

# GAYAN B. WIJERATNE

Department of Chemistry  
The University of Alabama at Birmingham

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## Professional Experience

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### University of Alabama at Birmingham (UAB), Birmingham, AL, USA

<i>Assistant Professor of Chemistry</i>	2018 – present
<i>Scientist, UAB Center for Nanoscale Materials and Biointegration (CNMB)</i>	2019 – present

### Johns Hopkins University (JHU), Baltimore, MD, USA

<i>Acting Principle Investigator (Kenneth D. Karlin Laboratory)</i>	2018
<i>Postdoctoral Research Associate (Kenneth D. Karlin Laboratory)</i>	2015 – 2018

### University of Kansas (KU), Lawrence, KS, USA

<i>X-ray Absorption Team Leader at Brookhaven National Laboratory</i>	2014 – 2015
<i>Graduate Research Assistant (Timothy A. Jackson Laboratory)</i>	2010 – 2015
<i>Graduate Teaching Assistant (Introductory Chemistry – freshman/sophomore level)</i>	2010 – 2013

### University of Colombo (UOC), Colombo, Sri Lanka

<i>Teaching Assistant/Laboratory Assistant (General/Organic Chemistry – sophomore level)</i>	2009 – 2010
<i>Undergraduate Research Assistant (Sujatha Hewage Laboratory)</i>	2007 – 2009

## Education

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**Ph.D. with Honors (Inorganic Chemistry)** University of Kansas, Lawrence, KS, USA 2015

Dissertation Title: “*Formation, Characterization, and Oxidative Reactivity of Bio-inspired Peroxo- and Hydroxo-manganese(III) Complexes*”

**B.Sc. with Honors (Major in Chemistry)**, University of Colombo, Colombo, Sri Lanka 2009  
 Thesis Title: “*Synthesis and Antibacterial Activity Studies of Transition Metal Complexes Derived From Sri Lankan Natural Products*”

## Honors and Awards

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### University of Kansas, Lawrence, KS, USA

*Doctoral Dissertation Honors* 2015  
*The Higuchi Doctoral Progress Award – The Most Outstanding Graduate Student* 2015  
*Amini/Bailey Scholarship – Outstanding Research Accomplishments* 2014  
*Emily V. Berger Scholarship – Outstanding Incoming Graduate Student* 2010 – 2012

### University of Colombo, Colombo, Sri Lanka

*Prof. R. S. Ramakrishna Memorial Gold Medal –* 2009  
*The Most Outstanding Undergraduate Student in Inorganic Chemistry*

## Teaching and Service at UAB

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CH 740. Transition Metal Chemistry Spring 2020  
 CH 427 Lab. Molecular Structure and Spectroscopy Spring 2020  
 CH 749. Spectroscopic Methods in Inorganic Chemistry Fall 2019  
 CH 440. Transition Metal Chemistry Spring 2019  
 CH 427 Lab. Molecular Structure and Spectroscopy Spring 2019  
 CH 345. Principles and Applications in Chemical Periodicity – Junior/Senior level Fall 2018  
 CH 345 Lab. Principles and Applications in Chemical Periodicity – Junior/Senior level Fall 2018

Student thesis committees: Garrett Tolbert (G), Maria Espinosa (G), Jennifer Pyles (G), Zach Cuny (G), Parmanand Ahirwar (G), Eunice Lim (UG), Amy Copes (UG), John Gotham (UG)

Organizer, “*Pathways to Careers in Chemistry*” Chemistry Seminar Series 2018 - present  
 Member, UAB College of Arts and Sciences (CAS) Dean Search Committee 2019/2020  
 Member, UAB Chemistry Department Search Committee (Radiochemistry) 2019/2020  
 Member, UAB Chemistry Department Search Committee (Physical Analytical) 2018/2019

## Research Publications

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17. Eva M. Zolnhofer, **Gayan B. Wijeratne**, Timothy A. Jackson\*, Skye Fortier, Frank W. Heinemann, Karsten Meyer, J. Krzystek, Andrew Ozarowski, Daniel J. Mindiola, and Joshua Telser\* “Electronic Structure and Magnetic Properties of  $Ti^{III}Cl_2(tmeda)_2$ ” *In review; Inorg. Chem.* **2020**
16. Pritam Mondal, and **Gayan B. Wijeratne**\* “Modeling Tryptophan/Indoleamine 2,3-Dioxygenase with Heme Superoxide Mimics: Is Ferryl the Key Intermediate?” *J. Am. Chem. Soc.* **2020**, *142*, 1846–1856.
15. **Gayan B. Wijeratne**\*, Mayukh Bhadra, Maxime A. Siegler, and Kenneth D. Karlin\* “Modeling Nitric Oxide Reductase Function with a Mononuclear Copper(I) Complex: Intramolecular Proton Transfer Promotes  $N_2O_{(g)}$  Release” *J. Am. Chem. Soc.*, **2019**, *141*, 17962–17967.
14. Joshua D. Parham, **Gayan B. Wijeratne**, Jaycee Mayfield, and Timothy A. Jackson\* “Steric Control of Dioxygen Activation Pathways for  $Mn^{II}$  Complexes Supported by Pentadentate, Amide-containing Ligands” *Dalton Trans.* **2019**, *48*, 13034–13045.
13. Suzanne M. Adam, **Gayan B. Wijeratne**, Patrick J. Rogler, Daniel E. Diaz, David A. Quist, Jeffrey J. Liu, and Kenneth D. Karlin\* “Fe/Cu Complexes: Toward Understanding Heme-Copper Oxidase Structure and Function” *Chem. Rev.* **2018**, *118*, 10840–11022; published in the 2018 special issue titled “Oxygen Reduction and Activation in Catalysis”
12. **Gayan B. Wijeratne**, Melissa C. Denler, Derek B. Rice, Hannah E. Colmer, Victor W. Day, and Timothy A. Jackson\* “ $Mn^{III}$ -Peroxo Adduct Supported by a New Tetradentate Ligand Shows Acid-Sensitive Aldehyde Deformylation Reactivity” *Dalton Trans.* **2018**, *47*, 13442–13458.
11. Joshua D. Parham, **Gayan B. Wijeratne**, Derek B. Rice, and Timothy A. Jackson\* “Spectroscopic and Structural Characterization of  $Mn(III)$ -alkylperoxo Complexes Supported by Pentadentate Amide-containing Ligands” *Inorg. Chem.* **2018**, *57*, 2489–2502.
10. Derek B. Rice, **Gayan B. Wijeratne**, and Timothy A. Jackson\* “Mn K-edge X-ray Absorption Studies of Mononuclear  $Mn(III)$ -hydroxo Complexes” *J. Biol. Inorg. Chem.* **2017**, *22*, 1281–1293.
9. **Gayan B. Wijeratne**, Shabnam Hematian, Maxime A. Siegler, and Kenneth D. Karlin\* “Copper(I)/ $NO_{(g)}$  Reductive Coupling Producing a *trans*-Hyponitrite Bridged Dicopper(II) Complex – Redox Reversal giving Copper(I)/ $NO_{(g)}$  Disproportionation” *J. Am. Chem. Soc.* **2017**, *139*, 13276–13279.
8. Derek B. Rice, **Gayan B. Wijeratne**, Andrew D. Burr, Joshua D. Parham, Victor W. Day, and Timothy A. Jackson\* “Steric and Electronic Influence on Proton-coupled Electron-transfer Reactivity of a mononuclear  $Mn(III)$ -hydroxo Complex” *Inorg. Chem.* **2016**, *55*, 8110–8120.
7. **Gayan B. Wijeratne**, Eva M. Zolnhofer, Skye Fortier, Lauren N. Grant, Patrick J. Carroll, Chun-Hsing Chen, Karsten Meyer, J. Krzystek, Andrew Ozarowski, Timothy A. Jackson\*, Daniel J. Mindiola\*, and Joshua Telser\* “Electronic Structure and Reactivity of a Well-defined Mononuclear Complex of  $Ti(II)$ ” *Inorg. Chem.* **2015**, *54*, 10380–10397.
6. **Gayan B. Wijeratne**, Victor W. Day, and Timothy A. Jackson\* “O–H Bond Oxidation by a Monomeric  $Mn(III)$ -OMe Complex” *Dalton Trans.* **2015**, *44*, 3295–3306.

5. **Gayan B. Wijeratne**, Briana Corzine, Victor W. Day, and Timothy A. Jackson\* “Saturation Kinetics in Phenolic O–H Bond Oxidation by a Mononuclear Mn(III)–OH Complex Derived from Dioxygen” *Inorg. Chem.* **2014**, *53*, 7622–7634.
4. Hannah E. Colmer, Robert A. Geiger, Domenick F. Leto, **Gayan B. Wijeratne**, Victor W. Day, and Timothy A. Jackson\* “Geometric and Electronic Structure of a Peroxomanganese(III) Complex Supported by a Scorpionate Ligand” *Dalton Trans.* **2014**, *43*, 17949–17963.
3. Arron B. Wolk, Christopher M. Leavitt, Joseph A. Fournier, Michael Z. Kamrath, **Gayan B. Wijeratne**, Timothy A. Jackson, and Mark A. Johnson\* “Isolation and Characterization of a Peroxo Manganese (III) Dioxygen Reaction Intermediate Using Cryogenic Ion Vibrational Predissociation Spectroscopy” *Int. J. Mass Spectrom.* **2013**, *354–355*, 33–38.
2. Timothy A. Jackson\*, J. Krzystek, Andrew Ozarowski, **Gayan B. Wijeratne**, Benjamin F. Wicker, Daniel J. Mindiola, and Joshua Telser\* “Vanadocene *de Novo*: Spectroscopic and Computational Analysis of Bis( $\eta^5$ -Cyclopentadienyl)Vanadium(II)” *Organometallics* **2012**, *31*, 8265–8274.
1. Robert A. Geiger, **Gayan B. Wijeratne**, Victor W. Day, and Timothy A. Jackson\* “Steric and Electronic Influences on the Structures of Peroxomanganese(III) Complexes Supported by Tetradentate Ligands” *Eur. J. Inorg. Chem.* **2012**, *2012*, 1598–1608.

### Invited Seminars, Conferences and Workshops

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6. Organizer, “Small-molecule model systems in mimicking metals in biology” symposium, Southeast Regional Meeting of the ACS 2021 – November 10<sup>th</sup> – 13<sup>th</sup>, 2021 – Birmingham, AL
5. 259<sup>th</sup> ACS National Meeting – *Symposium: Creative Advances in Synthetic and Biological Coordination Chemistry* (in honor of 70<sup>th</sup> birthday of Prof. Ken D. Karlin, Johns Hopkins University) – March 22<sup>nd</sup> – 26<sup>th</sup>, 2020 – Philadelphia, PA
4. Tennessee Tech University, Cookeville, TN – November 15<sup>th</sup>, 2019
3. Samford University, Birmingham, AL – November 8<sup>th</sup>, 2019
2. Southeast Regional Meeting of the ACS 2019 – *Symposium: Recent advances in bioinorganic chemistry* – October 20<sup>th</sup> – 23<sup>rd</sup>, 2019 – Savannah, GA
1. Sewanee – The University of the South, Sewanee, TN – October 05<sup>th</sup>, 2018

#### Workshops:

1. ACS New Faculty Workshop – August 1<sup>st</sup> – 3<sup>rd</sup>, 2019 – Washington, D.C.

#### Research Presentations (Oral):

2. **Gayan B. Wijeratne**, Shabnam Hematian, Maxime A. Seigler, and Kenneth D. Karlin “New Insights into Copper-nitrosyl Chemistry and Isolation and Characterization of a *trans*-hyponitrite-bridged Dicopper(II) Complex”  
Presented at 254<sup>th</sup> ACS National Meeting, August 20 – 24, 2017, Washington, D.C.

1. **Gayan B. Wijeratne**, Andrew D. Burr, Briana Corzine, and Timothy A. Jackson “Dioxygen Activation Under Ambient Conditions Using Bio-inspired Manganese(II) Complexes to Generate Mid-valent Oxidants for Catalytic O–H Bond Oxidations”  
Presented at 249<sup>th</sup> ACS National Meeting, March 22 – 26, 2015, Denver, CO

Research Presentations (Poster):

6. **Gayan B. Wijeratne**, Briana Corzine, Andrew D. Burr, and Timothy A. Jackson “Tuning Reactivity of Mid-valent Manganese Oxidants: Toward Greener Catalysis”  
Presented at the Center for Environmentally Beneficial Catalysis (CEBC) Industry Advisory Board and Science Advisory Board Meeting, October 5 – 6, 2014, Lawrence, KS
5. **Gayan B. Wijeratne**, Victor W. Day, and Timothy A. Jackson “Catalytic Reduction of Dioxygen to Water Involving a Structurally Characterized Mn(III)–OH Species”  
Presented at Gordon Conference: Graduate Research Seminar, January 30 – February 02, 2014, Ventura, CA
4. **Gayan B. Wijeratne**, Briana Corzine, and Timothy A. Jackson “Mechanistic and Kinetic Analysis of Catalytic O–H Bond Oxidation Using a Mononuclear Manganese(II) Complex and Dioxygen”  
Presented at the Center for Environmentally Beneficial Catalysis (CEBC) Industry Advisory Board and Science Advisory Board Meeting, April 14 – 15, 2014, Lawrence, KS
3. **Gayan B. Wijeratne**, Briana Corzine, and Timothy A. Jackson “Phenol Oxidation by Mn<sup>III</sup>–OH/–OMe Complexes Generated from O<sub>2</sub>”  
Presented at the Center for Environmentally Beneficial Catalysis (CEBC) Industry Advisory Board and Science Advisory Board Meeting, October 7 – 8, 2013, Lawrence, KS
2. **Gayan B. Wijeratne**, Robert A. Geiger, and Timothy A. Jackson “Spectroscopic and Computational Studies of the Effects of Ligand Perturbations on the Geometric and Electronic Structures of Peroxomanganese(III) Adducts”  
Presented at Kansas Physical Chemistry Symposium  
November 19, 2011, Lawrence, KS
1. Effects of Ligand Perturbations on the Electronic Structures of Peroxomanganese(III) Adducts  
**Gayan B. Wijeratne**, Robert A. Geiger, and Timothy A. Jackson “Effects of Ligand Perturbations on the Electronic Structures of Peroxomanganese(III) Adducts”  
Presented at 242<sup>nd</sup> ACS National Meeting, August 28 – September 1, 2011, Denver, CO

## Professional Memberships

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Center for Nanomaterial and Biointegration at UAB	2019 – present
Center for Free Radical Biology at UAB	2018 – present
American Society for the Advancement of Science (AAAS)	2018 – present
American Chemical Society (ACS)	2011 – present

Sri Lanka Association for the Advancement of Science (SLAAS)

2009 – present

### Student/Postdoctoral Researchers Mentored

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| 1. Pritam Mondal – Postdoctoral, University of Alabama at Birmingham       | Feb. 2019 – present   |
| 2. Amy Copes – Undergraduate, University of Alabama at Birmingham          | Feb. 2019 – present   |
| 3. Eunice Lim – Undergraduate, University of Alabama at Birmingham         | Jan. 2019 – present   |
| 4. Garrett Tolbert – Graduate student, University of Alabama at Birmingham | Apr. 2019 – present   |
| 5. Xyan Aguilar – Graduate student, University of Alabama at Birmingham    | Jan. 2019 – Nov. 2019 |
| 6. Diego E. Morett – Graduate student, Johns Hopkins University            | Jan. 2017 – June 2018 |
| 7. Hyun Kim – Graduate student, Johns Hopkins University                   | Jun. 2016 – June 2018 |
| 8. Joshua D. Parham – Graduate student, University of Kansas               | Jan. – Jun. 2015      |
| 9. Derek B. Rice – Graduate student, University of Kansas                  | Jan. 2014 – Jun. 2015 |
| 10. Andrew D. Burr – Undergraduate (freshman), University of Kansas        | Jan. 2014 – Jun. 2015 |
| 11. Briana Corzine – REU student, University of Kansas                     | May – Jul. 2013       |

### Contributions to Grant Writing

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1. Principle Investigator: Gayan B. Wijeratne – “Modeling Critical Aspects of Tryptophan Oxidation in Biology” – 2020 – UAB FDGP – Current status: In review
2. Principle Investigator: Kenneth D. Karlin – “Bioinorganic Copper Coordination Chemistry” – 2018 – NIH NIGMS – Current status: Funded
3. Principle Investigator: Kenneth D. Karlin – “Heme/Copper and Heme/Nonheme Iron O<sub>2</sub> and NO reactivity” – 2016 – NIH NIGMS – Current status: Funded
4. Principle Investigator: Timothy A. Jackson – “Mechanistic Studies to Enable Aerobic Oxidation of C–H Bonds by Manganese Catalysts” – 2015 – US-DOE – Current status: Funded
5. Principle Investigator: Timothy A. Jackson – “Structural and Electronic Contributions to Reactivity in Peroxomanganese(III) Compounds” – 2011 – NSF CAREER – Current status: Completed