

GARTH GIESBRECHT, PH.D.

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EXPERIENCE

Senior Competitive Intelligence Advisor

ExxonMobil Technology and Engineering Company | Houston, TX Mar 2016 – Dec 2025

Market Research Associate

ExxonMobil Chemical Company | Houston, TX Aug 2012 – Feb 2016

Senior Research Chemist

ExxonMobil Chemical Company | Houston, TX July 2004 – July 2012

Postdoctoral Fellow

Los Alamos National Laboratory | Los Alamos, NM Apr 2001 – June 2004

Postdoctoral Fellow

University of California, Berkeley | Berkeley, CA June 1998 – Mar 2001

EDUCATION

Ph.D. in Chemistry

University of British Columbia | Vancouver, BC, CANADA May 1998

B.Sc. (Hons) in Chemistry

University of Winnipeg | Winnipeg, MB, CANADA June 1990

COMPETENCIES

Strong background in chemistry and polymer science

Ability to combine multiple sources of data to identify trends, threats and opportunities

Good presentation skills, clear analysis and presentation of data

Effective communication with colleagues with differing levels of expertise

Technical writing – journals, patents, research grants

CONFERENCE PROCEEDINGS and INVITED TALKS

10. The University of British Columbia, Inorganic Discussion Group, Vancouver, BC, Canada (September 2024). "Life as an Industrial Chemist".
9. 21st International Conference on Organometallic Chemistry, Vancouver, BC, Canada (July 2004). "Bulky Cyclopentadienyl Ligands as Supporting Groups in Lanthanide Chemistry."
8. 226th Meeting of the American Chemical Society, New York, NY, USA (September 2003). "Mono-Cyclopentadienyl Complexes of the Lanthanides."
7. Inorganic Chemistry Gordon Research Conference, Newport, RI, USA (July 2003). "Mechanisms of Exchange for π -Arene Bridged Anilido and Aryloxy Dimers."
6. 85th Meeting of the Canadian Society of Chemistry, Vancouver, BC, Canada (June 2002). "New Superbulky Cyclopentadienyl Groups as Supporting Ligands in Organolanthanide Chemistry."
5. 83rd Meeting of the Canadian Society of Chemistry, Calgary, AB, Canada (May 2000). "Ancillary Ligands Incorporating Anionic NCN Linkages."
4. 219th Meeting of the American Chemical Society, San Francisco, CA, USA (March 2000). "Amidinate Ligands Incorporating Pendant Donor Groups."
3. Alberta/British Columbia Inorganic Chemistry Colloquium, Kamloops, BC, Canada (May 1997). "Pyramidal Inversion at Phosphorus Facilitated by Aluminum and Gallium."
2. 31st International Conference on Coordination Chemistry, Vancouver, BC, Canada (August 1996). "Amidophosphine Complexes of Lithium and Aluminum."
1. 3rd International Conference on Inorganic Chemistry, Brighton, England (July 1995). "Amidophosphine Complexes of Scandium and Aluminum."

PUBLICATIONS

32. Horrillo-Martinez, P., Leitch, D. C., Ryken, S. A., Thomson, R. K., Beard, J. D., Patrick, B. O., Schafer, L. L., **Giesbrecht, G. R.** "Titanium Amidate Complexes as Active Catalysts for the Synthesis of High Molecular Weight Polyethylene." *Can. J. Chem.*, 2015, 93, 775 – 783. [Link](#)
31. **Giesbrecht, G. R.**, Gordon, J. C., Clark, D. L., Scott, B. L. "(η^5 -Fluorenyl)-tris-pyridine-di-iodo-lanthanum and -neodymium (III)." *Appl. Organomet. Chem.*, 2005, 19, 98 - 99. [Link](#)
30. **Giesbrecht, G. R.**, Gordon, J. C. "Lanthanide Alkylidene and Imido Complexes." *Dalton Trans.*, 2004, 2387 - 2393 (Cover Article). [Link](#)
29. **Giesbrecht, G. R.**, Collis, G. E., Gordon, J. C., Clark, D. L., Scott, B. L., Hardman, N. J. "Mono-Cyclopentadienyl Complexes of Lanthanum: Synthesis and Characterization of Anilido Derivatives." *J. Organomet. Chem.*, 2004, 689, 2177 - 2185. [Link](#)
28. **Giesbrecht, G. R.**, Gordon, J. C., Clark, D. L., Hay, P. J., Scott, B. L., Tait, C. D. "A Comparative Study of π -Arene Bridged Lanthanum Arylamide and Aryloxide Dimers. Solution Behavior, Exchange Mechanisms and X-ray Crystal Structures of $\text{La}_2(\text{NH}-2,6\text{-}^i\text{Pr}_2\text{C}_6\text{H}_3)_6$, $\text{La}(\text{NH}-2,6\text{-}^i\text{Pr}_2\text{C}_6\text{H}_3)_3(\text{THF})_3$ and $\text{La}(\text{NH}-2,6\text{-}^i\text{Pr}_2\text{C}_6\text{H}_3)_3(\text{py})_2$." *J. Am. Chem. Soc.*, 2004, 126, 6387 - 6401. [Link](#)
27. **Giesbrecht, G. R.**, Gordon, J. C., Clark, D. L., Scott, B. L. "Auto-Ionization in Lutetium-Iodide Complexes. Effect of Ionic Radius on Lanthanide-Iodide Binding." *Inorg. Chem.*, 2004, 43, 1065 - 1070. [Link](#)
26. Cui, C., **Giesbrecht, G. R.**, Schmidt, J. A. R., Arnold, J. "A Cationic Aluminum Methyl Complex Supported by an Anionic tacn Ligand." *Inorg. Chim. Acta*, 2003, 351, 404 - 408. [Link](#)
25. **Giesbrecht, G. R.**, Gordon, J. C., Clark, D. L., Scott, B. L. "Synthesis, Structure and Solution Dynamics of Lithium Salts of Super-Bulky Cyclopentadienyl Ligands." *Dalton Trans.*, 2003, 2658 - 2665. [Link](#)
24. **Giesbrecht, G. R.**, Gordon, J. C., Clark, D. L., Scott, B. L. "Syntheses and Structures of Mono-Cyclopentadienyl Di-iodide Complexes of the Lanthanides. X-Ray Crystal Structures Of $\text{Cp}^{\text{***}}\text{LaI}_2\text{py}_3$ ($\text{Cp}^{\text{***}} = [\eta^5\text{-C}_5\text{H}_2(\text{SiMe}_3)_3\text{-}1,2,4]$; py = pyridine) and $\text{Cp}^{\text{***}}\text{LaI}_2(\text{bipy})\text{py}$ (bipy = 2,2'-bipyridine)." *App. Organomet. Chem.*, 2003, 17, 473 - 479. [Link](#)
23. Schmidt, J. A. R., **Giesbrecht, G. R.**, Cui, C., Arnold, J. "Anionic Triazacyclononanes: New Supporting Ligands in Main Group and Transition Metal Organometallic Chemistry." *Chem. Commun.*, 2003, 1025 - 1033 (Cover Article). [Link](#)

22. **Giesbrecht, G. R.**, Gordon, J. C., Clark, D. L., Hijar, C. A., Scott, B. L., Watkin, J. C. "Neutral and Anionic Transition Metal Complexes Supported by Decafluorodiphenylamido Ligands: X-Ray Crystal Structures of $\{\text{Na}(\text{THF})_2\}\{\text{Ti}[\text{N}(\text{C}_6\text{F}_5)_2]_4\}$, $\{\text{K}(\eta^6\text{-C}_6\text{H}_5\text{Me})_2\}\{\text{ZrCl}_2[\text{N}(\text{C}_6\text{F}_5)_2]_3\}$, $\text{K}\{\text{VCl}[\text{N}(\text{C}_6\text{F}_5)_2]_3\}$, $\text{Fe}[\text{N}(\text{C}_6\text{F}_5)_2]_2(\text{THF})_2$ and $\text{Co}[\text{N}(\text{C}_6\text{F}_5)_2]_2(\text{py})_2$." *Polyhedron*, 2003, 22, 153 – 163. [Link](#)
21. **Giesbrecht, G. R.**, Gordon, J. C., Clark, D. L., Scott, B. L., Watkin, J. G., Young, K. J. "Salt-free synthesis of samarium-aluminum mixed-metal alkoxides: X-ray crystal structures of $\{[(i\text{-PrO})(i\text{-Bu})\text{Al}(\mu\text{-O-}i\text{-Pr})_2\text{Sm}(\text{O-}i\text{-Pr})(\text{HO-}i\text{-Pr}))(\mu\text{-O-}i\text{-Pr})\}_2$, $[(\text{THF})_2\text{Sm}(\text{O-}t\text{-Bu})_2(\mu\text{-O-}t\text{-Bu})_2\text{Al}(i\text{-Bu})_2]$, $\text{Sm}(\text{OAr})_3(\text{THF})_3$ (Ar = 2,4,6-Me₃C₆H₂), $[\text{Nd}(\mu\text{-OAr})(\text{OAr})_2(\text{py})_2]_2$ (Ar = 2,4,6-Me₃C₆H₂) and $(\text{ArO})_3\text{Sm}[(\mu\text{-O-}t\text{-Bu})_2\text{Al}_2(\text{O-}t\text{-Bu})_4]$ (Ar = 2,6-*i*-Pr₂C₆H₃)." *Inorg. Chem.*, 2002, 41, 6372 – 6379. [Link](#)
20. Gordon, J. C., **Giesbrecht, G. R.**, Clark, D. L., Hay, P. J., Keogh, D. W., Martin, R. L., Poli, R., Scott, B. L., Watkin, J. G. "The First Example of a μ_2 -Imido Functionality Bound to a Lanthanide Metal Center: The X-Ray Crystal Structure and a DFT Study of $[(\mu\text{-ArN})\text{Sm}(\mu\text{-NHAr})(\mu\text{-Me})\text{AlMe}_2]_2$ (Ar = 2,6-*i*-Pr₂C₆H₃)." *Organometallics*, 2002, 21, 4726 - 4734. [Link](#)
19. **Giesbrecht, G. R.**, Shafir, A., Cui, C., Schmidt, J. A. R., Arnold, J. "Divalent Lanthanide Metal Complexes of a Triazacyclononane-Functionalized Tetramethylcyclopentadienyl Ligand: X-Ray Crystal Structures of $[\text{C}_5\text{Me}_4\text{SiMe}_2(\text{tacn})]\text{LnI}$ (Ln = Sm, Yb; tacn = 1,4-diisopropyl-1,4,7-triazacyclononane)." *Organometallics*, 2002, 21, 3841 - 3844. [Link](#)
18. **Giesbrecht, G. R.**, Gordon, J. C., Brady, J. T., Clark, D. L., Keogh, D. W., Michalczyk, R., Scott, B. L., Watkin, J. G. "Interactions of Remote Alkyl Groups with Lanthanide Metal Centers: Synthesis, Characterization and Ligand Redistribution Reactions of Heterobimetallic Species Containing Trialkylaluminum Fragments." *Eur. J. Inorg. Chem.*, 2002, 723 - 731. [Link](#)
17. Gordon, J. C., **Giesbrecht, G. R.**, Brady, J. T., Clark, D. L., Keogh, D. W., Scott, B. L., Watkin, J. G. "Observation of a Significantly Reduced $^1J_{\text{C-H}}$ Coupling Constant in an Agostic f-Element Complex: X-Ray Crystal Structure of $(\text{ArO})\text{Sm}[(\mu\text{-OAr})(\mu\text{-Me})\text{AlMe}_2]_2$ (Ar = 2,6-*i*-Pr₂C₆H₃)." *Organometallics*, 2002, 21, 127 - 131. [Link](#)
16. **Giesbrecht, G. R.**, Shafir, A., Arnold, J. "Synthesis and Structure of a Linked-Bis(amidate) Ligand and Some Complexes with Titanium." *Inorg. Chem.*, 2001, 40, 6069 - 6072. [Link](#)
15. **Giesbrecht, G. R.**, Whitener, G. D., Arnold, J. "Mono-Guanidinate Complexes of Lanthanum: Synthesis, Structure and Their Use in Lactide Polymerization." *Dalton Trans.*, 2001, 923 – 927. [Link](#)

14. **Giesbrecht, G. R.**, Gebauer, A., Shafir, A., Arnold, J. "Alkali-Metal Complexes of a Triazacyclononane-Functionalized Tetramethylcyclopentadienyl Ligand." *Dalton Trans.*, 2000, 4018 - 4020. [Link](#)
13. **Giesbrecht, G. R.**, Shafir, A., Arnold, J. "Zirconium Complexes of a tacn-Derived Amido Ligand and Ring-Opening to Form a New Diamido-Amino Pincer." *Chem. Commun.*, 2000, 2135 - 2136. [Link](#)
12. Fryzuk, M. D., **Giesbrecht, G. R.**, Rettig, S. J. "Synthesis, Characterization, and Reactivity of Scandium Chloro, Alkyl, Aryl, and Borohydride Complexes, $\text{Sc}(\eta^5\text{-C}_5\text{H}_5)\text{R}[\text{N}(\text{SiMe}_2\text{CH}_2\text{PPr}^i_2)_2]$ (R = Cl, Me, Ph, and BH_4)." *Can. J. Chem.*, 2000, 78, 1003 - 1012. [Link](#)
11. **Giesbrecht, G. R.**, Whitener, G. D., Arnold, J. "Crystal Packing Forces Dictate η^1 - Versus η^2 -Coordination of Benzyl Groups in [Guanidinate]Zr(CH₂Ph)₃." *Organometallics*, 2000, 19, 2809 - 2812. [Link](#)
10. Kincaid, K., Gerlach, C. P., **Giesbrecht, G. R.**, Hagadorn, J. R., Whitener, G. W., Shafir, A., Arnold, J. "Synthesis, Structure and Coordination Chemistry of a Tridentate, 6-Electron Donor Amidinate Ligand." *Organometallics*, 1999, 18, 5360 - 5366. [Link](#)
9. Fryzuk, M. D., **Giesbrecht, G. R.**, Yap, G. A. P., Rettig, S. J. "Synthesis and Characterization of Group 13 Hydrides and Metal-Metal Bonded Dimers Stabilized by the Bis(amidophosphine) Ligand, *syn*-[P₂N₂] ([P₂N₂] = [PhP(CH₂SiMe₂NSiMe₂CH₂)₂PPh])." *J. Organomet. Chem.*, 1999, 591, 61 - 70. [Link](#)
8. **Giesbrecht, G. R.**, Shafir, A., Arnold, J. "Alkali-Metal Guanidines: Solid-State Structural Diversity in Base-Free Derivatives." *Dalton Trans.*, 1999, 3601 - 3604. [Link](#)
7. Fryzuk, M. D., **Giesbrecht, G. R.**, Rettig, S. J. "Pyramidal Inversion at Phosphorus Facilitated by the Presence of Proximate Lewis Acids. Coordination Chemistry of Group 13 Elements with the Macrocyclic Bis(amidophosphine) Ligand [P₂N₂] ([P₂N₂] = [PhP(CH₂SiMe₂NSiMe₂CH₂)₂PPh])." *Inorg. Chem.*, 1998, 37, 6928 - 6934. [Link](#)
6. Fryzuk, M. D., **Giesbrecht, G. R.**, Johnson, S. A., Kickham, J. E., Love, J. B. "Chelating Amides of Lithium. Synthesis, Structure and Coordination Chemistry." *Polyhedron*, 1998, 17, 947 - 952. [Link](#)

5. Fryzuk, M. D., **Giesbrecht, G. R.**, Rettig, S. J. "Synthesis, Characterization and Solution Dynamics of Alkali-Metal Chloride, Aluminate and Borate Adducts of the Tridentate Amidophosphine Ligand Precursor $\text{LiN}(\text{SiMe}_2\text{CH}_2\text{PPr}^i_2)_2$." *Organometallics*, 1997, 16, 725 - 736. [Link](#)
4. Fryzuk, M. D., **Giesbrecht, G. R.**, Olovsson, G., Rettig, S. J. "Synthesis and Characterization of Four- and Five-Coordinate Organoaluminum Complexes Incorporating the Amido Diphosphine Ligand System $\text{N}(\text{SiMe}_2\text{CH}_2\text{PPr}^i_2)_2$." *Organometallics*, 1996, 15, 4832 - 4841. [Link](#)
3. Fryzuk, M. D., **Giesbrecht, G. R.**, Rettig, S. J. "Synthesis and Characterization of the Five-Coordinate Scandium Dialkyl Complexes $\text{ScR}_2[\text{N}(\text{SiMe}_2\text{CH}_2\text{PPr}^i_2)_2]$ (R = Me, Et, CH_2SiMe_3)." *Organometallics*, 1996, 15, 3329 - 3336. [Link](#)
2. **Giesbrecht, G. R.**, Hanan, G. S., Kickham, J. E., Loeb, S. J. "Thiocyclophanes Containing the - $\text{S}(\text{CH}_2)_3\text{S}(\text{CH}_2)_3\text{S}$ - Linkage. Synthesis and Structures of 2,6,10-Trithia[11]-o-cyclophane (TT[11]OC), 2,6,10-Trithia[11]-m-cyclophane (TT[11]MC) and the Palladation Product $[\text{Pd}(\text{TT}[11]\text{MC})][\text{BF}_4]$." *Inorg. Chem.*, 1992, 31, 3286 - 3291. [Link](#)
1. de Groot, B., **Giesbrecht, G. R.**, Loeb, S. J., Shimizu, G. S. "Copper(I) and Silver(I) Complexes of the Crown Thioether Ligand 2,5,8-Trithia[9]-o-benzophane (TT[9]OB). Structures of $[\text{Cu}(\text{PPh}_2\text{Me})(\text{TT}[9]\text{OB})][\text{ClO}_4]$ and $[\text{Ag}(\text{PPh}_3)(\text{TT}[9]\text{OB})][\text{ClO}_4]$." *Inorg. Chem.*, 1991, 30, 177 - 182. [Link](#)

PATENTS

24. Rix, F. C., Lu, Q., Boller, T. M., **Giesbrecht, G. R.**, Harlan, C. J. “Making Polyolefin”, CN110330580A [Link](#)
23. Holtcamp, M. W., Day, G. S., Perez, C. M., **Giesbrecht, G. R.** “Supported Metallocene Catalyst Systems and Methods of Preparation Thereof”, US2014/0121341A1 [Link](#)
22. Lue, C. T., Rix, F. C., Boller, T. M., **Giesbrecht, G. R.**, Goode, M. G., Kao, S. C., Li, D., Pequeno, R. E., Farley, J. M., Zilker, D. P. “Producing Polyolefin Products with Improved Stiffness, Toughness, and Processability”, US9850332B2, US9879106B2, US10239977B2, US10308742B2, US10604606B2 [Link](#)
21. **Giesbrecht, G. R.** “Ligands For Catalysts”, US9718900B2 [Link](#)
20. Wagner, J. B., **Giesbrecht, G. R.**, Kao, S. C., Jaker, S. P. “Multiple Catalyst System Comprising Metallocenes and Tridentate Nitrogen Based Ligand Complexes For Olefin Polymerization”, US9714305B2, US10174143B2, US10604605B2 [Link](#)
19. Yang, J., Holtcamp, M. W., **Giesbrecht, G. R.**, Day, G. S., Canich, J. M., Xiongdong, L. “Metallocenes and Catalyst Compositions Derived Therefrom”, US9644047B2 [Link](#)
18. **Giesbrecht, G. R.**, Holtcamp, M. W., Kol, M., Press, K., Day, G. S. “Polyalphaolefins Prepared Using Modified Salan Catalyst Compounds”, US9365661B2, US9382349B2 [Link](#)
17. Yang, J., Holtcamp, M. W., **Giesbrecht, G. R.**, Day, G. S. “Metallocenes and Catalyst Compositions Derived Therefrom”, US9249239B2, US9464145B2, US9745390B2 [Link](#)
16. Kao, S. C., Cao, P. A., Harlan, C. J., Khokhani, P. A., Rodriguez, G., Rix, F. C., **Giesbrecht, G. R.** “Methods of Preparing a Catalyst System”, US9234060B2 [Link](#)
15. Kol, M., Holtcamp, M. W., **Giesbrecht, G. R.**, Day, G. S., Press, K. “Long-Bridged Salan Catalyst”, US9200100B2 [Link](#)
14. **Giesbrecht, G. R.**, Holtcamp, M. W., Day, G. S., Hagadorn, J. R. “Supported Salan Catalysts”, US9120879B2, US9556287B2 [Link](#)

13. **Giesbrecht, G. R.**, Holtcamp, M. W., Kol, M., "Vinyl Terminated Polyethylene With Long Chain Branching", US9045568B2, US9464148 [Link](#)
12. **Giesbrecht, G. R.**, Holtcamp, M. W., Kol, M., Day, G. S., Cano, D. A. "Nonsymmetric Catalysts Comprising Salan Ligands", US8957172B2 [Link](#)
11. **Giesbrecht, G. R.**, Day, G. S., Holtcamp, M. W., Kol, M., Cano, D. A., Whetmore, E. D., Press, K. "Catalysts Comprising Salan Ligands", US8957171B2 [Link](#)
10. **Giesbrecht, G. R.**, Holtcamp, M. W., Kol, M., Day, G. S., Press, K. "Halogenated Catalysts Comprising Salan Ligands", US8952114B2 [Link](#)
9. **Giesbrecht, G. R.**, "Catalyst Compounds and Use Thereof", US8877881B2 [Link](#)
8. **Giesbrecht, G. R.**, Boller, T. M., Voskoboynikov, A. Z., Asachenko, A. F., Nikulin, M. V., Tsarev, A. A., "Catalyst Compounds and Use Thereof", US8557936B2 [Link](#)
7. **Giesbrecht, G. R.**, Boller, T. M., Voskoboynikov, A. Z., Asachenko, A. F., Nikulin, M. V., Tsarev, A. A., "Catalyst Compounds and Use Thereof", US8546501B2 [Link](#)
6. **Giesbrecht, G. R.**, Boller, T. M., Voskoboynikov, A. Z., Asachenko, A. F., Nikulin, M. V., Tsarev, A. A., "Catalyst Compounds and Use Thereof", US8541522B2 [Link](#)
5. **Giesbrecht, G. R.**, Boller, T. M., Voskoboynikov, A. Z., Asachenko, A. F., Nikulin, M. V., Tsarev, A. A., "Catalyst Compounds and Use Thereof", US8541521B2 [Link](#)
4. **Giesbrecht, G. R.**, Boller, T. M., Voskoboynikov, A. Z., Asachenko, A. F., Nikulin, M. V., Tsarev, A. A., "Catalyst Compounds and Use Thereof", US8530953B2 [Link](#)
3. Hussein, F. D., Cann, K. J., Schoeb-Wolters, A. M., Cao, P. A., Savatsky, B. J., Markel, E. J., Zilker, D. P., **Giesbrecht, G. R.**, "Methods of Polymerization Using Spray Dried and Slurried Catalyst", US8497330B2 [Link](#)
2. Voskoboynikov, A. Z., Nikulin, M. V., Tsarev, A. A., Asachenko, A. F., Babkin, A. V., **Giesbrecht, G. R.**, Canich, J. A. M., "Mono-Indenyl Transition Metal Compounds and Polymerization Therewith", US8058461B2 [Link](#)
1. **Giesbrecht, G. R.**, Solan, G. A., Davies, C. L., "Catalyst Compounds and Use Thereof", US7767773B2 [Link](#)

AWARDS

2003: Inorganic Chemistry Gordon Research Conference Poster Prize

1997: Alberta/British Columbia Inorganic Chemistry Colloquium Student Poster Prize

1992-1994: Natural Sciences and Engineering Research Council Postgraduate Scholarship

1990: University of Winnipeg Academic Proficiency Scholarship

1985: University of Winnipeg Board of Regents Entry Scholarship