Rylan J. Lundgren - Curriculum Vitae

RESEARCH INTERESTS

Homogeneous catalysis involving transition metals; synthetic organic methodology development; ligand design in metal chemistry; reaction mechanisms of metal-mediated processes; stereoselective synthesis and catalysis; allenes in bioorthogonal ligations and cycloadditions.

ACADEMIC HISTORY

Assistant Professor of Chemistry
University of Alberta
Edmonton, AB, Canada
July 2013 –

NSERC Postdoctoral Fellow, Chemistry
Massachusetts Institute of Technology, Cambridge, MA, USA
California Institute of Technology, Pasadena, CA, USA
December 2010 – May 2013
Research Supervisor: Dr. Gregory C. Fu
Research Focus: *Transition metal, organocatalytic, and photoinduced methodologies for the synthesis and functionalization of amines.*

Doctor of Philosophy, Chemistry
Dalhousie University, Halifax, NS, Canada
September 2006 – November 2010
Research Supervisor: Dr. Mark Stradiotto
Research Focus: *Design and application of P,N-ligands for platinum group metal-catalyzed transformations.*

Bachelor of Science with Honours, Chemistry
University of Manitoba, Winnipeg, MB, Canada
September 2001 – May 2006
Research Supervisor: Dr. Mario Bieringer
Research Focus: *Synthesis, structure evolution, and magnetic properties of metal vanadates.*

SELECTED AWARDS AND SCHOLARSHIPS

Thieme Chemistry Journal Award (2014)
NSERC Postdoctoral Fellowship (2010-2012)
Canadian Society for Chemistry National Award for Graduate Work in Inorganic Chemistry (2011)
NSERC Postgraduate Scholarship D (2007-2010)

PUBLICATIONS

Independent Research

(25) **Ambient Decarboxylative Arylation of Malonate Half-Esters via Oxidative Catalysis**
J. Am. Chem. Soc. **2016**, *138*, 13826
Patrick J. Moon, Shengkang Yin, Rylan J. Lundgren

(24) **Allene Functionalized Azobenzene Linker Enables Rapid and Light-Responsive Peptide Macrocyclization**
Bioconjugate Chem. **2016**, *27*, 509
Mohammad R. Jafari, Jenner Lakusta, Rylan J. Lundgren, Ratmir Derda.

(23) **Oxidative Coupling of Aryl Boron Reagents with sp^3-Carbon Nucleophiles: The Enolate Chan–Evans–Lam Reaction**
Angew. Chem. Int. Ed. **2016**, *55*, 1984
Patrick J. Moon, Heather M. Halperin, Rylan J. Lundgren.

(22) **Chemo- and Regioselective Reductive Transposition of Allylic Alcohol Derivatives via Iridium or Rhodium Catalysis.**
Chem. Commun. **2016**, 52, 958
Rylan J. Lundgren, Bryce N. Thomas.

Postdoctoral, Graduate and Undergraduate Research

(21) **Enantioconvergent Cross-Couplings of Racemic Alkylmetal Reagents with Unactivated Secondary Alkyl Electrophiles: Catalytic Asymmetric Negishi α-Alkylations of N-Boc-pyrrolidine**
J. Am. Chem. Soc. **2013**, *135*, 10946
Christopher J. Cordier, Rylan J. Lundgren, Gregory C. Fu

(20) **Transition Metal-Catalyzed Alkylations of Amines with Alkyl Halides: Photoinduced, Copper-Catalyzed Couplings of Carbazoles**
Angew. Chem. Int. Ed. **2013**, *52*, 5129
Alexander C. Bissember, Rylan J. Lundgren, Sidney Cruetz, Jonas C. Peters, Gregory C. Fu
- *Identified as a "Very Important Paper"*

(19) **Catalytic Asymmetric C–N Bond Formation: Phosphine-Catalyzed Intra- and Intermolecular γ-Addition of Nitrogen Nucleophiles to Allenoates and Alkynoates**
Angew. Chem. Int. Ed. **2013**, *52*, 2525
Rylan J. Lundgren, Ashraf Wilsily, Nicolas Marion, Cong Ma, Ying Kit Chung, Gregory C. Fu

(18) **The Development of a Well-Defined Palladium/Mor-DalPhos Pre-catalyst for Ammonia Arylation at Room Temperature**
Chem. Eur. J. **2013**, *19*, 2131
Pamela G. Alsabeh, Rylan J. Lundgren, Robert McDonald, Carin C. C. Johansson Seechurn, Thomas Colacot, Mark Stradiotto

(17) **Recent Advances in Buchwald-Hartwig Amination Enabled by the Application of Sterically Demanding Phosphine Ancillary Ligands**
Aldrichimica Acta **2012**, *45*, 59 *(Review)*
Rylan J. Lundgren, Mark Stradiotto

(16) **Addressing Challenges in Palladium-Catalyzed Cross-Coupling Reactions Through Ligand Design**

Chem. Eur. J. **2012**, *18*, 9758 *(Review)*
Rylan J. Lundgren, Mark Stradiotto
- *One of the most accessed CEJ papers of the year (4/2012 – 3/2013)*

(15) **Design of New P,N "DalPhos" Ligands: Applications in Transition Metal Catalysis**
Synlett **2011**, 2443 *(Review)*
Rylan J. Lundgren, Kevin D. Hesp, Mark Stradio

(14) **Palladium-Catalyzed Synthesis of Indoles via Ammonia Cross-Coupling-Alkyne Cyclization**
Chem. Commun. **2011**, *47*, 6936
Pamela G. Alsabeh, Rylan J. Lundgren, Lauren E. Longobardi, Mark Stradiotto

(13) **Palladium-Catalyzed Mono-α-Arylation of Acetone with Aryl Halides and Tosylates**
J. Am. Chem. Soc. **2011**, *133*, 5194
Kevin D. Hesp, Rylan J. Lundgren, Mark Stradiotto

(12) **Transition Metal-Catalyzed Trifluoromethylation of Aryl Halides**
Angew. Chem. Int. Ed. **2010**, *48*, 9322 *(Highlight)*
Rylan J. Lundgren, Mark Stradiotto

(11) **Palladium Catalyzed Cross-Coupling of Aryl Chlorides and Tosylates with Hydrazine**
Angew. Chem. Int. Ed. **2010**, *49*, 8686
Rylan J. Lundgren, Mark Stradiotto
- *Featured in Chemical and Engineering News [2010, 88 (42), 8]*

(10) **A P,N-Ligand for Pd-Catalyzed Ammonia Arylation: Coupling of Deactivated Aryl Chlorides, Chemoselective Aminations, and Room Temperature Reactions**
Angew. Chem. Int. Ed. **2010**, *49*, 4071
Rylan J. Lundgren, Brendan D. Peters, Pamela G. Alsabeh, Mark Stradiotto
- *Featured in Chemical and Engineering News [2010, 88 (21), 32]*

(9) **A Highly Versatile Catalyst System for the Cross-Coupling of Aryl Chlorides and Amines**
Chem. Eur. J. **2010**, *16*, 1983
Rylan J. Lundgren, Antonia Sappong-Kumankumah, Mark Stradiotto

(8) **Zwitterionic Relatives of Cationic Platinum Group Metal Complexes: Applications in Stoichiometric and Catalytic Sigma-Bond Activation**
Angew. Chem. Int. Ed. **2010**, *49*, 494 *(Review)*
Mark Stradiotto, Kevin D. Hesp, Rylan J. Lundgren

(7) **Rapid Ketone Transfer Hydrogenation by Employing Simple, In Situ Prepared Iridium(I) Precatalysts Supported by "Non-NH" P,N Ligands**
Chem. Eur. J. **2008**, *14*, 10388
Rylan J. Lundgren, Mark Stradiotto

(6) **Neutral, Cationic, and Zwitterionic Ru(II) Atom Transfer Radical Addition Catalysts Supported by P,N Substituted Indenes or Indenide Ligands**
Organometallics **2008**, *27*, 250
Rylan J. Lundgren, Matthew A. Rankin, Robert McDonald, Mark Stradiotto

(5) **Synthesis and Reactivity of Platinum Group Metal Complexes Featuring the New Pincer-like Bis(phosphino) silyl Ligand [κ³-(2-$Ph_2PC_6H_4)_2SiMe$]-([PSiP]): Application in the Ruthenium Mediated Transfer Hydrogenation of Ketones**
Organometallics **2007**, *26*, 6522
Morgan C. MacInnis, Darren F. MacLean, Rylan J. Lundgren, Robert McDonald, Laura Turculet

(4) **A Formally Zwitterionic Ruthenium Catalyst Precursor for the Transfer Hydrogenation of Ketones that Does Not Feature an Ancillary Ligand N-H Functionality**
Angew. Chem. Int. Ed. **2007**, *46*, 4732
Rylan J. Lundgren, Matthew A. Rankin, Robert McDonald, Gabriel Schatte, Mark Stradiotto
- *Identified as a "Hot Paper" by the journal editors*

(3) **Formation, Structure and Magnetism of the Metastable Defect Fluorite Phases $AVO_{3.5+x}$ (A = In, Sc)**
J. Solid State Chem. **2007**, 3333
Shahid P. Shafi, Rylan J. Lundgren, Lachlan M. D. Cranswick, Mario Bieringer

(2) **Synthesis, Phase Evolution and Magnetism in $Sc_{(1-x)}Lu_xVO_3$ (x = 0 - 1.0)**
Chem. Mater. **2007**, *19*, 3945
Rylan J. Lundgren, Lachlan M. D. Cranswick, Mario Bieringer

(1) **In Situ X-Ray Powder Diffraction, Synthesis, and Magnetic Properties of $InVO_3$**
J. Solid State Chem. **2006**, *179*, 3599
Rylan J. Lundgren, Lachlan M. D. Cranswick, Mario Bieringer

MONOGRAPHS AND BOOK CHAPTERS

(5) **Applications of Sterically Demanding Phosphine Ligands in Palladium-Catalyzed Cross-Coupling leading to C(sp^2)–E Bond Formation (E = NH_2, OH, and F)**
Ligand Design in Metal Chemistry: Reactivity and Catalysis (Ed Mark Stradiotto and Rylan Lundgren) John Wiley & Sons Ltd.
Mark Stradiotto and Rylan J. Lundgren.

(4) **Key Concepts in Ligand Design: An Introduction**
Ligand Design in Metal Chemistry: Reactivity and Catalysis (Ed Mark Stradiotto and Rylan Lundgren) John Wiley & Sons Ltd.
Rylan J. Lundgren and Mark Stradiotto

(3) **Bis(adamant-1-yl)(2-morpholinophenyl)phosphine (Mor-DalPhos)**
Electronic Encyclopedia of Reagents for Organic Synthesis 2013, John Wiley & Sons Ltd.
Rylan J. Lundgren

(2) **2-[Bis(1-adamantantyl)phosphino]-*N*,*N*-dimethylaniline**
Electronic Encyclopedia of Reagents of Organic Synthesis 2013, John Wiley & Sons Ltd.
Rylan J. Lundgren

(1) ***N*,*N*-Dimethyl 4-[di(tert-butyl)phosphino]aniline**
Electronic Encyclopedia of Reagents for Organic Synthesis 2011, John Wiley & Sons Ltd.
Rylan J. Lundgren

PATENTS

NOVEL CATALYSTS. Rylan J. Lundgren, Mark Stradiotto. PCT/US2011/061130.

SELECTED FUNDING SOURCES

ACS Petroleum Research Fund New Directions (2017)
NSERC Engage Plus Grant (2016)
NSERC Engage Grant (2015)
Canadian Foundation for Innovation John Evans Leaders Fund (2014)
NSERC Discovery Grant (2014 – 2019)
NSERC Research Tools and Infrastructure Grant (2014)

SELECTED PRESENTATIONS (>20 total)

(8) **Copper-Mediated Oxidative Cross-Coupling Reactions of Carbon Nucleophiles**
University of British Columbia Nov. 25, 2016
Rylan J. Lundgren

(7) **Copper-Mediated Oxidative Carbon–Carbon Bond Forming Reactions Involving Aryl Boron Species**
99th Canadian Chemistry Conference and Exhibition, 2016 Halifax, Canada
Rylan J. Lundgren and Patrick Moon

(6) **Regioselective Reductive Transposition Reactions and Copper-Mediated Oxidative Coupling of Aryl Boron Reagents with sp^3-Nucleophiles**
Gordon Research Conferences – Organometallic Chemistry 2015, Salve Regina University Newport, RI, USA.
Rylan J. Lundgren, Bryce Thomas, Patrick Moon

(5) **New Catalytic Transformations of Iridium-Allyl Species Allylic Reduction and Carbene Coupling**
98th Canadian Chemistry Conference and Exhibition, 2015 Ottawa, Canada
Rylan J. Lundgren and Bryce N. Thomas

(4) **Organocatalytic and Transition Metal Catalyzed Methods for Enantioselective Amine Synthesis and Functionalization**
University of Saskatchewan (Jan. 10, 2014); *University of Regina* (Jan. 9, 2014)
Rylan J. Lundgren

(3) **Phosphine-Catalyzed Enantioselective Additions of Nitrogen Nucleophiles γ to Carbonyl Groups**
Gordon Research Conferences – Organic Reactions and Processes 2012, Smithfield, RI, USA
Rylan J. Lundgren, Ashraf Wilsily, Nicolas Marion, Cong Ma, Gregory C. Fu

(2) **The Development of P,N-Ligands for Transition Metal-Catalyzed Transfer Hydrogenation and Cross-Coupling Reactions**
94th Canadian Chemistry Conference and Exhibition, 2011, Montreal, Canada (Invited Award Lecture)
Rylan J. Lundgren, Mark Stradiotto

(1) **Towards a Universal Catalyst for the Cross Coupling of Amines and Aryl Chlorides**
15th IUPAC International Symposium on Organometallic Chemistry Directed Towards Organic Synthesis, 2009 Glasgow, UK
Rylan J. Lundgren, Mark Stradiotto

SELECTED SCHOLARLY AND PROFESSIONAL ACTIVITIES

Co-editor (with M. Stradiotto, Dalhousie University) *Ligand Design in Metal Chemistry: Reactivity and Catalysis* John Wiley & Sons Ltd.

Referee for:

Chemical Reviews
Journal of the American Chemical Society
Organic Letters
ACS Catalysis
Chemistry – A European Joural
Organometallics
Synthesis

Referee for Funding Agencies NSERC Discovery Grants, NSERC Strategic Grants

TEACHING ACTIVITIES

Introduction to Inorganic Chemistry (Chem 241, ~100 students)	Fall 2013, 2014, 2015, 2016
Introduction to Organic Chemistry 1 (Chem 261, 150–250 students)	Winter 2014, 2015
Introductory University Chemistry 1 (Chem 101/103 ~300 students)	Winter 2016