1985)
- 16) ****Eastern Canada university tour: Toronto, Waterloo, Windsor and Indiana (1985)
- 17) *Penn State, State College, PAS (1985)
- 18) *Cornell, Ithaca, NY (1985)
- 19) *****West coast university tour: UBC, Washington, Oregon, UC Davis, UC Berkeley (1985)
- 20) *New York Academy of Sciences (1985)
- 21) *SUNY-Stony Brook (1985)

- 22) *New England OM Chemistry Workshop, Andover, MA (1986)
- 23) Organometallic Chemistry GRC (2 posters), Andover School, NH (1986)
- 24) *Fall National ACS meeting (symposium + 1 contributed), Anaheim, CA (1986)
- 25) ****Southern California university tour: UC Santa Barbara, UCLA, Caltech, UC San Diego (1986)
- 26) *Yale University, New Haven, CT (1986)
- 27) *University of Chicago, IL (1987)
- 28) *NSF OM Chemistry Workshop, Asilomar, CA (1987)
- 29) *Central regional ACS meeting (symposium), Columbus, OH (1987)
- 30) *Organometallic Chemistry GRC, Newport, RI (1987)
- 31) **Carolina Tour: South Carolina, North Carolina, Chapel Hill (1988)
- 32) ACS-CSC joint meeting (3 talks), Toronto, ON (1988)
- 33) *****Rocky mountain university tour: Utah, Utah State, Colorado State, Los Alamos National Lab, New Mexico (1988)
- 34) *University of Delaware, Newark, DE (1988)
- 35) *University of Maryland, MD (1989)
- 36) Organometallic Chemistry GRC (poster & co-Chair), Newport, RI (1989)
- 37) *Fall National ACS meeting (symposium), Miami, FL (1989)
- 38) *Pacifichem (1990)
- 39) *Columbia University, NY (1990)
- 40) *Harvard University, Cambridge, MA (1990)
- 41) *Penn, Philadelphia, PA (1990)
- 42) Redox Chemistry conference (poster), Laramie, WY (1990)
- 43) *Fall National ACS meeting (symposium), Washington, DC (1990)
- 44) ISHC (poster), Lyon, France (1990)
- 45) *Polymetallic Activation conference, Parma, Italy (1990)
- 46) *****Euro university tour: Konstanz, Wurzburg, LMU, Heidelberg, Aachen, MPI-Mulheim, Strasbourg, ENS Paris (1990)
- 47) *Spring National ACS meeting (symposium), San Francisco, CA (1992)
- 48) *Inorganic Discussion Weekend, Ottawa, ON (1992)
- 49) *Los Alamos National Lab, Los Alamos, NM (1992)
- 50) *University of New Mexico, Albuquerque, NM (1992)
- 51) *NSF Organometallic Workshop, New Orleans, LA (1993)
- 52) *Spring National ACS meeting (symposium), San Diego, CA (1994)
- 53) *Fall National ACS Meeting (symposium), New Orleans, LA (1995)
- 54) *Canadian Society of Chemistry National Meeting, Windsor, ON (1997)
- 55) **5th Chemical Congress of North America, Cancun, Mexico (1997)
- 56) *Spring National ACS Meeting (symposium), Dallas, TX (1998)
- 57) *Canadian Society of Chemistry National Meeting, Whistler, BC (1998)
- 58) **Fall National ACS Meeting (symposium), Boston, MA (1998)
- 59) *Inorganic Chemistry Gordon Research Conference, Newport, RI (1998)
- 60) *Organometallic Chemistry Gordon Research Conference, Newport, RI (1998)
- 61) *Organometallic Chemistry in the South Pacific, Auckland, NZ (1999)
- 62) *IMEBORON 10 International Boron Conference, Durham, UK (1999)
- 63) *Oxford University, UK (1999)
- 64) *RSC Coordination Chemistry Discussion Group, Bristol, UK (1999)
- 65) OMCOS10, Versailles, France (1999)
- 66) *Canadian Society of Chemistry National Meeting, Calgary (2000)

- 67) *DOE National Lab Catalysis conference, Argonne National Lab, Chicago (2000)
- 68) *Pacifichem (2000)
- 69) *Canadian Society of Chemistry National Meeting, Montreal (2001)
- 70) *****Holland-Germany Tour: University of Amsterdam, Utrecht University, Eindhoven Technical University, Aachen Technical University, Max Planck Institute for Coal Chemistry, Mulheim, Munster University (2001)
- 71) *University of New Brunswick (2002)
- 72) *National Research Council workshop on *Energy and Transportation*, Washington, DC (2002)
- 73) *Brown University, Providence, RI (2002)
- 74) *Spring National ACS meeting, Orlando, FL (2002)
- 75) *University of Illinois, Champaign-Urbana, IL (2002)
- 76) *BP, Naperville, IL (2002)
- 77) DOE National Labs Catalysis Symposium, PNNL, Richland, WA (2002)
- 78) International Conference on Coordination Chemistry, Heidelberg, Germany (2002)
- 79) *Los Alamos Museum, Los Alamos, NM (2002)
- 80) *Fall National ACS meeting, Boston, MA (2002)
- 81) Greenhouse Gas Control Technologies (poster), Kyoto, Japan (2002)
- 82) Inorganic Reaction Mechanisms Gordon Research Conference (poster), Ventura, CA (2003)
- 83) *Spring National ACS meeting, New Orleans, LA (2003)
- 84) ***Midwest Tour: Ohio State University, Indiana University, Ohio University (2003)
- 85) *Penn, Philadelphia, PA (2003)
- 86) *Organometallic Chemistry Gordon Research Conference, Newport, RI (2003)
- 87) *Fall National ACS meeting, New York, NY (2003)
- 88) DOE National Labs Catalysis Symposium, ORNL, Oak Ridge, TN (2003)
- 89) *Indo-US conference on Recent Advances in Organometallic Catalysis and Olefin Polymerization, Chennai, India (2003)
- 90) *Dalhousie University, Halifax, NS (2004)
- 91) *****West Coast Tour: University of Washington, Victoria, British Columbia, Alberta and Simon Fraser University (2004)
- 92) *Spring National ACS meeting, Anaheim, CA (2004)
- 93) *New Mexico State University (2004)
- 94) *University of Texas at El Paso (2004)
- 95) ***Texas Tour: Exxon-Mobil, Baytown, University of Houston, Texas A&M (2004)
- 96) ***Canada Tour: Queen's, McGill University, University of Montreal (2004)
- 97) *Canadian Society of Chemistry National Meeting, London, ON (2004)
- 98) *International Conference on Coordination Chemistry, Merida, Mexico (2004)
- 99) ***Canada Tour: University of Ottawa, Windsor, Western Ontario (2005)
- 100) *University of Michigan (2005)
- 101) ***North Carolina Tour: U North Carolina Chapel Hill, UNC Charlotte, NC State (2005)
- 102) *Massachusetts Institute of Technology (2005)
- 103) *16th FEICHEM meeting on Organometallic Chemistry, Budapest, Hungary (2005)
- 104) *Pacifichem (2005)
- 105) *SICC-4 meeting on Chemical Synthesis and Catalysis, Singapore (2005)
- 106) *University of Chicago, IL (2006)
- 107) *Notre Dame University, South Bend, IN (2006)

- 108) *Hydrogen storage meeting, Purdue University, West Lafayette, IN (2006)
109) *Canadian Society of Chemistry National Meeting, Halifax, NS (2006)
110) *RSC Dalton Discussion on Main Group Chemistry, Imperial College, London, UK (2006)
111) *University of Washington, Seattle, WA (2006)
112) *International Conference on Coordination Chemistry, Capetown, South Africa (2006)
113) *15th International Society of Homogeneous Catalysis Conference, Sun City, South Africa (2006)
114) *Renewable Energy Gordon Research Conference, Ventura, CA (2007)
115) *Inorganic Chemistry Reaction Mechanisms Gordon Research Conference, Ventura, CA (2007)
116) *Spring ACS National ACS Meeting, Chicago, IL (2007)
117) *Oxford-Kobe Energy Seminar, Kobe, Japan (2007)
118) ****Job Interview Tour: Northwestern University, University of Ottawa, Pacific Northwest National Laboratory, Argonne National Laboratory (2007)
119) Organometallic Chemistry Gordon Research Conference (Poster), Newport, RI (2007)
120) *Fall ACS National Meeting, Boston, MA (2007)
121) *University of New Mexico, Albuquerque, NM (2008)
122) ****California Tour: University of California-Berkeley, Stanford, UC Davis, US-Santa Barbara (2008)
123) *Mid-Atlantic Inorganic Chemistry Discussion Weekend (Keynote), Moncton, NB (2008)
124) ***McElwain Lecture** (invited by students) University of Wisconsin (2008)
125) ****Euro Tour: ETH, University of Zurich, EPFL-Lausanne, Switzerland, Université Paul Sabatier, Toulouse, France (2008)
126) *Canadian Society of Chemistry National Meeting, Edmonton (2008)
127) *Organometallic Chemistry Gordon Research Conference, Newport, RI (2008)
128) *CENTC Summer School, University of Washington, Seattle, WA (2008)
129) SACIQ, Quebec, QC (Plenary) (2008)
130) *Inorganic Chemistry Gordon Research Conference, Newport, RI (2008)
131) *IMEBORON International Boron Conference, Platja d'Aro, Spain (2008)
132) ***Humphrey Symposium Lecture**, University of Vermont, Burlington, VT (2008)
133) *M.F. Hawthorne Birthday Symposium, University of Missouri-Columbia (2008)
134) *Inorganic Chemistry Discussion Weekend (Plenary), Brock University, St. Catharines, ON (2008)
135) *Materials Science Institute Retreat, Oregon (2008)
136) *International Conference on Hydrogen and Hydrogen Storage, Bangalore, India (2009)
137) *TU Berlin, Germany (2009)
138) Inorganic Chemistry Reaction Mechanisms Gordon Research Conference (poster), Ventura, CA (2009)
139) *Spring ACS national meeting, Salt Lake City, UT (2009)
140) *University of Texas, Austin, TX (2008)
141) *10th Asian Hydrogen Energy Conference, Daegu, Korea (2009)
142) *Korea Tour: KIST, Kyung Hee and Korea University (2009)

- 143) *Canadian Society of Chemistry National Meeting, Hamilton (2009)
144) *Gordon-Kenan Seminar on Organometallic Chemistry (Plenary), Newport, RI (2009)
145) *University of Western Ontario, London, ON (2009)
146) *University of Victoria, BC (2009)
147) *Inorganic Chemistry Exchange symposium (Plenary), Queen's University, Kingston, ON (2009)
148) **Alberta Tour: University of Alberta, University of Calgary (2009)
149) **McGill University and Sigma Xi, Montréal, QC (2009)
150) *ONSETT clean tech meeting, Toronto, ON (2009)
151) *Catalysis and Photochemistry, Rostock, Germany (2010)
152) *Eastman Chemical, Kingsport, TN (2010)
153) *Spring National ACS meeting, San Francisco, CA (2010)
154) *University of Massachusetts **IGERT lecturer** (2010)
155) *NRC Hydrogen Storage Workshop (2010)
156) *Canadian Catalysis Symposium, Banff, AB (2010)
157) *Canadian Society of Chemistry National Meeting, Toronto (2010)
158) *New Materials Forum, Montecatini Terme, Italy (2010)
159) *IUPAC Conference on Green Chemistry, Ottawa, ON (2010)
160) *Dalhousie University, Halifax, NS (2010)
161) *University of Kentucky (2010)
162) *Université de Montréal (2010)
163) **Pacifichem (2010)
164) *Swiss National Chemistry Conference, Zurich (2011)
165) *Spring National ACS meeting, Anaheim, CA (2011)
166) *University of Alberta, Edmonton, AB (2011)
167) ***Coates Lecture**, University of Wyoming (2011)
168) *Brock University, St. Catharines, ON (2011)
169) International Hydrogen Fuel Cell Conference, Vancouver, BC (2011)
170) *Canadian Society of Chemistry national meeting, Montréal, QC (2011)
171) *ACS Green Chemistry Summer School, McGill University, Montréal, QC (2011)
172) *Los Alamos Neutron Summer School, Los Alamos, NM (2011)
173) *Fall National ACS Meeting, Denver, CO (2011)
174) *IMEBORON XIV, Niagara Falls, ON (2011)
175) *Sustainable Chemistry, Kingston, ON (2011)
176) Entretiens Jacques Cartier Catalysis Symposium, Ottawa, ON (2011)
177) *Canadian Society of Chemical Engineers symposium, London, ON (2011)
178) *Green Chemistry and Catalysis Symposium, Quebec, QC (2011)
179) *University of Rochester, NY (2012)
180) *Renewable Feedstocks symposium, Edmonton, AB (2012)
181) *Spring National ACS meeting, San Diego, CA (2012)
182) *Canadian Symposium on Catalysis, Quebec, QC (2012)
183) *Dow Chemical, Freeport, TX (2012)
184) *ExxonMobil Chemicals, Baytown, TX (2012)
185) *Nova Chemicals, Calgary, AB (2012)
186) **Canadian Society of Chemistry National Meeting, Calgary, AB (2012)
187) *Miller Institute Symposium, Berkeley, CA (2012)

- 188) **ENS Lyon, Lyon, France (2012)
- 189) *CPE Lyon, Lyon, France (2012)
- 190) *Institut Francais Petrol Energies Nouvelles, France (2012)
- 191) *International Symposium on Homogeneous Catalysis, Toulouse, France (2012)
- 192) *Universitat Rovira i Virgili, Tarragona, Spain (2012)
- 193) *ISACS 8, Toronto (2012)
- 194) *Inorganic Rings International Symposium, Victoria, BC (2012)
- 195) *Canada-Argentina Science workshop, Buenos Aires (2012)
- 196) ***Mid-Atlantic Tour: Penn, DuPont CR&D, Penn State (2012)
- 197) ***Western Canada Tour: University of British Columbia, Simon Fraser University and UBC Okanagan (2012)
- 198) **University of Southern California and UC Riverside (2013)
- 199) *Inorganic Reaction Mechanisms Gordon Research Conference (poster), Galveston, TX (2013)
- 200) **Lehigh, Albright University, PA (2013)
- 201) *Spring National ACS meeting, New Orleans, LA (2013)
- 202) ***Dow Lecture on Sustainable Chemistry**, Colorado State University (2013)
- 203) *National Renewable Energy Laboratory, Golden, CO (2013)
- 204) *Argonne National Laboratory (2013)
- 205) ***Canadian Society of Chemistry National Meeting, Quebec (2013)
- 206) *Organometallic Chemistry Gordon Research Conference (poster), Newport, RI (2013)
- 207) International Symposium on Relations between Homogeneous and Heterogeneous Catalysis, Sapporo, Japan (2013)
- 208) *Fall National ACS Meeting, Indianapolis, IN (2013)
- 209) 2nd Conference on Catalysis for Biorefineries, Dalian, China (2013)
- 210) *Xiaotong University, Shanghai, China (2013)
- 211) *Center for Advanced Materials Processing, Clarkson University (2013)
- 212) *FP Innovations, Point Claire, QC (2014)
- 213) *Spring National ACS meeting, Dallas, TX (2014)
- 214) *Canadian Symposium on Catalysis, Edmonton (2014)
- 215) *Light to Hydrogen Symposium, Rostock, Germany (2014)
- 216) *Goethe Universität, Frankfurt, Germany (2014)
- 217) *Canadian Society of Chemistry National Meeting, Vancouver (2014)
- 218) International Symposium on Homogeneous Catalysis, Ottawa, ON (2014)
- 219) *International Conference on Organometallic Chemistry, Sapporo, Japan (2014)
- 220) **Fall National ACS Meeting, San Francisco, CA (2014)
- 221) *University of Toronto (2014)
- 222) *Bowdoin College, Maine (2014)
- 223) **ENS Lyon and IRCELYON, France (2014)
- 224) ***Arkema FAST lecturer**, King of Prussia, PA (2014)
- 225) *ACS Winter Fluorine Conference, St. Pete Beach, FL (2015)
- 226) **Spring National ACS meeting, Denver, CO (2015)
- 227) ***Canadian Society of Chemistry National Meeting, Ottawa (2015)
- 228) **University of Edinburgh and Heriot-Watt, Scotland (2015)
- 229) **Oxford and Bristol, UK (2015)
- 230) *University of Saskatchewan, SK (2015)
- 231) *ChemConn (Plenary), Fredericton, NB (2015)

- 232) Tailor-Made Fuels from Biomass Meeting, Aachen, Germany (2015)
- 233) *CENTC Summer School, Seattle (2015)
- 234) **Fall National ACS Meeting, Boston, MA (2015)
- 235) *International Conference on Clean Energy, Ottawa (2015)
- 236) *Canadian Hydrogen Energy Workshop, Deep River, ON (2015)
- 237) 3rd Conference on Catalysis for Biorefineries, Rio De Janeiro, Brazil (2015)
- 238) *BioAmber, MN (2015)
- 239) **Pacifichem (2015)
- 240) *University of North Texas, Denton, TX (2016)
- 241) *UC Santa Barbara, CA (2016)
- 242) *UC at Los Angeles, CA (2016)
- 243) *UC San Diego, CA (2016)
- 244) ***Spring National ACS meeting, San Diego, CA (2016)
- 245) *ENS Lyon, France (2016)
- 246) *University of Jaume I, Castellón, Spain (2016)
- 247) *Institute of Chemical Technology (ITQ), Valencia, Spain (2016)
- 248) *Institute of Chemical Research of Catalonia (ICIQ), Tarragona, Spain (2016)
- 249) *RedINTECAT meeting, Punta Umbria, Spain (2016)
- 250) XXVI Biennial Meeting on Organic Chemistry, Punta Umbria, Spain (2016)
- 251) *Organometallic Chemistry Gordon Research Conference, Newport, RI (2016)
- 252) *University of Rochester, NY (2016)
- 253) 11th Int'l Congress on Catalysis and Fine Chemicals, Lyon, France (2016)
- 254) *University of British Columbia (2016)
- 255) ***Green Chemistry Initiative Lecturer**, University of Toronto (2016)
- 256) *ACS Winter Fluorine conference, Florida (2017)
- 257) ***Spring National ACS meeting, San Francisco, CA (2017)
- 258) *Canadian Society of Chemistry National Meeting, Toronto (2017)
- 259) *Fall National ACS meeting, Washington, DC (2017)
- 260) *Moscow State University, Moscow, Russia (2017)
- 261) *Nesmeyanov Institute for Organoelement Compounds (INEOS), Moscow, Russia (2017)
- 262) ***Plenary**, Renewable Plant Resources, St. Petersburg, Russia (2017)
- 263) *University of Wurzburg, Wurzburg, Germany (2017)
- 264) *University of Erlangen-Nuremberg, Erlangen, Germany (2017)
- 265) ***Plenary**, Berlin Fluorine Chemistry School, Berlin, Germany (2017)
- 266) *Air Liquide R&D, Paris, France (2017)
- 267) 4th Conference on Catalysis for Biorefineries, Lyon, France (2017)
- 268) *Dalhousie University, Halifax, NS (2017)
- 269) *Scripps Research Institute-Florida, Jupiter, FL (2018)
- 270) **Spring National ACS meeting, New Orleans, LA (2018)
- 271) Canadian Symposium on Catalysis, Saskatoon, SK (2018)
- 272) **Canadian Society of Chemistry National Meeting, Edmonton, AB (2018)
- 273) International Symposium on Homogeneous Catalysis, Amsterdam (2018)
- 274) *Tokyo University of Agriculture and Technology, Japan (2018)
- 275) *University of Tokyo, Japan (2018)
- 276) *Lignin Chemistry Gordon Research Conference, Easton, MA (2018)
- 277) *University of Missouri, Columbia (2018)
- 278) *Dartmouth College, NH (2018)

- 279) *Boston College, MA (2018)
 280) *Frontiers for Biorefining, St Simon's Island, GA (2018)
 281) ACS Winter Fluorine conference, Florida (2019)
 282) *Spring National ACS meeting, Orlando, FL (2019)
 283) *Longfields-Davidson Heights Secondary School (2019)
 284) Canadian Society of Chemistry National Meeting, Quebec City, QC (2019)
 285) *12th International Summer School on Organometallic Chemistry, Castellon, Spain (2019)
 286) *Universitat Rovira i Virgili, Tarragona, Spain (2019)
 287) *University of Barcelona, Spain (2019)
 288) *ISOM, Barcelona, Spain (2019)
 289) *3M Tech Forum, St. Paul, MN (2019)
 290) *University of Washington (2020)
 291) *McMaster University (2020)
 292) *University of Central Florida (2020)
 293) ¶**Spring National ACS meeting, Philadelphia, PA (2020)
 294) ¶*Canadian Chemistry Conference, Winnipeg, MB (2020)
 295) ¶International Congress on Catalysis, San Diego, CA (2020)
 296) *Canadian Conference on Chemical Engineering (virtual, 2020)
 297) *Global Inorganic Discussion Weekday (virtual, 2021)
 298) *University of British Columbia (2021)
 299) *Concordia University (2021)
 300) *Pacifichem, Honolulu, HI (virtual, 2021)
 301) *ACS Winter Fluorine Conference, Clearwater Beach, FL (2022)
 302) **Spring National ACS meeting, San Diego (2022)
 303) * **Plenary**, ComBioCat, Rostock Germany (2022)
 304) **Canadian Chemistry Conference, Calgary (2022)
 305) &*Organometallic Gordon Research Conference, Newport, RI (2022)
 306) &*Green Chemistry Gordon Research Conference, Barcelona, Spain (2022)
 307) &International Symposium on Homogeneous Catalysis, Lisbon, Portugal (2022)
 308) *Hawthorne symposium, UCLA (2022)
 309) *SERMACS, San Juan, Puerto Rico, USA (2022)
 310) *ACS Winter Fluorine Conference, Clearwater Beach, FL (2023)
 311) Inorganic Reaction Mechanisms Gordon Research Conference, Galveston (2023)
 312) **Canadian Chemistry Conference, Vancouver (2023)
 *Joint symposium on Fluorine Chemistry and Fluorous Technology, Quebec City (2023)
 313) *Auburn University, Alabama (virtual; 2023)
 314) * Shanghai Institute for Organometallic Chemistry (2024).

¶ Cancelled due to coronavirus & Postponed due to coronavirus

Collaborators and co-workers

Recent collaborators:

- Christian Ehm, Federico II University of Naples, Italy
- Omar Boutureira, Universitat Rovira i Virgili, Tarragona, Spain

- Mu-Hyun (Mookie) Baik, KAIST South Korea
- Carine Michel, Laurent Bonneviot, Belen Albela, Stephan Steinmann, Christophe Bucher, ENS Lyon, France
- Paul Fleurat-Lessard, Dijon, France
- Feliu Maseras, ICIQ, Tarragona, Spain
- Rita Mazzoni, Universitat di Bologna Industrial Chemistry, Italy
- Emilia Sicilia, Calabria, Italy
- Sensuke Ogoshi, Osaka University, Japan
- Mike Hall, Texas A&M Chemistry, USA
- Dan Ess, BYU Chemistry, USA
- Russell P. Hughes, Dartmouth Chemistry, USA
- David Dixon, Alabama Chemistry, USA
- Michael Neidig, Rochester Chemistry, USA
- Kyle Lancaster, Cornell University, USA
- Erin Johnson, Dalhousie Chemistry, Canada
- Jason Hein, UBC Chemistry, Canada

Postdoctoral Scholars Sponsored (41 since 1997; current position):

Loïc Mangin (U de Montréal), Behnaz Ghaffari (Arkema), Fernanda Gomes Mendonca do Pim (MITACS), Cassandra Hayes (Lund, Sweden), Indira Thapa (Health Canada), Spyros Ntais (TechInsights, Inc.), Daniel Harrison (3M), Rima Isaifan (Qatar Foundation), Chunfang Jiang (Digital), Hassan Kalviri (Sussex Chemicals, Ottawa), Baburam Sedai (Boron Specialties, USA), Ben Tardiff (Innospec, Calgary), Matt Rankin (3M Canada), Cheng Fan (Nova Chemicals), William Wright (Motorex, Switzerland), Sib Sankar Mal (Professor in Karnataka, India), Richard Burchell (Waters, Manchester, UK), Timo Ott (Grillo-Werke, Germany), Giovanni Rachiero (Syngenta, Abruzzi, Italy), Susan Hanson*, Steve Obrey, Kevin John, Carl Iverson* (LANL staff), Ches Simpson (PNNL staff), Tianshu Li (RA at Karlsruhe, Germany), Ahmad Dehestani (Sylvatex, Walnut Creek, CA), Charles Hamilton (Cabot Microelectronics), Vincent Pons (Patent attorney, Lyon, France), Frances Stephens* (teaching in Minneapolis, Minnesota), Hongbo Li (Versum Materials, Allentown, PA), Jeff Cross (Entegris, Batavia, IL), Melissa Petruska* (ATMI), Rich Keaton* (Dow Freeport), Michael Harmjanz* (Professor in Pondichery, India), Ned Hardman (Monolith, Houston), My Hang Huynh (unknown), Mike Abrams (Arkema), Charles Carter (Nova Chemicals, Canada), Grace Mann (BN ImmunoTherapeutics, South San Francisco), Andrea Appel (Continental Tire, Hanover, Germany). * LANL Director's-funded

Students Sponsored (117 since 1997; current position):

Undergrads (72): Tom Cameron (Entegris), Karen Gagnon (UC Davis), David Norman (Crane Currency), Joseph Rule (3M), Melanie Pribisko (CSU, Channel islands), Carl Myers (Colgate-Palmolive), Johanna Blacquiere (Chemistry Prof., Western), Jonathan Webb (Imperial Oil), Christina Price (ICE UG, Memorial), Kelly O'Neill (ICE undergrad, Memorial), Grace Ahn (Harvard Medical School researcher at Dana Farber), Amani Farhat (GS, Ottawa), Lauren Gough (Health Canada), Amanda Comeau (Renfrew physician), William Nicola (uOttawa undergrad), Stan Giesbrecht (ICE undergrad, Manitoba; Lawyer), Emily Mattiussi (Doctors without Borders, UK), Marc-André Légare (Laval UG; McGill Chem Prof.), Tony St.-Jacques (NRC), Lorena So (Ophthalmology, uOttawa), Charlie Kivi (Instructor, Toronto), Matt McKay (CENTC UG, GS, UNC Chapel Hill), Matt McCann (?), Perry Scheetz (CENTC UG, GS, Dartmouth), Nishaan Brar (Toronto Med School), Kyle Leckett (?), Julia Bayne (GS, Toronto), Kareem Shareefa (?),

Logan Shepard (ExxonMobil), Lisa Wallis (?), Alyssa Perrozzo (CENTC UG, MIT), Jin Lin Zhou (?), Lorraine Pua (GS, Nanyang U, Singapore), Alicia Leung (?), Sarah Piotrkowski (Queen's GS), Jennifer Daccache (uOttawa Med School), Tom Zakharov (?), Thalia Rashid (?), Michael Reynen (?), Faith Leroux(?), Jason Da Gama (Toronto pharmacy), Peixian Zang (UCBerkeley Chem. Eng.), Alyssa Napier (CENTC UG, MIT), Jeremy Koob (CENTC UG, Brandeis), Thomas McFarland (UBC Med school), Patrick Gautier (?), Yardley Cuthbert (?), Karen Liu (uOttawa), Renée Diedrich (?), Hawa Keita (CENTC UG, Wisconsin), Raquel Edjoc (Toronto Chem), Cullen Walsh (GS, UNC), Therese Chan (MSc uOttawa), Ahmed Musa (Toronto Med. School), Nancy Xu (Toronto pharmacy), Angeli Reyes (current uOttawa), Keshia Gaudet (ICE UG, Alberta), Siham Abouhadjar, Frédéric Vachon, Alec McDermott (La Cité College), Chuangyue Guo (?), Jenny Li (current uOttawa), Alexander Watson (ICE UG, Western), Emeraude Tapé (current uOttawa Co-op), Abdul Al Nabulsi (ICE UG, McMaster), Moutasem Seifi (ICE UG, USRA, Windsor), Nathalie Rowlinson (WISE; ACS SURF; Honours, RA), Seth Hogeterp (Co-op; Honours; RA; high school teacher) Laure Hakizumwami (Co-op), Samantha Dudra (ICE UG, Dalhousie; GS Toronto), Nicole Johnson (ICE UG, Calgary), Scott Kim (ICE UG, Western; GS Toronto), Odhran Cruise (ICE UG, Victoria; GS Oxford), Maxwell Lohoar (ICE UG, Dalhousie).

MSc (11): Stephanie Granville (Teacher), Nicole Hunter (pharmacy school), Wei-Ching Chen (Univar), Alexandre Sicard (Ottawa resource distribution), Brandon Fitchett (DND), Karine Ghostine (Transport Canada), Alexandra Rochon (Health Canada), Chris Godwin (?), Bakr Barnawi (Saudi scholar; PhD student Calgary), Samira Behroozi (PhD student uOttawa), Jessica Martin (?).

MSc (visiting; 7): Rémi Tirfoin, Paris (GS, Oxford), Morgane Le Fur, Caen (Ariane Group, France), Elise Thorr, Clermont-Ferrand (Laita UCLAB Industrie), Jason Enguehard, Paris (Pall Industrial, France), Benedicte Grebille, Ervan Salvi (ENS Lyon)

MASc: Joanne Woloszyn (uOttawa Chemical and Biological Engineering; co-supervised with Fauteux-Lefebvre; uOttawa PhD student).

PhD (16): Steven Maguire (Sudbury Neutrino Observatory), Christian Díaz-Urrutia (ExxonMobil in Belgium), Uttam Das (NRC, Ottawa), Graham Lee (Research chemist at Nova in Calgary), Kaitie Giffin (Total in Belgium), Mehdi Mostajeran (Health Canada, Ottawa), Matt LeClerc (Nanalysis in Calgary), Nicholas Andrella (Ace Glass), Alex Daniels (uOttawa lab safety coordinator), Yahya Albkuri (McMaster PDF with Emslie), Alexandre Sicard (Tokyo PDF with Nozaki/AGC), Matt Elsby (Yale PDF with Hazari), Luana Porto (NRC PDF with Michelle Loewen), Saeed Ataie (UBC PDF with Laurel Schafer), Atousa Khanzadeh, Samantha Cormier (co-supervised with Fogg) (current uOttawa).

PhD (visiting; 10): Yann Gloaguen, LCC Toulouse (RA in Amsterdam), Thomas Hugle, Berlin (Oak Ridge National Lab), Felix Gaertner, Rostock (Evonik, Germany), Johannes Thomas, Rostock (Evonik, Germany), Andreia Nunes, CPE Lyon (?), Xinnan Lu, ENS Lyon (Saudi PDF), Dawei Zhang, ENS Lyon (Cambridge PDF), Andrea Cingolani, U di Bologna, Italy, Torsten Rinesch, RWTH Aachen, Germany, Antonio Hernandez Manas (Univ. de Claude Bernard, Lyon, France), Raheleh Zafari (uOttawa Chemical and Biological Engineering).

Personal

Married to artist Betsy Anfield since 1978; two children: Noah, computer software developer and systems manager for University of California, Santa Barbara and Anik, singer, dancer, and musical theatre performer living in Austin, TX and working as scheduling guru at AMDA in New York City and Los Angeles. Baker likes to cook, listen to music, occasionally plays the piano, and enjoys golf, racquet sports and fishing.

Scientific Accomplishments

1) *DuPont CR&D*

- a. Prepared extensive family of terminal diorganophosphide complexes ($M-PR_2$) of early transition metals and corresponding early-late heterobimetallic complexes; demonstrated cooperative reactivity of latter (with Stan Wreford, Dick Harlow, and Joe Calabrese).
- b. Discovered stable phosphido-bridged dinuclear metal carbonyl radicals and demonstrated selective substitution chemistry by ESR and electrochemical techniques (with Paul Krusic).
- c. Synthesized new inorganic precursor compounds for solution routes to 3-5 semiconductors and metal borides (with Fred Tebbe).
- d. Elucidated radical mechanism of unsaturated fatty acid reaction with $VOCl_3$ and $TiCl_3$. These results favorably impacted DuPont's TiO_2 business.
- e. Discovered homogeneous catalysts for a number of fluorocarbon chemical processes of relevance to replacement of chlorofluorocarbons (with Rich Beatty, Al Sievert and Slava Petrov).
- f. Discovered Ni-catalyzed coupling of amide N-H bonds with haloalkenes useful for preparation of nylon intermediates (with Soley Kristjansdottir).
- g. Developed metal-catalyzed addition of B-H and B-B bonds to unsaturated organic substrates for preparation of bioactive compounds of interest to DuPont-Merck joint venture (with Steve Westcott).

2) *LANL*

- a. Demonstrated advantages of alternative reaction media (ionic liquids and supercritical CO_2) for catalyst recycle and product separation in homogeneous catalysis (with Bill Tumas).
- b. Used unique energy-containment reactor for intensive investigation of homogeneous Pt-catalyzed direct alkane oxidation to alcohols using dioxygen (with John Watkin, and Caltech's John Bercaw and Jay Labinger).
- c. Demonstrated versatile reactivity of dinuclear Mo and Re allyl complexes and took advantage of Ir allyl chemistry to prepare recyclable supported catalysts for alkane dehydrogenation and tandem catalysis (with Kevin John, Brian Scott and Al Sattelberger).
- d. Synthesized reactive metal phosphonium complexes and determined novel electronic structures (with Neil Henson, Rich Martin, Brian Scott and Greg Kubas)
- e. Elucidated mechanisms and discovered selective catalysts for dehydrogenation of amine-boranes for potential hydrogen storage applications (with DOE's Chemical Hydrogen Storage Center of Excellence).
- f. Discovered new base-promoted alcohol oxidation mechanism using ligated oxovanadium complexes (with David Thorn and Susan Hanson)

3) *uOttawa*

- a. Demonstrated effect of ionic liquid solvents on controlling selectivity in metal complex-catalyzed dehydrogenation of ammonia-borane (with Larry Sneddon from Penn).
- b. Discovered new homogeneous and heterogeneous iron catalysts for dehydrogenation of ammonia-borane; the latter was scaled up with US DOE's Hydrogen Storage Engineering Center of Excellence.
- c. Developed new heterogeneous borohydride hydrolysis catalysts for portable hydrogen generator (with Boyd Davis from Queen's) as part of NSERC-supported H2CAN national hydrogen research network.

- d. Demonstrated ability of metal nanoparticle catalysts to effect release of pure hydrogen from ammine metal borohydride complexes
- e. Demonstrated use of homogeneous copper complex catalysts for selective oxidation of lignin models and extracts as part of NSERC-supported Lignoworks national lignin valorization research network.
- f. Synthesized reactive cobalt and nickel fluorocarbenes that undergo 2+2 cycloaddition with tetrafluoroethylene; demonstrated first example of metal-mediated fluoroalkene metathesis.
- g. Investigation of C-F and M-C bond reactivity in polyfluorometallacycles led to new processes for base metal-catalyzed hydrodefluorination and hydrodefluorodimerization of fluoroalkenes.
- h. Demonstrated rich chemistry of fluoroalkenes and N-heterocyclic carbenes including reactions of polyfluoroalkenylimidazolium compounds.
- i. Demonstrated tunable phosphorus-ligated CuH catalysts for selective hydrodefluorination of fluoroalkenes.
- j. Demonstrated formation of new Cu-R^F complexes by insertion of fluoroalkenes into Cu-H and subsequent R^F transfer to organic electrophiles.
- k. Designed, prepared and characterized new manganese, iron, cobalt, nickel, copper and zinc complexes with amido- and thiolato-SNS and SNC ligands for homogeneous bifunctional catalysis applications.

Publications to December, 2023 – R. Tom Baker (undergrads in red)

Undergraduate Research

1. "Synthesis, Physical Properties and Crystal and Molecular Structure of a Binuclear Copper(II) Complex Incorporating 3-Methylpyrazolylgallate Ligands", Baker, R. T.; Rettig, S. J.; Storr, A.; Trotter, J. *Can. J. Chem.* **1976**, *54*, 343-353.

Metallocarboranes Ph.D. Research

2. "Synthesis of *Closo*- and *Nido*-Metallaboranes from Metallocenes", Leyden, R. N.; Sullivan, B. P.; Baker, R. T.; Hawthorne, M. F. *J. Am. Chem. Soc.* **1978**, *100*, 3758-3765.
3. "Characterization and Molecular Structure of [(PPh₃)Rh(C₂B₉H₁₁)]₂, a Phosphinorhodacarborane Dimer Containing Rh-H-B Bridges", Baker, R. T.; King, R. E.; Knobler, C. B.; O'Con, C. A.; Hawthorne, M. F. *J. Am. Chem. Soc.* **1978**, *100*, 8266-8267.
4. "*Closo*- and *Hypercloso*-Ten-vertex Ruthenacarboranes Containing Chelating Alkenylphosphine Ligands", Jung, C. W.; Baker, R. T.; Knobler, C. B.; Hawthorne, M. F. *J. Am. Chem. Soc.* **1980**, *102*, 5782-5790.
5. "Ten-vertex *Closo*- and *Hypercloso*-Phosphinometalloborane Complexes Derived from Sodium Dodecahydro-1,3-dicarba-*arachno*-nonaborate(1⁻)", Jung, C. W.; Baker, R. T.; Hawthorne, M. F. *J. Am. Chem. Soc.* **1981**, *103*, 810-816.
6. "Dynamic FTNMR Studies of Hindered Metal-Cage Rotation in Twelve-Vertex *Closo*-Phosphinometalloborane Complexes", Marder, T. B.; Baker, R. T.; Long, J. A.; Doi, J. A.; Hawthorne, M. F. *J. Am. Chem. Soc.* **1981**, *103*, 2988-2994.
7. "Synthesis and Characterization of Anionic Halogen-Containing Rhodacarboranes. Crystal and Molecular Structure of the Hydrogen-Bonded Ion Pair [HPPPh₃][*closo*-3-Ph₃P-3,3-Br₂-3,1,2-

RhC₂B₉H₁₁]", Zheng, L.; Baker, R. T.; Knobler, C. B.; Walker, J. A.; Hawthorne, M. F. *Inorg. Chem.* **1983**, *22*, 3350-3355.

8. "Metallacarboranes in Catalysis. 2. Synthesis and Reactivity of *Closo* Icosahedral Bis(phosphine)hydridorhodacarboranes and the Crystal and Molecular Structures of Two Unusual *closo*-Phosphinorhodacarborane Complexes", Baker, R. T.; Delaney, M. S.; King, R. E.; Knobler, C. B.; Long, J. A.; Marder, T. B.; Paxson, T. E.; Teller, R. G.; Hawthorne, M. F. *J. Am. Chem. Soc.* **1984**, *106*, 2965-2978.

9. "Synthesis, Structural Characterization, and Stereospecificity in the Formation of Bimetallic Rhodacarborane Clusters Containing Rh-H-B Bridge Interactions", Behnken, P. E.; Marder, T. B.; Baker, R. T.; Knobler, C. B.; Thompson, M. R.; Hawthorne, M. F. *J. Am. Chem. Soc.* **1985**, *107*, 932-940.

10. "*Hypercloso*-Metallaboranes", Baker, R. T. *Inorg. Chem.* **1986**, *25*, 109-111.

Early Metal Diorganophosphido Complexes and Phosphido-Bridged Early-Late Heterobimetallics

11. "Characterization and Interconversion of Metal-Phosphorus Single and Double Bonds: Bis(cyclopentadienyl)zirconium and -hafnium Bis(diorganophosphido) Complexes", Baker, R. T.; Whitney, J. F.; Wreford, S. S. *Organometallics* **1983**, *2*, 1049-1051.

12. "Synthesis and Molecular Structures of Homoleptic Dicyclohexylphosphido Complexes of the Early Transition Metals", Baker, R. T.; Krusic, P. J.; Tulip, T. H.; Calabrese, J. C.; Wreford, S. S. *J. Am. Chem. Soc.* **1983**, *105*, 6763-6765.

13. "Synthesis and Molecular Structures of Diorganophosphido-Bridged Heterobimetallic Complexes", Baker, R. T.; Tulip, T. H.; Wreford, S. S. *Inorg. Chem.* **1985**, *24*, 1379-1383.

14. "Synthesis, Molecular Structure, Solution Dynamics and Reactivity of (η -C₅H₅)₂M(μ -PR₂)₂Rh(η -indenyl) (M = Zr, Hf; R = Et, Ph)", Baker, R. T.; Tulip, T. H. *Organometallics* **1986**, *5*, 839-845.

15. "Unsaturated, PCy₂-bridged Re-M Heterobimetallics (M = Rh, Ir, Pd; Cy = Cyclohexyl): Metal-Metal Bond Isomerism, Reversible P-H Bond Activation, and Cooperative Reactivity", Baker, R. T.; Calabrese, J. C.; Glassman, T. E. *Organometallics* **1988**, *7*, 1889-1891.

16. "Synthetic, Structural and Bonding Studies of Phosphido-Bridged Early-Late Transition-Metal Heterobimetallic Complexes", Baker, R. T.; Fultz, W. C.; Marder, T. B.; Williams, I. D. *Organometallics* **1990**, *9*, 2357-2367.

*17. "Unsaturated Bis(phosphido)-Bridged Heterobimetallic Polyhydrides Via Dihydrogen Activation", Baker, R. T.; Glassman, T. E.; Ovenall, D. W.; Calabrese, J. C. *Isr. J. Chem.* **1991**, *31*, 33-53.

18. "New (η -C₅Me₅)M(PR₂)_x Complexes (M = Ta, Mo, W): Reversible P-H Bond Activation, sp³ C-H Bond Activation, and P-C Bond Formation", Baker, R. T.; Calabrese, J. C.; Harlow, R. L.; Williams, I. D. *Organometallics* **1993**, *12*, 830-841.

Paramagnetic Metal Complexes

19. "Electron Spin Resonance and Molecular Orbital Study of Binuclear Phosphido-Bridged Iron Carbonyl Radicals", Baker, R. T.; Krusic, P. J.; Calabrese, J. C.; Roe, D. C. *Organometallics* **1986**, *5*, 1506-1508.

20. "Spectroscopic, Structural, Electrochemical and Kinetic Studies of Ligand Substitution in the 33e⁻ Dinuclear Radical Fe₂(CO)₇(μ-PPh₂) and the 34e⁻ Analogues [Fe₂(CO)₇(μ-PPh₂)]⁻ and FeCo(CO)₇(μ-PPh₂)", Baker, R. T.; Calabrese, J. C.; Krusic, P. J.; Therien, M. J.; Trogler, W. C. *J. Am. Chem. Soc.* **1988**, *110*, 8392-8412.

21. "Single-Crystal EPR Spectrum of the Phosphido-Bridged Radical Fe₂(CO)₇(μ-PPh₂)", Krusic, P. J.; Baker, R. T.; Calabrese, J. R.; Morton, J. R.; Preston, K. F.; Le Page, Y. *J. Am. Chem. Soc.* **1989**, *111*, 1262-1267.

22. "EPR Spectra of (C₅Me₅)MoCl₂(PMe₃)₂ in Solution and In Single Crystals of (C₅Me₅)MoCl(N₂)(PMe₃)₂", Baker, R. T.; Morton, J. R.; Preston, K. F.; Williams, A. J.; Le Page, Y. *Inorg. Chem.* **1991**, *30*, 113-116.

23. "Structural Determinations of Chloro-bis(triisopropylphosphine)rhodium Complexes in the +2 and +3 Oxidation States", Harlow, R. L.; Thorn, D. L.; Baker, R. T.; Jones N. L. *Inorg. Chem.* **1992**, *31*, 993-997.

24. "RhCl(CO)[P(t-Bu)₃]: a Simple Rhodium(I) Complex Which is not Square Planar?", Harlow, R. L.; Westcott, S. A.; Thorn, D. L.; Baker, R. T. *Inorg. Chem.* **1992**, *31*, 323-325.

Solution Routes to Inorganic Materials

25. "Studies on Organoaluminum Precursors of Aluminum Nitride Fibers", Baker, R. T.; Bolt, J. D.; Reddy, G. S.; Roe, D. C.; Staley, R. H.; Tebbe, F. N.; Vega, A. J. *Materials Research Society Symp. Proc.* **1988**, *121*, 471-476.

Metal Cp Complexes Review

26. "(η⁵)-π-Cyclopentadienyl Metal Complexes by Reaction with the Corresponding Metal Halides", Baker, R. T., Section 5.8.2.8.3., Vol. 12 in "*Inorganic Reactions and Methods*", Zuckerman, J. J., Hagen, A. P., Eds., VCH: New York, **1991**.

Metallopolymers

27. "Synthesis of the New Metalloligands [η⁶-(PPh₂)_xC₆H_{6-x}]CrL(CO)₂ [x = 1, 2; L = CO, PR₃] and some Rhodium(I) Complexes", Wright, M. E.; Lawson, L.; Baker, R. T.; Roe, D. C. *Polyhedron* **1992**, *11*, 323-329.

Metal Boryl Complexes and Catalyzed Additions of B-X Bonds to Unsaturated Organics

28. "Boryliridium and Boraethyliridium Complexes *fac*-[IrH₂(PMe₃)₃(BRR')] and *fac*-[IrH(PMe₃)₃(η²-CH₂BHRR')]", Baker, R. T.; Ovenall, D. W.; Calabrese, J. C.; Westcott, S. A.; Taylor, N. J.; Williams, I. D.; Marder, T. B. *J. Am. Chem. Soc.* **1990**, *112*, 9399-9400.

29. "Reactions of Hexylborane with Phosphinorhodium Hydride, -Alkyl- and Allyl Complexes", Baker, R. T.; Ovenall, D. W.; Harlow, R. L.; Westcott, S. A.; Taylor, N. J.; Marder, T. B. *Organometallics* **1990**, *9*, 3028-3030.
30. "Reactions of Catecholborane (HBcat) with Phosphinorhodium Complexes: Molecular Structures of $\text{RhHCl}(\text{Bcat})(\text{PPri}_3)_2$ and $[(\text{Pr}^i)_2\text{PCH}_2]_2\text{Rh}[(\eta^6\text{-cat})\text{Bcat}]$ ", Westcott, S. A.; Taylor, N. J.; Marder, T. B.; Baker, R. T.; Jones, N. L.; Calabrese, J. C. *J. Chem. Soc., Chem. Comm.* **1991**, 304-305.
31. "New Homogeneous Rhodium Catalysts for the Regioselective Hydroboration of Alkenes", Westcott, S. A.; Blom, H. P.; Marder, T. B.; Baker, R. T. *J. Am. Chem. Soc.* **1992**, *114*, 8863-8869.
32. "Reactions of Catecholborane with Wilkinson's Catalyst: Implications for Transition Metal-Catalyzed Hydroboration of Alkenes", Burgess, K.; van der Donk, W. A.; Westcott, S. A.; Marder, T. B.; Baker, R. T.; Calabrese, J. C. *J. Am. Chem. Soc.* **1992**, *114*, 9350-9359.
33. "Transition Metal-Catalyzed Addition of Catecholborane to α -Substituted Vinylarenes: Hydroboration vs. Dehydrogenative Borylation", Westcott, S. A.; Marder, T. B.; Baker, R. T. *Organometallics*, **1993**, *12*, 975-979.
34. "Nucleophile-Promoted Degradation of Catecholborane: Consequences for Transition Metal-Catalyzed Hydroborations", Westcott, S. A.; Blom, H. P.; Marder, T. B.; Baker, R. T. *Inorg. Chem.* **1993**, *32*, 2175-2182.
35. "Insertion of Alkenes into Rh-B Bonds", Baker, R. T.; Calabrese, J. C.; Westcott, S. A.; Nguyen, P.; Marder, T. B. *J. Am. Chem. Soc.* **1993**, *115*, 4367-4368.
36. "Reactions of Catecholborane with Iridium Complexes: Molecular Structure of $\text{trans-IrHCl}(\text{CO})(\text{Bcat})(\text{PPh}_3)_2$ ", Westcott, S. A.; Marder, T. B.; Baker, R. T.; Calabrese, J. C. *Can. J. Chem.* **1993**, *71*, 930-936.
- *37. "New Developments in the Transition Metal-Catalyzed Hydroboration of Alkenes", Westcott, S. A.; Nguyen, P.; Blom, H. P.; Marder, T. B.; Baker, R. T.; Calabrese, J. C. *Current Topics in the Chemistry of Boron*, Kabalka, G. W., Ed., pp. 68-71, Royal Society of Chemistry: Cambridge, **1994**.
38. "Transition Metal-Catalyzed Diboration of Vinylarenes", Baker, R. T.; Nguyen, P.; Marder, T. B.; Westcott, S. A., *Angew. Chem. Int. Ed. Engl.* **1995**, *34*, 1336-1338.
39. "Reactions of Organoruthenium Phosphine Complexes with Hydroborating Reagents", Baker, R. T.; Calabrese, J. C.; Westcott, S. A.; Marder, T. B. *J. Am. Chem. Soc.* **1995**, *117*, 8777-8784.
40. "Coinage Metal-Catalyzed Hydroboration of Imines", Baker, R. T.; Calabrese, J. C.; Westcott, S. A. *J. Organomet. Chem.* **1995**, *498*, 109-117.

41. "Oxidative Addition of a B-B Bond by an Iridium(I) Complex: Molecular Structure of *mer-cis*-[IrCl(Bcat)₂(PMe₃)₃]", Dai, C.; Stringer, G.; Marder, T. B.; Baker, R. T.; Scott, A. J.; Clegg, W.; Norman, N. C. *Can. J. Chem.* **1996**, *74*, 2026.
42. "Metal-Catalysed Multiple Boration of Ketimines", Cameron, T. M.; Baker, R. T.; Westcott, S. A. *Chem. Commun.* **1998**, 2395 - 2396.
43. "Metal-Catalyzed Routes to Alpha-Heteroatom-Substituted Boronic Acids and Boronate Esters", Appel, A.; Cameron, T. M.; Carter, C. A. G.; Gagnon, M. K. J.; Mann, G.; Baker, R. T., *Current Topics in the Chemistry of Boron*, Marder, T. B.; Hughes, A.D., Eds., Royal Society of Chemistry: London, **2000**, pp 407-414.
44. "Platinum-catalyzed Diboration using a Commercially Available Catalyst: Diboration of Aldimines to Alpha-aminoboronate Esters", Mann, G.; John, K. D.; Baker, R. T. *Org. Lett.* **2000**, *2*, 2105-2108.
45. "Enhanced Regioselectivity of Rhodium-Catalysed Alkene Hydroboration in Supercritical Carbon Dioxide", Carter, C. A. G.; Baker, R. T.; Nolan, S. P.; Tumas, W. *Chem. Commun.* **2000**, 347-348.
46. "Metal-catalyzed Hydroboration and Diboration of Thiocarbonyl Compounds", Harrison, D. J.; Vogels, C. M.; Gagnon, M. K. J.; Carter, C. A. G.; Langler, R. F.; Baker, R. T.; Westcott, S. A., *Organometallics* **2001**, *20*, 2130-2132.
47. "Bifunctional Lewis Acid Reactivity of Diol-Derived Diboron Reagents", Carter, C. A. G.; John, K. J.; Mann, G.; Martin, R. L.; Cameron, T. M.; Baker, R. T.; Bishop, K. L.; Broene, R. D.; Westcott, S. A. in *Group 13 Chemistry: From Fundamentals to Applications*, Shapiro, P. J.; Atwood, D. A., Eds., *ACS Symp. Ser.* **2002**, *822*, 70-87.
- *48. "Diboration", Broene, R. D.; Baker, R. T. *Encyclopedia of Catalysis*, John Wiley and Sons: New York, **2002**.
- *49. "Disilylation", Broene, R. D.; Baker, R. T. *Encyclopedia of Catalysis*, John Wiley and Sons: New York, **2002**.
- *50. "Distannylation and Addition of R_mE-E'R_n, (E = B, Si, Sn)", Broene, R. D.; Baker, R. T. *Encyclopedia of Catalysis*, John Wiley and Sons: New York, **2002**.
51. "Reactions of Hydroborating Reagents with Phosphinorhodium Hydride Complexes", Westcott, S. A.; Marder, T. B.; Baker, R. T.; Harlow, R. L.; Calabrese, J. C.; Lam, K. C.; Lin, Z. *Polyhedron*, **2004**, *23*, 2665-2677 (M.L.H. Green issue).
52. "A Gentle and Efficient Route for the Deoxygenation of Sulfoxides using Catecholborane (HBcat; cat = 1,2-O₂C₆H₄)", Harrison, D. J.; Tam, N. C.; Vogels, C. M.; Langler, R. F.; Baker, R. T.; Decken, A.; Westcott, S. A. *Tetrahedron Lett.* **2004**, *45*, 8493-8496.

53. "Synthesis and Molecular Structure of 4,4,5,5-tetramethyl-2-(1-(phenylsulfonyl)propan-2-yl)-1,3,2-dioxaborolane", Coombs, R. R.; Vogels, C. M.; Wheaton, S. L.; Baerlocher, F. J.; Baker, R. T.; Decken, A.; Westcott, S. A. *J. Chem. Cryst.* **2006**, *36*, 661-665.

54. "Metal Catalysed Hydroboration of Vinyl Sulfides, Sulfoxides, Sulfones, and Sulfonates", Webb, J. D.; Harrison, D. J.; Norman, D. W.; Blacquiere, J. M.; Vogels, C. M.; Durant, D. K.; Duffy, S. J.; Venkataraman, D.; Decken, A.; Baker, R. T.; Westcott, S. A. *J. Mol. Cat. A* **2007**, *275*, 91-100.

*55. "Hydroboration and Diboration of Imines", Westcott, S. A.; Baker, R. T., in *Modern Reduction Methods*, Andersson, P. G.; Munslow, I. J., Eds., Wiley-VCH: Weinheim, **2008**, pp. 297-319.

Models for Silica-Supported Metal Complexes

56. "Synthesis and Characterization of Iron Silasesquioxane Phosphane Complexes", Liu, F.; John, K. D.; Scott, B. L.; Baker, R. T.; Ott, K. C.; Tumas, W. *Angew. Chem. Intl. Ed. Engl.* **2000**, *39*, 3127-3130.

Reductive Coupling

57. "Molybdenum η^2 -imine Complex Formation and the Reductive Coupling of Imines", Cameron, T. M.; Ortiz, C. G.; Abboud, K. A.; Boncella, J. M.; Baker, R. T.; Scott, B. L. *Chem. Commun.* **2000**, 573-574.

Metal Diaminophosphenium Complexes

58. "Sterically Tunable Phosphenium Cations: Synthesis and Characterization of Bis(arylamino)phosphenium Ions, Phosphinophosphenium Adducts, and the First Well-Defined Rhodium Phosphenium Complexes", Abrams, M. B.; Scott, B. L.; Baker, R. T., *Organometallics*, **2000**, *19*, 4944-4956.

59. "Molecular and Electronic Structure of Platinum Bis(*N*-arylamino)phosphenium Complexes including [Pt(phosphine)(phosphenium)(*N*-heterocyclic carbene)]⁺", Hardman, N. J.; Abrams, M. B.; Pribisko, M. A.; Gilbert, T. P.; Martin, R. L.; Kubas, G. J.; Baker, R. T. *Angew. Chem. Intl. Ed. Engl.* **2004**, *43*, 1955-1958.

Allylmetal Complexes and Single-Site Alkane Dehydrogenation

60. "Chemistry of M(allyl)₃ (M = Rh, Ir) compounds: Structural Characterization of Tris(allyl)iridium Complexes with Phosphorus Ligands", John, K. D.; Salazar, K. V.; Scott, B. L.; Baker, R. T.; Sattelberger, A. P. *Chem. Commun.* **2000**, 581-582.

61. "Comparison of the Reactivity of M(allyl)₃ (M = Rh, Ir) with Donor Ligands", John, K. D.; Salazar, K. V.; Scott, B. L.; Baker, R. T.; Sattelberger, A. P. *Organometallics*, **2001**, *20*, 296-304.

62. "The Remarkable Structure and Dynamics of Tris(allyl)rhodium and -Iridium as Determined by Theory and Experiment", John, K. J.; Michalczyk, R.; Hernandez, G.; Green, J. C.; Martin, R. L.; Baker, R. T.; Sattelberger, A. P. *Organometallics* **2002**, *21*, 5757-5766.

63. "Interplay of Metal-Allyl and Metal-Metal Bonding in Dimolybdenum Allyl Complexes", Trovitch, R. J.; John, K. D.; Martin, R. L.; Obrey, S. J.; Scott, B. L.; Sattelberger, A. P.; Baker, R. T., *Chem. Commun.*, **2009**, 4206-4208.

64. "Spectroscopic Characterization of Alumina-Supported Bis(allyl) Iridium Complexes: Site-Isolation, Reactivity and Decomposition Studies", Trovitch, R. J.; Guo, N.; Janicke, M. T.; Li, H.; Marshall, C. L.; Miller, J. T.; Sattelberger, A. P.; John, K. D.; Baker, R. T. *Inorg. Chem.* **2010**, *49*, 2247-2258.

*65. "Tris(allyl)rhodium and Tris(allyl)iridium", John, K. D.; Eglin, J. L.; Salazar, K. V.; Baker, R. T.; Sattelberger, A. P. *Inorg. Synth.* **2014**, *36*, 165-171.

*66. "Supramolecular Arrays Based on Dimolybdenum Building Blocks", Cotton, F. A.; Donahue, J. P.; Lin, C.; Murillo, C. A.; Baker, R. T.; Li, H. *Inorg. Synth.* **2014**, *36*, 81-95.

Reactions of Nitrido Osmium Complexes

67. "Formation and reactivity of the Os(IV)-azidoimido complex, PPN[Os^{IV}Cl₃(bpy)(N₄)]", Huynh, M. H. V.; Baker, R. T.; Jameson, D. L.; Labouriau, A.; Meyer, T. J. *J. Am. Chem. Soc.* **2002**, *124*, 4580-4582.

68. "[OsCl(tpy)(NCCH₃)(NSAr)]: Reversible Reduction of Acetonitrile by Os(III)-Sulfilimido Complexes", Huynh, M. H. V.; Baker, R. T.; Morris, D. E.; White, P. S.; Meyer, T. J. *Angew. Chem. Int. Ed. Engl.* **2002**, *41*, 3870-3873.

69. "The Cyanoimido Ligand as an Oxo Analogue. Novel Approaches to the Preparation of Cyano(imino)-aza-phosphorus(V) and N-Cyanoaziridine", Huynh, M. H. V.; Meyer, T. J.; Baker, R. T. *J. Am. Chem. Soc.* **2003**, *125*, 2832-2833.

Multiphasic and Tandem Catalysis

70. "Homogeneous Catalysis Enhanced: Toward Greener Chemistry", Baker, R. T.; Tumas, W. *Science* **1999**, *284*, 1477-1479.

71. "Phase-separable Catalysis using Room Temperature Ionic Liquids and Supercritical Carbon Dioxide", Liu, F.; Abrams, M. B.; Baker, R. T.; Tumas, W. *Chem. Commun.* **2001**, 433-434.

72. "Micro-X-ray Fluorescence as a General High-Throughput Screening Method for Catalyst Discovery and Small Molecule Recognition", Miller, T. C.; Mann, G.; Havrilla, G. J.; Wells, C. A.; Warner, B. P.; Baker, R. T. *J. Combin. Chem.* **2003**, *5*, 245-252.

73. "Concurrent Tandem Catalysis", Wasilke, J.-C.; Obrey, S. J.; Baker, R. T.; Bazan, G. C. *Chem. Rev.* **2005**, *105*, 1001-1020.

74. "Rhodium-Catalysed Hydroformylation using Fluoroarylphosphines and a Comparison of Platinum(0, II), Palladium(II), Rhodium(I) and Iridium(I) Complexes of P{C₆H₃(CF₃)_{2-3,5}}₃ and P(C₆F₅)₃", Clarke, M. L.; Ellis, D.; Mason, K. L.; Orpen, A. G.; Pringle, P. G.; Wingad, R. L.; Zaher, D. A.; Baker, R. T. *Dalton Trans.* **2005**, 1294-1300.

75. "Divide et Impera – Multiphase, Green Solvent and Immobilization Strategies for Molecular Catalysis", Baker, R. T.; Kobayashi, S.; Leitner, W. *Adv. Synth. Catal.* **2006**, *348*, 1337-1340.

76. "One-pot Suzuki-Heck Relay to Prepare Industrially Valuable Intermediates using the Pd Cy*Phine Catalyst System," Das, U. K.; Clément, R.; Johannes, C.; Robins, E.; Jong, H.; Baker, R. T. *Catal. Sci. Technol.* **2017**, *7*, 4599-4603.

Alkane C-H Bond Activation with Iminopyrrole Platinum Complexes

77. "C-H Bond Activation by Unsymmetrical 2-(*N*-Arylimino)-pyrrolide Pt complexes: Geometric Effects on Reactivity", Iverson, C. N.; Carter, C. A. G.; Baker, R. T.; Scollard, J. D.; Labinger, J. A.; Bercaw, J. E. *J. Am. Chem. Soc.* **2003**, *125*, 12674-12675.

*78. "C-H Bond Activation with Neutral Platinum Methyl Complexes", Iverson, C. N.; Carter, C. A. G.; Scollard, J. D.; Pribisko, M. A.; John, K. D.; Scott, B. L.; Baker, R. T.; Bercaw, J. E.; Labinger, J. A., in "Activation and Functionalization of C-H Bonds," Goldman, A. S.; Goldberg, K. I., Eds. *ACS Symp. Ser.* **2004**, *885*, 319-333.

Metallofluorometallacycles

79. "Cobalt Fluorocarbenes", Harrison, D. J.; Gorelsky, S. I.; Lee, G. M.; Korobkov, I.; Baker, R. T. *Organometallics*, **2013**, *32*, 12-15.

80. "Cobalt Fluorocarbenes: Cycloaddition Reactions with Tetrafluoroethylene and Reactivity of Perfluorometallacyclic Products," Harrison, D. J.; Lee, G. M.; Leclerc, M. C.; Korobkov, I.; Baker, R. T. *J. Am. Chem. Soc.*, **2013**, *135*, 18296-18299.

81. "Activation of C-F and Ni-C bonds of [P,S]-Ligated Nickel Perfluorometallacycles," Giffin, K. A.; Harrison, D. J.; Korobkov, I.; Baker, R. T. *Organometallics* **2013**, *32*, 7424-7430.

82. "Stepwise Addition of Difluorocarbene to a Transition Metal Centre," Lee, G. M.; Harrison, D. J.; Korobkov, I.; Baker, R. T., *Chem. Commun.* **2014**, *50*, 1128-1130.

83. "A T-shaped Ni[κ^2 -(CF₂)₄-] NHC Complex: Unusual C_{sp3}-F and M-C^F Bond Functionalization Reactions," Andrella, N. O.; Sicard, A. J.; Korobkov, I.; Baker, R. T., *Chem. Sci.*, **2015**, *6*, 6392-6397.

84. "Brønsted Acid-Promoted C-F Bond Activation in [P,S]-Ligated Neutral and Anionic Perfluoronickelacyclopentanes," Giffin, K. A.; Korobkov, I.; Baker, R. T. *Dalton Trans.*, **2015**, *44*, 19587-19596 (invited paper for special *Fluorine* issue).

85. "Tetracarbonyl(trifluoromethyl)-cobalt(I), [Co(CO)₄(CF₃)], as a Precursor to New Cobalt Trifluoromethyl and Difluoro-carbene Complexes," Harrison, D. J.; Daniels, A. L.; Korobkov, I.; Baker, R. T. *Organometallics*, **2015**, *34*, 4598-4604.

86. "Perfluoroalkyl Co (III) Fluoride and Bis(perfluoroalkyl) Complexes: Catalytic Fluorination and Selective Difluorocarbene Formation," Leclerc, M. C.; Bayne, J. M.; Lee, G. M.; Gorelsky, S. I.; Vasiliu, M.; Korobkov, I.; Harrison, D. J.; Dixon, D. A.; Baker, R. T. *J. Am. Chem. Soc.* **2015**, *137*, 16064-16073.

87. "A New Stepwise Mechanism for Formation of a Metallacyclobutane via a Singlet Diradical Intermediate," Fuller, J. T.; Harrison, D. J.; Leclerc, M. C.; Baker, R. T.; Ess, D. H.; Hughes, R. P. *Organometallics* **2015**, *34*, 5210-5213.
88. "^{d10} Nickel Difluorocarbenes and their Cycloaddition Reactions with Tetrafluoroethylene," Harrison, D. J.; Daniels, A. L.; Korobkov, I.; Baker, R. T. *Organometallics*, **2015**, *34*, 5683-5686.
89. "Synthesis of Bromodifluoromethyl(arylsulfonyl) Compounds and Microwave-assisted Nickel-catalyzed Cross-coupling with Arylboronic Acids," Lee, G. M.; Loechtefeld, R.; Menssen, R.; Bierer, D. E.; Riedl, B.; Baker, R. T. *Tetrahedron Lett.* **2016**, *57*, 5464–5468.
90. "Generation of Hydrofluoronickelacycles from Trifluoroethylene and Ni(0): Ligand Effects on Regio-/Stereo-Selectivity and Reactivity," Giffin, K. A.; Pua, L. A.; Piotrkowski, S.; Gabidullin, B. M.; Korobkov, I.; Hughes, R. P.; Baker, R. T. *J. Am. Chem. Soc.* **2017**, *139*, 4075–4086.
91. "Experimental and Computational Evidence for 1,4-Diradical Intermediates in Reactions of Cobalt Fluorocarbene Complexes with Terminal Aryl-alkynes to give Metallacyclobutenes," Lee, G. M.; Leung, A. S. C.; Harrison, D. J.; Korobkov, I.; Hughes, R. P.; Baker, R. T. *Organometallics* **2017**, *36*, 2853–2860.
92. "High-Throughput Evaluation of In Situ-generated Cobalt (III) Catalysts for Acyl Fluoride Synthesis," Lee, G. M.; Clément, R.; Baker, R. T. *Catal. Sci. Technol.* **2017**, *7*, 4996-5003.
93. "^{d8} Nickel and Palladium Difluorocarbenes Derived from Trifluoromethyl POCOP-type Pincer Complexes," Lee, G. M.; Korobkov, I.; Baker, R. T. *J. Organomet. Chem.* **2017**, *847*, 220-227 (invited article for John Gladysz 65th birthday issue).
94. "Metal Heptafluoroisopropyl (M-hfip) Complexes for use as hfip Transfer Agents," Andrella, N. O.; Liu, K.; Gabidullin, B. M.; Vasiliu, M.; Dixon, D. A.; Baker, R. T. *Organometallics* **2018**, *37*, 422-432.
95. "Nickel Fluorocarbene Metathesis with Fluoroalkenes," Harrison, D. J.; Guan, J.; Daniels, A. L.; Gabidullin, B. M.; Hall, M. A.; Baker, R. T. *Angew. Chem. Int. Ed.* **2018**, *57*, 5772-5776.
96. "Formation and C–F Bond Functionalization of [P,N]-Coordinated Perfluoronickelacyclopentanes," Giffin, K. A.; Pua, L. A.; Korobkov, I.; Baker, R. T. *Polyhedron* **2019**, *127*, 458-466 (invited article for William Jones 65th birthday issue).
97. "Synthesis and Reactivity of Mn-CF₃ complexes," Daniels, A. L.; Da Gama, J. G.; Edjoc, R.; Gabidullin, B. M.; Baker, R. T. *Inorganics*, **2019**, *7*, 3 (12 pp; invited article for special issue on First-Row Transition Metal Complexes).
98. "Selective Copper-complex Catalyzed Hydrodefluorination of Fluoroalkenes and Allyl Fluorides: A Tale of Two Mechanisms," Andrella, N. O.; Xu, N.; Gabidullin, B. M.; Ehm, C.; Baker, R. T. *J. Am. Chem. Soc.* **2019**, *141*, 11506-11521.

99. "Synthesis and Reactivity of Perfluoroferracyclocarbenes," Ghostine, K.; Gabidullin, B. M.; Baker, R. T. *Polyhedron* **2020**, *185*, 114587-114592 (invited article for John Bercaw's 75th birthday issue).
100. "Regioselective Formation of Fluorinated Metallacycles from Fluoroalkenes and an Electron-rich Ni(0) Difluorocarbene," Rochon, A.; Elsby, M. R.; Baker, R. T. *Can. J. Chem.* **2020**, *99*, <https://doi.org/10.1139/cjc-2020-0372> (invited article for special issue honoring Robert Morris).
101. "Nickel-catalyzed Homologation of Vinylidene Difluoride (CH₂=CF₂): Selective β -F vs. β -H Elimination," Sicard, A. J.; Ghaffari, B.; Gabidullin, B. M.; Ovens, J. S.; Hughes, R. P.; Baker, R.T. *J. Am. Chem. Soc.* **2022**, *144*, 22713-22721.
102. "Generation of Copper Fluoroalkyl Complexes (CuR^FL_n) from Chlorotrifluoroethylene and -R^F Transfer to Aroyl Chlorides," Porto, L. L. T. N.; Seifi, M.; Johnson, N.; Baker, R. T. *Can. J. Chem.* **2023**, *101*, 476-480 (invited article in special issue for Cathleen Crudden).
103. "Mechanism of Perfluoro-Nickelacyclopentane Formation from Tetrafluoroethylene: Effects of Ancillary Bite Angle," Porto, L. L. T. N.; Ghaffari, B.; Ovens, J. S.; Hughes, R. P.; Baker, R. T. *Organometallics* **2023**, *42*, 3370-3384.
104. "Synthesis and Reactivity of Functionalized Fluoro-Nickelacyclopentanes," Mangin, L.; Porto, L. L. T. N.; Ovens, J. S.; Baker, R. T. *Organometallics* **2023**, *41*, in press.
105. "Tetrafluoroethylation of Electron-rich Alkenyl Iodides Enabled by *in situ* Generation of Solvent-stabilized 'Ligandless' CuCF₂CF₂H", Segovia, C. M.; Porto, L. L. T. N.; Ahmad, A.; Casasús, P.; Bascuas, I.; Mestre, J.; Bernús, M.; Castellón, S.; Baker, R. T.; Boutureira, O. *Adv. Synth. Catal.* **2024**, under revision.
106. "Metathesis and Metallacycle Reactivity of d¹⁰ Ni Perfluorocarbenes with Alkenes," Ghaffari, B.; Daniels, A. L.; Guan, J.; Hall, M. B.; Baker, R. T. *Organometallics* **2024**, *41*, submitted.
107. "Copper-mediated Tetrafluoroethylation using Safe-Supply™ Tetrafluoroethylene," Andrella, N. O.; Xu, N.; Porto, L. L. T. N.; Ehm, C.; Baker, R. T. *Angew. Chem. Int. Ed.* **2024**, *40*, submitted.
108. Copper-Mediated -CF(OCF₃)(CF₂H) Transfer to Organic Electrophiles," Porto, L. L. T. N.; Ghaffari, B.; Johnson, N.; Ovens, J. S.; Ehm, C.; Baker, R. T. *J. Am. Chem. Soc.* **2024**, submitted.
109. "High-valent Perfluoronickelacyclopentanes," N. O. Andrella, M. Harmjanz, C. Kivi, S. Knottenbelt, B. L. Scott, I. Korobkov, S. I. Gorelsky, M. J. Kirk, D. E. Morris and R. T. Baker *Organometallics* **2024**, submitted.

110. “Reactions of Cobalt and Manganese Carbonyl Phosphine Complexes with Fluoroalkenes,” Rowlinson, N. A. V.; Ghostine, K.; Behroozi, S.; Barnawi, B.; Ghaffari, B.; Ovens, J. S.; Baker, R. T. *Inorg. Chim. Acta* **2023**, submitted. (invited article for William Jones 65th birthday issue)

111. “Practical Routes to Low Global-Warming Fluoroalkenes: Cu- and Cr-Catalyzed Hydrodefluorination,” Sicard, A. J.; Rowlinson, N. A. V.; Ghaffari, B.; Baker, R. T. *Org. React. Proc. R&D* **2024**, submission awaiting Arkema company clearance.

112. “Ni-mediated Difluorocarbene Insertion into the C-H Bond of Terminal Alkynes.” Gibaldi, M.; Khanzadeh, A.; Rochon, A.; Woo, T.; Baker, R. T. *J. Fluorine Chem.* **2024** (invited article in special issue for Slava Petrov).

113. “Metal Perfluorometallacycles,” Baker, R. T. *Chem. Soc. Rev.* **2024**, submitted.

Organofluorine Chemistry

114. “Selective Activation of Fluoroalkenes with N-Heterocyclic Carbenes: Synthesis of N-Heterocyclic Fluoroalkenes and Polyfluoroalkenyl Imidazolium Salts,” Leclerc, M. C.; Gorelsky, S. I.; Korobkov, I.; Gabidullin, B. M.; Baker, R. T. *Chem. Eur. J.* **2016**, *22*, 8063-8067.

115. “Transition Metal-free Formation of C-E Bonds (E = C, N, O, S) from N-Heterocyclic Carbene-mediated Fluoroalkene C-F Bond Activation,” Leclerc, M. C.; Gabidullin, B. M.; Da Gama, J. G.; Daifuku, S. L.; Iannuzzi, T. E.; Neidig, M. L.; Baker, R. T. *Organometallics* **2017**, *36*, 849–857.

116. “A Closer Look at the Reactivity Between N-Heterocyclic Carbenes and Fluoroalkenes,” Leclerc, M. C.; Da Gama, J. G.; Gabidullin, B. M.; Baker, R. T. *J. Fluorine Chem.* **2017**, *203*, 81-89 (Invited paper for Antonio Togni issue).

117. “Fluorocarbon Refrigerants and their Syntheses: Past to Present,” Sicard, A. J.; Baker, R. T. *Chem. Rev.* **2019**, *120*, 9164-9303.

118. “Nucleophilic hydrodefluorination of fluorinated olefins mediated by common trialkylphosphines,” Sicard, A. J.; Rowlinson, N. A. V.; Baker, R. T. *Adv. Synth. Catal.* **2023**, submission awaiting Arkema company clearance.

Ammonia-Borane Dehydrogenation for Hydrogen Storage

*119. “Room Temperature Hydrogen Evolution from Amine-Boranes,” Stephens, F. H.; Baker, R. T. *Prep. Symp. ACS Fuel Div.* **2005**, *50*, 538-539.

*120. “Acid-Catalyzed Dehydro-oligomerization of Ammonia-Borane,” Stephens, F. H.; Baker, R. T.; Matus, M. H.; Grant, D. J.; Dixon, D. A. *Prep. Symp. ACS Fuel Div.* **2006**, *51*, 573-574.

*121. “Dehydrogenation of Amine-Boranes for Chemical Hydrogen Storage,” Keaton, R. J.; Blacquire, J. M.; Baker, R. T. *Prep. Symp. ACS Fuel Div.* **2006**, *51*, 644-645.

122. “Acid-Initiated Ammonia-Borane Dehydrogenation,” Stephens, F. H.; Baker, R. T.; Matus, M. H.; Grant, D. J.; Dixon, D. A. *Angew. Chem. Int. Ed.*, **2007**, *46*, 746-748. *Featured as a Very Important Paper and on the journal cover.*

123. "Base Metal Catalysts for Dehydrogenation of Ammonia-Borane for Chemical Hydrogen Storage," Keaton, R. J.; Blacquiere, J. M.; Baker, R. T. *J. Am. Chem. Soc.*, **2007**, *129*, 1844-1845. *Selected as a Hot Paper and highlighted in Chemical and Engineering News.*
124. "Ammonia-Borane, the Hydrogen Storage Source Par Excellence," Stephens, F. H.; Pons, V.; Baker, R. T. *Dalton Trans.*, **2007**, 2613-2626. *Highlighted on Royal Society web site.*
- *125. "Chemical Hydrogen Storage at Los Alamos," Gordon, J. G.; Baker, R. T.; Burrell, A. K.; Davis, B. L.; Diyabalanage, H. V.; Hamilton, C. W.; Inbody, M.; Jonietz, K. K.; Ott, K. C.; Pons, V.; Semelsberger, T. A.; Shrestha, R.; Stephens, F. H.; Thorn, D. L.; Tumas, W. *Prep. Symp. ACS Fuel Div.* **2007**, *52*, 445-446.
126. "In Situ Multinuclear NMR Spectroscopic Studies of the Thermal Decomposition of Ammonia Borane in Solution," Shaw, W. J.; Linehan, J. C.; Szymczak, N. K.; Heldebrant, D. J.; Yonker, C.; Camaioni, D. M.; Baker, R. T.; Autrey, T. *Angew. Chem. Int. Ed.* **2008**, *47*, 7493-7496.
127. "Coordination of Aminoborane, NH_2BH_2 , Dictates Selectivity and Extent of H_2 Release in Metal-Catalysed Ammonia-Borane Dehydrogenation," Pons, V.; Baker, R. T.; Szymczak, N. K.; Heldebrant, D. J.; Linehan, J. C.; Matus, M. H.; Grant, D. J.; Dixon, D. A., *Chem. Commun.* **2008**, 6597-6599.
128. "Soluble Boron-Nitrogen High Polymers from Metal Complex-Catalyzed Amine Borane Dehydrogenation," Pons, V.; Baker, R. T. *Angew. Chem. Int. Ed.*, **2008**, *47*, 9600-9602.
129. "B-N Compounds for Chemical Hydrogen Storage," Hamilton, C.W.; Baker, R. T.; Staubitz, A.; Manners, I. *Chem. Soc. Rev.*, **2009**, *38*, 279-293. (invited review for thematic issue on Renewable Energy).
130. "Transition metal-catalysed ammonia-borane dehydrogenation in ionic liquids," Wright, W. H. R.; Berkeley, E.; Baker, R. T.; Sneddon, L. G., *Chem. Commun.*, **2011**, *47*, 3177-3179 (Invited for special Hydrogen issue).
131. "Transition metal-catalysed dehydrogenation of amine-borane fuel blends," Mal, S. S.; Stephens, F. H.; Baker, R. T., *Chem. Commun.*, **2011**, *47*, 2922-2924 (Invited for special Hydrogen issue).
132. "Iron Complex-Complex-Catalyzed Ammonia-Borane Dehydrogenation. A Potential Route Towards B-N Containing Polymer Motifs Using Earth Abundant Metal Catalysts," Baker, R. T.; Gordon, J. C.; Hamilton, C. W.; Henson, N. J.; Lin, P.-H.; Maguire, S.; Murugesu, M.; Scott, B. L.; Smythe, N. C. *J. Am. Chem. Soc.* **2012**, *134*, 5598-5609.
133. "Lewis Base Assisted B-H Bond Redistribution in Borazine and Polyborazylene," Davis, B. L.; Reken, B. D.; Michalczyk, R.; Garner, E. B.; Dixon, D. A.; Kalviri, H.; Baker, R. T.; Thorn, D. L. *Chem. Commun.* **2013**, *49*, 9095-9097.

134. "Probing the Second Dehydrogenation Step in Ammonia-Borane Dehydrocoupling: Characterization and Reactivity of the Key Intermediate, B-(cyclotriborazanyl)amine-borane" Kalviri, H. A.; Gärtner, F.; Ye, G.; Korobkov, I.; Baker, R. T. *Chem. Sci.* **2015**, *6*, 618-624.
135. "Solution-based Routes to Ammine Metal Borohydrides: Formation of Ammonia-borane," Mostajeran, M.; Wolstenholme, D. J.; Frazee, C.; McGrady, G. S.; Baker, R. T. *Chem. Commun.* **2016**, *52*, 2581-2584.
136. "Base-metal Nanoparticle-catalyzed Hydrogen Release from Ammine Yttrium and Lanthanum Borohydrides," Mostajeran, M.; Ye, G.; Desgreniers, S.; Baker, R. T. *Chem. Mater.* **2017**, *29*, 742-751.
137. "Base-metal catalysts based on porous layered double hydroxides for alkaline-free sodium borohydride hydrolysis," Mostajeran, M.; Prévot, V.; Mal, S. S.; **Mattiussi, E.**; Davis, B. R.; Baker, R. T. *Int. J. Hydrogen Energy*, **2017**, *42*, 20092-20102.
- Lignocellulose Disassembly**
138. "Aerobic Oxidation of Polyalcohols by Vanadium (V) Complexes: Experimental Evidence for Reduction to Vanadium(III)," Hanson, S. K.; Baker, R. T.; Gordon, J. C.; Scott, B. L.; Sutton, A. D.; Thorn, D. L. *J. Am. Chem. Soc.* **2009**, *131*, 428-429.
139. "Aerobic Oxidation of Lignin Models using a Base Metal Vanadium Catalyst," Hanson, S. K.; Baker, R. T.; Gordon, J. C.; Scott, B. L.; Thorn, D. L. *Inorg. Chem.* **2010**, *49*, 5611-5618.
140. "Mechanism of Alcohol Oxidation by Dipicolinate Vanadium (V): Unexpected Role of Pyridine," Hanson, S. K.; Baker, R. T.; Gordon, J. C.; Scott, B. L.; Silks, L. A.; Thorn, D. L., *J. Am. Chem. Soc.* **2010**, *132*, 17804-17816.
141. "Comparison of Copper and Vanadium Homogeneous Catalysts for Aerobic Oxidation of Lignin Models," Sedai, B.; Díaz-Urrutia, C.; Baker, R. T.; Wu, R.; Silks, III, L. A.; Hanson, S. K. *ACS Catalysis*, **2011**, *1*, 794-804.
142. "Aerobic Oxidation of β -1 Lignin Model Compounds using Copper and Oxovanadium Catalysts," Sedai, B.; Díaz-Urrutia, C.; Baker, R. T.; Wu, R.; Silks, III, L. A.; Hanson, S. K. *ACS Catalysis*, **2013**, *3*, 3111-3122.
143. "Copper Catalysts for Selective C-C Bond Cleavage of β -O-4 Lignin Models," Sedai, B.; Baker, R. T. *Adv. Synth. Cat.* **2014**, *356*, 3563-3574.
144. "Towards lignin valorisation: comparing homogeneous catalysts for the aerobic oxidation and depolymerisation of organosolv lignin," Díaz-Urrutia, C.; Chen, W.-C.; Crites, C.-O.; **Daccache, J.**; Baker, R. T. *RSC Adv.* **2015**, *5*, 70502-70511.
145. "Knocking on Wood: Base Metal Complexes as Catalysts for Selective Oxidation of Lignin Models and Extracts," Hanson, S. K.; Baker, R. T. *Acc. Chem. Res.* **2015**, *48*, 2037-2048.

146. "Catalytic Aerobic Oxidation of Lignin-Derived Bio-Oils Using Oxovanadium Complex Catalysts and Ionic Liquids," Díaz-Urrutia, C.; Hurisso, B. B.; Gauthier, P. M. P.; Sedai, B.; Singer, R. D.; Baker, R. T., *J. Mol. Cat. A* **2016**, *423*, 414-422.
147. "Selective Aerobic Oxidation of Phenoxyethanol Lignin Model Compounds," Díaz-Urrutia, C.; Sedai, B.; Leckett, K.; Baker, R. T.; Hanson, S. K. *ACS Sust. Chem. Eng.*, **2016**, *4*, 6244-6251.
148. "Efficient Green Catalysis for the Conversion of Fructose to Levulinic Acid," Thapa, I.; Mullen, B.; Saleem, A.; Leibig, C.; Baker, R. T.; Giorgi, J. B. *Appl. Catal. A* **2017**, *539*, 70-79.
149. "Solid Phase Extraction of Bio-oil Model Compounds and Lignin-derived Bio-oil using Amine-functionalized Mesoporous Silicas," Sedai, B.; Zhou, J. L.; Fakhri, N.; Sayari, A.; Baker, R. T. *ACS Sust. Chem. Eng.* **2018**, *6*, 9716-9724 (invited for special issue recognizing Istvan Horvath).
150. "C6 Diacids from Homocitric Acid Lactone using Relay Heterogeneous Catalysis in Water," Thapa, I.; Ntais, S.; Clément, R.; Baranova, E. A.; Gu, Q.; Michel, C.; Lau, M. K.; Hass, C. S.; Millis, J.; Baker, R. T. *Catal. Today* **2018**, *319*, 191-196 (invited for special issue on Catalysis for Valorization of Biomass and Biomass-derived Platform Molecules).
151. "Anion-dependent Catalytic C-C Bond Cleavage of a Lignin Model within a Cationic Metal-organic Framework," do Pim, W. D.; Mendonca, F. G.; Brunet, G.; Facey, G. A.; Chevaliers, F.; Bucher, C. Baker, R. T.; Murugesu, M. *ACS Appl. Mater. Interfaces* **2021**, *13*, 688-695.
152. "Selective C-C Bond Cleavage in Diols and Lignin Models: High-Throughput Screening of Metal-oxide-anchored Vanadium in Mesoporous Silica", Lu, X.; Clément, R.; Lu, Y.; Albela, B.; Baker, R. T.; Bonneviot, L. *Catalysts* **2021**, *11*, (Invited for special issue on Heterogeneous Catalysis for Lignin Valorisation).
153. "Exploiting the Photocatalytic Activity of TiO₂ Towards the Depolymerization of Kraft Lignin," Crites, C.-O. L.; Mendonca, F. G.; Netto-Ferreira, J. C.; Baker, R. T.; Hallett-Tapley, G. L.; Tremblay, L. *New J. Chem.* **2021**, *45*, 15371-15377.
154. "Efficient SO₂ Capture Using an Amine-Functionalized, Nanocrystalline Cellulose-Based Adsorbent," Zafari, R.; Mendonca, F. G.; Baker, R. T.; Fauteux-Lefebvre, C. *Sep. Purif. Technol.* **2023**, *308*, 122917.
155. "Aerobic Oxidative C-C Bond Cleavage of 1,2-Diols by Trialkoxyamine Oxovanadium (V) Catalysts: Evidence for a Two-electron Pathway," Díaz-Urrutia, C.; Walden, D. M.; Godwin, C.; Hanson, S. K.; Korobkov, I.; Fleurat-Lessard, P.; Michel, C.; Baker, R. T. *ACS Catal.* **2024**, submitted.
156. "Kinetic and Thermodynamic Studies of Levulinic Acid Esterification to Levulinic Esters," Woloszyn, J.; Baker, R. T.; Fauteux-Lefebvre, C. Submitted, **2024**.

157. "Importance of Out-of-State Spin-Orbit Coupling for Slow Magnetic Relaxation in Mononuclear Fe^{II} complexes," Lin, P.-H.; Smythe, N. C.; Gorelsky, S.; Maguire, S.; Henson, S. J.; Korobkov, I.; Scott, B.L.; Gordon, J. C.; Baker, R. T.; Murugesu, M. *J. Am. Chem. Soc.* **2011**, *133*, 15806–15809.
158. "Mononuclear, Dinuclear and Trinuclear Iron Complexes Featuring a new Monoanionic SNS Thiolate Ligand," Das, U. K.; Daifuku, S. L.; Gorelsky, S. I.; Korobkov, I.; Neidig, M. L.; LeRoy J. L.; Murugesu, M.; Baker, R. T. *Inorg. Chem.* **2016**, *55*, 987-997.
159. "Fe(II) Complexes of a Hemilabile SNS Amido Ligand; Synthesis, Characterization and Reactivity," Das, U. K.; Daifuku, S. L.; Ianuzzi, T. E.; Gorelsky, S. I.; Korobkov, I.; Gabidullin, B. M.; Neidig, M. L.; Baker, R. T. *Inorg. Chem.* **2017**, *56*, 13766–13776.
160. "Efficient and Selective Iron Complex-Catalyzed Hydroboration of Aldehydes," Das, U. K.; Higman, C. S.; Korobkov, I.; Gabidullin, B. M.; Hein, J. E.; Baker, R. T. *ACS Catal.* **2018**, *8*, 1076-1081.
161. "Fe-SNS and -CNS Complexes: C_{aryl}-S Bond Cleavage and Amine-Borane Dehydrogenation Catalysis," Elsby, M. R.; Ghostine, K.; Das, U. K.; Korobkov, I.; Gabidullin, B. M.; Baker, R. T. *Organometallics* **2019**, *38*, 3844-3851.
162. "Highly Covalent Metal-Ligand Electron Sharing in Redox Non-innocent Fe[N₂S₃] complexes," Elsby, M. R.; Radovic, A.; de Aguirre, A.; Khrouz, L.; Sears, J.; Gabidullin, B. M.; Kropf, J.; Kaphan, D. M.; Delferro, M.; Maseras, F.; Bucher, C.; Neidig, M.; Baker, R. T. *Inorg. Chem.* **2022**, submitted.
- Other First Row Metal SNS chemistry**
163. "Cu(I)-SNS Complexes for Outer-sphere Hydroboration and Hydrosilylation of Carbonyls," Elsby, M. R.; Baker, R. T. *Chem. Commun.* **2019**, *55*, 13574-13577.
164. "Nickel(II)-SNS Thiolate Complexes: Reactivity and Solution Dynamics," Albkuri, Y. M.; Ovens, J. S.; Martin, J.; Baker, R. T. *Inorg. Chem.* **2021**, *60*, 10934-10942.
165. "A Mechanistic Study of Metal-Ligand Cooperativity in Mn(II)-Catalyzed Hydroborations: Hemilabile SNS Ligand Enables Metal Hydride-Free Reaction Pathway," Elsby, M. R.; Son, M.; Oh, C.; Martin, J.; Baik, M.-H.; Baker, R. T. *ACS Catal.* **2021**, *11*, 9043-9051.
166. "Same Ligand, Three First Row Metals: Comparing M-Amido Donors Bifunctional Reactivity (Mn, Fe, Co)," Elsby, M. R.; Kim, S. Y. H.; Steinmann, S.; Baker, R. T. *Dalton Trans.* **2021**, *50*, 14542-14546.
167. "SNS Ligand-Assisted catalyst Activation in Zn-catalysed Carbonyl Hydroboration," Ataie, S.; Hogeterp, S.; Ovens, J. S.; Baker, R. T. *Chem. Commun.* **2022**, *58*, 3795-3798.
168. "Solvent-Free Zn (NSNO) Complex-Catalysed Bifunctional Dihydroboration of Nitriles," Ataie, S.; Ovens, J. S.; Baker, R. T. *Chem. Commun.* **2022**, *58*, 8266-8269.

169. "Manganese SNS Thiolate Complex-Catalyzed Nitrile Dihydroboration," Elsby, M. R.; Son, M.; Oh, C.; Martin, J.; Baik, M.-H., Baker, R. T. *Chem. Sci.* **2022**, *13*, 12550-12559.
170. "Comparing B-H Bond Activation in Ni^{II}X(NNN)-Catalyzed Nitrile Dihydroboration (X = anionic N-, C-, O-, S- or P-donor)," Ataie, S.; Baker, R. T. *Inorg. Chem.* **2022**, *61*, 19998-20007.
171. "Coinage Metal Amido and Thiolate SNS Complexes: Consequences of Catalyst Speciation in Cu(I)-Catalysed Carbonyl Hydroboration," Ataie, S.; Lohar, M.; Mangin, L. P.; Baker, R. T. *Chem. Commun.* **2023**, *59*, 4044-4046.
172. "Electron-Triggered Imine Coupling: Synthesis and Characterization of Three Redox States (0,-1,-2) of a Ni(N₂S₂) complex," Mangin, L. P.; Albkuri, Y. M.; Ovens, J. S.; Al Shehimi, S.; Khrouz, L.; Steinmann, S.; Bucher, C.; Baker, R. T., *Chem.-Eur. J.* **2023**, in press (*selected as Hot Paper*).
173. "Selective Cobalt(II)-SNS Dithiolate Complex-Catalyzed Bifunctional Hydroboration of Aldehydes: Kinetics and Mechanistic Studies." Ataie, S.; Dudra, S. L.; Johnson, E. R.; Baker, R. T. *ACS Catal.* **2023**, *13*, 10076-10084.
174. "Bifunctional Activation of NHC-Zinc Pre-Catalyst for Effective Hydroboration of Quinolines and Nitriles," Ataie, S.; Baker, R. T. *ChemCatChem* **2023**, in press. (*invited article for special joint-collection with ChemistryEurope on Non-Innocent Ligands in Sustainable Catalysis*).
175. "Bifunctional Hydroboration Catalyst Activation Using a Co SNS Amido Complex Bearing an Abnormal-NHC Ligand", Ataie, S.; Khanzadeh, A.; Mangin, L. P.; Lohar, M. I.; Baker, R. T. *Organometallics*, **2023**, in press (*invited article for joint Organometallics/Org. React. Proc. R&D special issue*).
176. "Pd-SNS Complex-Catalyzed Heck Reaction", Khanzadeh, A.; Ataie, S.; Lohar, M. I.; Baker, R. T. *Catal. Sci. Technol.* **2024**, submitted.

n-Butanol from Ethanol

177. "Highly Selective Formation of *n*-Butanol from Ethanol through the Guerbet Process: A Tandem Catalytic Approach," Chakraborty, S.; Pizsel, P. E.; Hayes, C. E.; Baker, R. T.; Jones, W. D. *J. Am. Chem. Soc.*, **2016**, *138*, 14264-14267.

First Row Transition Metal Ligand-assisted Catalysis

178. "Strategies and Mechanisms of Metal-Ligand Cooperativity in First-Row Transition Metal Complex Catalysts," Elsby, M. R.; Baker, R. T. *Chem. Soc. Rev.* **2020**, *49*, 8933-8987.
179. "Through the Looking Glass: Using the Lens of SNS-Pincer Ligands to Examine First-Row Metal Bifunctional Catalysts," Elsby, M. R.; Baker, R. T. *Acc. Chem. Res.* **2023**, *56*, 798-809.

Separation and Recycling of Molecular Organometallic Catalysts

*180. "Catalyst Separation Strategies in Organometallic Catalysis," Gomes de Mendonca, F.; Baker, R. T. in *Comprehensive Organometallic Chemistry IV* **2022**.

Organometallic Nickel Chemistry

181. "Safe and Expeditious Preparation of Ni(cod)₂ for Same Day High-Throughput Screening," Sicard, A. J.; Baker, R. T. *Org. Proc. Res. Devel.* **2020**, *24*, 2950-2952.

Pd NHC chemistry

182. "Experimental Evidence of Zerovalent Pd(NHC) as a Competent Catalyst in C–N Cross-Coupling (NHC = DiMeIHept^{Cl})," Semeniuchenko, V.; Sharif, S.; Rana, N.; Chandrasoma, N.; Braje, W. M.; Baker, R. T.; Manthorpe, J. M.; Pietro, W.; Organ, M. G. *J. Am. Chem. Soc.* **2024**, under review.

183. "Synthesis and Characterization of Mononuclear Monovalent Pd NHC complexes (NHC = DiMeIHept^{Cl})," Semeniuchenko, V.; Sharif, S.; Rana, N.; Chandrasoma, N.; Braje, W. M.; Baker, R. T.; Manthorpe, J. M.; Pietro, W.; Organ, M. G. *J. Am. Chem. Soc.* **2024**, submitted.

* Not included in Thompson ISI. Red highlights are undergraduates.

PATENTS

1. "Solution Process for the Low Temperature Synthesis of III-V Semiconductors", Baker, R. T., U. S. patent 5,084,128. Application filed Oct. 23, 1990, issued Jan. 28, 1992.

2. "Borides and Boride Precursors Deposited From Solution", Baker, R. T.; Tebbe, F. N., U. S. patent 5,364,607. Application filed Sept. 8, 1989, issued Nov. 15, 1994.

3. "Homogeneous Catalytic Hydrodechlorination of Chlorofluorocarbons I. R_fCCl₃ to R_fCHCl₂", Baker, R. T., U. S. patent 5,300,712. Application filed May 27, 1993, issued April 5, 1994.

4. "Homogeneous Catalytic Hydrodechlorination of Chlorofluorocarbons II. R_fCXYCl to R_fCXYH", Baker, R. T., U. S. patent 5,326,914. Application filed May 27, 1993, issued July 5, 1994.

5. "Process for the Manufacture of Selected Halogenated Hydrocarbons containing Fluorine and Hydrogen", Baker, R. T.; Beatty, R. P.; Farnham, W. B.; Wallace, R. L., U. S. patent 5,545,769. Application filed Sept. 29, 1994, issued Aug. 13, 1996.

6. "Process for the Manufacture of Selected Halogenated Hydrocarbons containing Fluorine and Hydrogen and Compositions Provided Therein", Baker, R. T.; Beatty, R. P.; Farnham, W. B.; Wallace, R. L., U. S. patent 5,670,679. Application filed June 2, 1995, issued Sept. 23, 1997.

7. "Process for the Manufacture of Selected Halogenated Hydrocarbons containing Fluorine and Hydrogen and Compositions Provided Therein", Baker, R. T.; Beatty, R. P.; Farnham, W. B.; Wallace, R. L., U. S. patent 5,760,282. Application filed June 2, 1995, issued June 2, 1998.

8. "Process for the Manufacture of Halocarbons", Baker, R. T.; Petrov, V. A.; Rao, V. N. M., U. S. patent 6,040,487. Application filed Feb. 13, 1997, issued March 21, 2000.
9. "Nickel-Catalyzed Addition of N-H-Containing Compounds to Vinyl and Aryl Halides", Baker, R. T.; Kristjansdottir, S. S., U. S. patent 6,103,937. Application filed December 29, 1998, issued August 15, 2000.
10. "Process for the Manufacture of Fluorine-Substituted Hydrocarbons", Baker, R. T.; Beatty, R. P.; Sievert, A. C.; Wallace, R. L., U. S. patent 6,242,658. Application filed August 6, 1999, issued June 5, 2001.
11. "Process for the Manufacture of Halocarbons and Selected Compounds and Azeotropes with HF", Baker, R. T.; Petrov, V. A.; Rao, V. N. M.; Sievert, A. C., U. S. patent 6,291,730. Application filed Jan. 28, 1998, issued September 18, 2001.
12. "Process for the Manufacture of Halocarbons and Selected Compounds and Azeotropes with HF", Baker, R. T.; Miller, R. N.; Petrov, V. A.; Rao, V. N. M.; Sievert, A. C., U. S. patent 6,755,942. Application filed Aug. 14, 2000, issued June 29, 2004.
13. "Process for the Manufacture of Halocarbons and Selected Compounds and Azeotropes with HF", Baker, R. T.; Miller, R. N.; Petrov, V. A.; Rao, V. N. M.; Sievert, A. C., U. S. patent 6,858,762. Application filed June 12, 2003, issued February 22, 2005.
14. "Acid-catalyzed Dehydrogenation of Amine-boranes to Produce Hydrogen Fuel", Stephens, F. H.; Baker, R. T., U. S. Patent 7,675,045 filed June 22, 2006, issued January 12, 2010.
15. "Base Metal Catalyzed Dehydrogenation of Amine-boranes to Produce Hydrogen Fuel", Keaton, R. J.; Blacquiere, J. M.; Baker, R. T., U.S. Patent 7,544,837 filed October 30, 2006, issued June 9, 2009.
16. "Metal Aminoboranes," Burrell, A. K.; Davis, B. L.; Thorn, D. L.; Gordon, J. C.; Baker, R. T.; Semelsberger, T. A.; Tumas, W.; Diyabalanage, H. V. K.; Shrestha, R. P., US Patent 7,713,506 filed May 7, 2008, issued March 11, 2010.
17. "Metal Oxide-supported Organoiridium Complexes for Alkane Dehydrogenation Catalysis," Baker, R. T.; Sattelberger, A. P., Li, H., U.S. Patent 8,524,963 filed March 27, 2008, issued September 3, 2013.
18. "Metal-catalyzed Conversion of Biomass-derived Hydroxy-acids to Diacid Polymer Intermediates," Thapa, I.; Ntais, S.; Baranova, E.; Baker, R. T.; Lau, M. K., US provisional patent filed 2014. US patent application filed April 27, 2017 (BioAmber).
19. "Biological Production of Functionalized Alpha-substituted Acrylates," Lau, M. K.; Hass, C. S.; Ahmed, H. N.; Baker, R. T.; Millis, J. R.; Thapa, I. US provisional patent filed 2015. US patent application filed June 28, 2018 (BioAmber).

20. "Liquid Phase Catalytic Hydrodefluorodimerization of Fluoroalkenes using Silanes," Baker, R. T.; Sicard, A. J. US patent 10,703,695 filed 2017; issued July 20, 2020 (uOttawa; sponsored by Arkema).

21. "Process for Preparation of Hydrofluoroalkenes by Selective Catalytic Consecutive Hydrodefluorination," Baker, R. T.; Andrella, N. O. US patent 10,774,021 filed 2017, issued Sept. 15, 2020 (uOttawa, sponsored by Arkema).

22. "Process for Catalytic Hydrodefluorodimerization of Fluoroolefins," Baker, R. T.; Sicard, A. J. US patent 10,882,802 filed 2020; issued Jan. 5, 2021 (uOttawa; sponsored by Arkema).

BOOK REVIEW

"State of the Art Coverage by Academic and Industrial Experts", Baker, R. T. *Adv. Synth. Catal.* **2007**, 349, 469-470 (review of *Multiphase Homogeneous Catalysis*, Cornils, B.; Herrmann, W. A.; Horvath, I. T.; Leitner, W.; Mecking, S.; Olivier-Bourbigou, H.; Vogt, D., Eds.).