

Hazem Amarne, Ph.D.

## CV

### Hazem Amarne

The University of Jordan  
Department of Chemistry  
Amman 11942 - Jordan  
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#### EDUCATION

- 2007-2011**    **Ph.D. Student**, Queen's University, Kingston, ON, Canada  
Thesis title "Photochromic N,C-Chelate Four-Coordinate Organoboron Compounds"
- 2004-2006**    **M.Sc. Student**, McMaster University, Hamilton, ON, Canada  
Thesis title "Synthesis and Applications of Siloxane Boronic Acids and Siloxane Boronates"
- 1997-2000**    **M.Sc. Student**, Jordan University of Science & Technology, Irbid, Jordan  
Thesis title "Synthesis, Characterization, and Pyrolysis of Alkaline Earth Polycarbosilazane Macromolecular Complexes"
- 1991-1995**    **B.Sc. Student**, Jordan University of Science & Technology, Irbid, Jordan

#### PROFESSIONAL EXPERIENCE

- 10/2022- present**    **Associate Professor** at The University of Jordan- Amman - Jordan  
**Courses Taught:** general chemistry (I), general chemistry (II), inorganic chemistry (I), inorganic chemistry (II), organometallic chemistry, chemical applications of group theory, and general chemistry labs.
- 7/2019- 9/2022**    **Assistant Professor** at The University of Jordan- Amman - Jordan  
**Courses Taught:** general chemistry (I), general chemistry (II), inorganic chemistry (I), inorganic chemistry (II), organometallic chemistry, chemical applications of group theory, and general chemistry labs.
- 9/2017-6/2019**    **Full Time Lecturer** at The University of Jordan- Amman - Jordan  
**Courses Taught:** general chemistry (I), general chemistry (II), inorganic chemistry (I), inorganic chemistry (II), and general chemistry labs.
- 9/2015-8/2017**    **Full Time Lecturer** at Hashemite University- Zarqa - Jordan  
**Courses Taught:** General chemistry, basics of general chemistry, inorganic chemistry (I), inorganic chemistry (II), and experimental inorganic chemistry.
- 9/2012-12/2014**    **Post-Doctoral Fellow** University of Windsor, Windsor-Ontario, Canada.  
**Focus:** Supramolecular chemistry: synthesis and characterization of Metal-Organic Rotaxane Frameworks (MORFs).  
Development of new organoboron-based Metal-Organic Frameworks (MOFs).

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- 9/2011-8/2012**      **Post-Doctoral Fellow** University of Windsor, Windsor-Ontario, Canada.  
**Focus:** Electrochemical devices Fabrication and evaluation of light-emitting electrochemical cells based on Ir and Ru complexes.
- 2002-2004**      **Research and Development Chemist** International Pharmaceutical Research Center (www.iprc.com.jo) Amman-Jordan.
- Development and validation of new analytical methods to quantify trace amounts of different drugs in human plasma using LC-MS (Waters and Thermo Finnigan). In addition, GLP were conducted and regular calibration and maintenance of all instruments were performed. Also, duties included preparation for lab inspections by FDA.
- 2000-2001**      **Research and Development Manager** ASTRACHEM, manufacturers of agrochemical formulations and fertilizers- Dammam-Saudi Arabia.
- Analysis and formulation of new agrochemicals and fertilizers formulations in addition to applying GLP and writing SOP manuals.

## **RESEARCH EXPERIENCE**

**Current Research Interests** University of Jordan, Amman, Jordan.

1. Synthesis and applications of new organometallic compounds, focusing on main group elements.
2. Synthesis of luminescent metal complexes (main group metals, transition metals, and lanthanides).
3. Synthesis and applications (luminescence, catalysis, and medicinal properties) of new MOFs and COFs.

**Postdoctoral Fellow** University of Windsor, Windsor-Ontario, Canada.

**Focus:** Supramolecular chemistry: synthesis and characterization of Metal-Organic Rotaxane Frameworks (MORFs).

Development of new organoboron-based Metal-Organic Frameworks (MOFs).  
Electrochemical devices Fabrication and evaluation of light-emitting electrochemical cells based on Ir and Ru complexes.

**Graduate Research Assistant** Queen's University, Kingston-Ontario, Canada

**Focus:** Synthetic organic/main group chemistry, study of photochromic properties.

- Synthesis and manipulation of air-sensitive compounds using glovebox and Schlenk techniques.
- Synthesis and characterization of N,C-chelate organoboron compounds, including heterocyclic (pyrrole, furan, and thiophene)-based organoboron compounds and their corresponding ligands.
- Synthesis and characterization of organobismuth and organosilicon compounds.
- Study of photochemical and photophysical properties, including quantum yield measurements (Fluorescence and Actinometry).
- Performing and analyzing DFT and TD-DFT calculations.
- Performing multinuclear and variable temperature NMR studies including kinetic and titration studies.

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**Graduate Research Assistant** McMaster University, Hamilton, Canada

**Focus:** Synthetic organic/main group chemistry

- Synthesis, purification, and characterization of siloxane boronic acids and boronates. Synthetic techniques included reactions under inert atmosphere and metal-catalyzed reactions (hydrosilylation, hydroboration, and hydrogenation) in addition to general chemistry techniques (e.g.) Grignard reactions and protection/deprotection reactions.
- Purification techniques included: Silica-gel columns (mg - multi gram scales), distillation, and crystallization.
- Characterization techniques included multinuclear NMR techniques, FT-IR, and UV/VIS.

**Graduate Research Assistant** Jordan University of Science & Technology, Irbid, Jordan

**Focus:** Macromolecular chemistry

- Synthesis, characterization, and pyrolysis of alkaline earth polycarbosilazane complexes
- Study thermal properties using TGA/DSC techniques.

## JOURNAL PUBLICATIONS

- (24) Zakariyya Ishtaiwi\*, Deeb Taher, Marcus Korb, Wissam Helal, Hassan K Juwhari, Afnan Al-Hunaiti, Hazem Amarne, Khaleel Assaf, Lubna Alrawashdeh, Mohammad W Amer, Yaser A Yousef, Heinrich Lang\* "Luminescent materials based on N-(3-nitrophenyl)-N'-(4-R-C<sub>6</sub>H<sub>4</sub>)oxamato zincate(II) complexes" *J. Mol. Struct.* **2023**, 1288, 135747.
- (23) Randa M Al-As'ad\*, Abdel-Aziz Abu-Yamin\*, Marcus Korb, Khaled Al Khalyfeh, Ismael A Elayan, Mansour H Almatarneh, Hassan K Juwhari, Hazem Amarne, Deeb Taher, Zakariyya Ishtaiwi, Heinrich Lang "Synthesis, characterization, crystal structure and DFT calculations of dysprosiumIII-(E)-ethyl-4-(2-hydroxybenzylidene amino) benzoate" *J. Mol. Struct.* **2023**, 1280, 135061.
- (22) Muawia Alqasaimah, Abdel-Aziz Abu-Yamin\*, Suzan Matar, Khaled Al Khalyfeh, Tobias Ruffer, Heinrich Lang, Ibrahim AM Saraerah, Mahmoud Salman, Pawel Figiel, Grzegorz Leniec, Hazem Amarne, Deeb Taher "Preparation, spectroscopic investigation, biological activity and magnetic properties of three inner transition metal complexes based on (2-((p-tolylimino)methyl)phenol) Schiff base" *J. Mol. Struct.* **2023**, 1274, 134458.
- (21) Zakariyya Ishtaiwi\*, Deeb Taher\*, Marcus Korb, Wissam Helal, Afnan Al-Hunaiti, Hassan K. Juwhari, Hazem Amarne, Mohammad W. Amer, Yaser A. Yousef, Sami Klaib, Sultan T Abu-Orabi "Syntheses, crystal structures, DFT calculation and solid-state spectroscopic properties of new zincate (II) complexes with N-(4-substituted phenyl)-N'-(4-nitrophenyl)-oxamate" *Arab. J. Chem.* **2022**, 15 (12), 104349.
- (20) Hazem Amarne\*, Wissam Helal, Deeb Taher, Markus Korb, Afnan Al-Hunaiti "Crystal structure, Hirshfeld surface analysis and contact enrichment ratios of 5,5-dimethyl-2-(2,4,6-tris(trifluoromethyl)phenyl)-1,3,2-dioxaborinane" *Mol. Cryst. Liq. Cryst.* **2022**, 743 (1), 77.
- (19) Abdel-Aziz Abu-Yamin\*, Deeb Taher, Marcus Korb, Khaled Al Khalyfeh, Zakariyya Ishtaiwi, Hassan K. Juwhari, Wissam Helal, Hazem Amarne, Sami Mahmood, Reza Loloee, Yaser A. Yousef, Asma Ghazzy, Heinrich Lang "Synthesis, chemical and physical properties of lanthanide (III) (Nd, Gd, Tb) complexes derived from (E)-ethyl 4-(2-hydroxybenzylideneamino) benzoate" *Polyhedron.* **2022**, 222, 115906.
- (18) Asma Ghazzy, Deeb Taher\*, Marcus Korb, Khaled Al Khalyfeh, Wissam Helal, Hazem Amarne, Tobias Ruffer, Zakariyya Ishtaiwi, Heinrich Lang "Rearrangement of Diferrocenyl 3,4-Thiophene Dicarboxylate" *Inorganics*, **2022**, 10(7), 96.

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- (17) Khaled Al Khalyfeh\*, Deeb Taher\*, Wissam Helal, Marcus Korb, Hazem Amarne, Heinrich Lang “Crystal Structure and Hirshfeld Surface Analysis of Bis (3-thienoyl) Disulfide” *J. Chem. Crystallogr.* **2021**, 52, 113.
- (16) Alexander J Stirk, Benjamin H Wilson, Christopher A O’Keefe, Hazem Amarne, Kelong Zhu, Robert W Schurko, Stephen J Loeb\* “Applying reticular synthesis to the design of Cu-based MOFs with mechanically interlocked linkers” *Nano Res.* **2021**, 14(2), 417.
- (15) Hazem Amarne\*, Wissam Helal, Suning Wang “Synthesis, structure, and DFT calculations of a novel photoluminescent trisarylborane-bismuth(III) complex” *Luminescence.* **2019**, 34 (7), 731.
- (14) Deeb Taher\*, Firas Awwadi, Mousa Al-Noaimi, Lina K Khader, Hassan K Juwhari, Hazem Amarne, Mohammed H Kailani, Abdellatif Ibdah “Bis (N, N’-substituted oxamate) Zincate (II) complexes: Synthesis, spectroscopy, solid state structure and DFT calculations” *Inorg. Chim. Acta.*, **2019**, 487, 409.
- (13) Deeb Taher\*, Firas Awwadi, J.M. Speck, M. Korb, D. Schaarschmidt, C. Wagner, Hazem Amarne, K. Merzweiler, G. van Koten, H. Lang.\* “From ferrocenyl selenoesters to diferrocenyl methanols” *J. Organomet. Chem.* **2018**, 863, 1-9.
- (12) Soren K. Mellerup, Ying-Li Rao, Hazem Amarne, Suning Wang\* “Tuning the Colors of the Dark Isomers of Photochromic Boron Compounds with Fluoride Ions: Four-State Color Switching” *Org. Lett.* **2016**, 18(17), 4436–4439.
- (11) Ismail Elguraish, Kelong Zhu, Leslie Hernandez, Hazem Amarne, Jingwei Luo, V. Nicholas Vukotic, Stephen Loeb\* “Assembly of a M4L4 "folded-cube" using a T-shaped, right-angled ligand” *Dalton Trans.* **2015**, 44, 898-902
- (10) Ying-Li Rao, Hazem Amarne, Leanne Chen, Matthew Brown, Nicholas Mosey, Suning Wang\* “Photo and Thermal-induced Multi-structural Transformation of 2-phenyl-azolyl Chelate Boron Compounds” *J. Am. Chem. Soc.*, **2013**, 135, 3407-3410.
- (9) Michael Brook\*, Laura Dodge, Yang Chen, Ferdinand Gonzaga, Hazem Amarne “Sugar Complexation to Silicone-Boronic Acids” *Chem. Comm.* **2013**, 49, 1392-1394.
- (8) Ying-Li Rao, Hazem Amarne, Jia-Sheng Lu, Suning Wang\* “Impact of a Dithienyl Unit on Photostability of N,C-Chelating Boron Compounds” *Dalton Trans.* **2013**, 42, 638-644.
- (7) Ying-Li Rao, Hazem Amarne, Suning Wang\* “Photochromic Organoboron Compounds” *Coordination Chemistry Reviews*, **2012**, 256, 759-770.
- (6) Hazem Amarne, Chul Baik, Rui-Yao Wang, Suning Wang\* “Photoisomerization of 1-Phenyl - 2-(pyridin-2-yl)indole BMe<sub>2</sub>: The Dark Isomer” *Organometallics.* **2011**, 30, 665-668.
- (5) Zachary Hudson, Christina Sun, Michael Helander, Hazem Amarne, Zheng-Hong Lu, Suning Wang\* “Enhancing Phosphorescence and Electrophosphorescence Efficiency of Cyclometalated Pt(II) Compounds with Triarylboron” *Adv. Funct. Mater.* **2010**, 20, 3426-3439.
- (4) Hazem Amarne, Chul Baik, Stephen Murphy, Suning Wang\* “Steric and Electronic Influence on Photochromic Switching of N,C-Chelate Four-Coordinate Organoboron Compounds” *Chem. Eur. J.*, **2010**, 16, 4750-4761.
- (3) Chul Baik, Zachary Hudson, Hazem Amarne, Suning Wang\* “Enhancing the Photochemical Stability of N,C-Chelate Boryl Compounds: C-C Bond Formation versus C=C Bond cis, trans-Isomerization” *J. Am. Chem. Soc.*, **2009**, 131, 14549-14559.
- (2) Ying-Li Rao, Hazem Amarne, Shu-Bin Zhao, Theresa McCormick, Sanela Martic, Yi Sun, Rui-Yao Wang, Suning Wang\* "Reversible Intramolecular C-C Bond Formation/Breaking and Color Switching Mediated by a N,C-Chelate in (2-ph-py)BMe<sub>2</sub> and (5-BMe<sub>2</sub>-2-ph-py)BMe<sub>2</sub>" *J. Am. Chem. Soc.* **2008**, 130, 12898-12900.
- (1) Paul Zelisko, Hazem Amarne, Karen Neumann, Alex Bain\* “Extensions of a Basic Laboratory Experiment: [4+2] and [2+2] Cycloadditions” *J. Chem. Edu.*, **2008**, 85, 104-106.

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### **PATENTS**

Hazem Amarne, Ying-Li Rao, and Suning Wang\* "Boron compounds and use thereof" US provisional 61/470.046, Canada formal 2,735, 531, filed March 31, 2011, full patent application filed on March 31<sup>st</sup>, 2012, US2012/0253044 A1.

### **AWARDS**

**2007-2011** Queen's Graduate Award, Queen's University  
**2009** Discretionary Conference Award, Queen's University  
**2007** Discretionary Conference Award, Queen's University  
**2004** Manske-MacLean Bursary in Chemistry, McMaster University.  
**2004** Centennial Scholarship, McMaster University.

### **NOMINATIONS**

**2010/2011** (1) Fisher Scientific TA Award, Queen's University (2) Department of Chemistry TA Award for Excellence in Teaching, Queen's University  
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**2008/2009** Fisher Scientific TA Award, Queen's University