

Carlos Enrique Díaz, Ph.D.

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Education

University of Central Florida

Doctor of Philosophy in Chemistry

Dissertation Title: “Structure-Property Relationship of the
Two-Photon Circular Dichroism of Compounds with Axial and Helical Chirality”

Orlando, FL

August 2015

Universidad Central de Venezuela (Central University of Venezuela)

Licenciado en Química (Bachelor of Science in Chemistry)

Caracas, Venezuela

March 2006

Professional Experience

At University of Colorado Colorado Springs – Chemistry & Biochemistry

Graduate Program Director

Fall 2023 - Present

Teaching Professor of Chemistry

Fall 2023 - Present

Senior Instructor of Chemistry

Fall 2020 – Summer 2023

Instructor of Chemistry

Fall 2015 – Summer 2020

At Pikes Peak State College (part-time)

Adjunct Faculty

Spring 2016 - Present

At University of Central Florida

Graduate Research Assistant

Fall 2011- Spring 2014

Graduate Teaching Assistant

Spring 2009 – Spring 2011

Awards

- Outstanding Performance in the Chemistry Graduate Program – UCF Chem. Dept. – 2015.
- Outstanding Graduate Teaching Assistant - UCF Chem. Dept. - 2011.
- Outstanding Graduate Chemistry Seminar - UCF Chem. Dept. - 2011.

Professional Organization Affiliations

American Chemical Society

2010 - Present

Unknighted Chemists Graduate Student Association (Founding Member)

2014 - 2016

Conferences Presentations & Posters

1. **Carlos Díaz**, Lorenzo Echevarria, Antonio Rizzo, Florencio Hernández (April 2014) *Two-Photon Circular Dichroism of an Axially Dissymmetric Diphosphine Ligand with Strong Intramolecular Charge Transfer*. 11th UCF Graduate Research Forum. Orlando, Florida. Poster Session.
2. **Yuly Vesga**, **Carlos Díaz**, Mary Higgs, Florencio Hernandez (April 2014) *Two-photon circular dichroism of molecular structures simulating L-tryptophan residues in proteins with secondary structures*. 11th UCF Graduate Research Forum. Orlando, Florida. Poster Session.
3. **Carlos Díaz**, Lorenzo Echevarria, Florencio Hernández (March 2014) *Conformational study of an axially-chiral ligand in solution using two-photon circular dichroism and the fragment-recombination approach*. 247th ACS National Meeting & Exposition. Dallas, Texas. Oral Presentation.
4. **Carlos Díaz**, Alma Morales, Andrew Frazer, Kevin Belfield, Supriyo Rey, Florencio Hernández (March 2012) *Structural identification of a novel axially-chiral binaphthyl fluorene based Salen ligand in solution using electronic circular dichroism: A Theoretical-experimental analysis*. 25 Years of Excellence in Optics and Photonics Symposium at CREOL, The College of Optics and Photonics at UCF. Orlando, Florida. Poster Session.
5. **Carlos Díaz**, Na Lin, Leonardo De Boni, Remy Passier, Fabrizio Santoro, Antonio Rizzo, **Florencio Hernández** (June 2012) *Study of the effect of the π -electron delocalization curvature on the TPCD of molecules with axial chirality*. 24th International Symposium on Chirality. Fort Worth, Texas. Oral Presentation.
6. **Carlos Díaz**, Na Lin, Leonardo De Boni, Remy Passier, Fabrizio Santoro, Antonio Rizzo, Florencio Hernández (April 2012) *Study of the effect of the π -electron delocalization curvature on the TPCD of molecules with axial chirality*. 9th UCF Graduate Research Forum. Orlando, Florida. Poster Session.
7. **Carlos Díaz**, Alma Morales, Andrew Frazer, Kevin Belfield, Supriyo Rey, Florencio Hernández (December 2011) *Structural identification of a novel axially-chiral binaphthyl fluorene based Salen ligand in solution using electronic circular dichroism: A Theoretical-experimental analysis*. UCF 2011 Biophysics Forum. Invited Oral Presentation.
8. **Carlos Díaz**, Alma Morales, Andrew Frazer, Kevin Belfield, Suren Tatulian, Supriyo Rey, **Florencio Hernández** (March 2011) *Experimental-theoretical characterization of a new optically active binaphthyl fluorene based Salen ligand*. 241st ACS National Meeting & Exposition. Anaheim, California. Oral Presentation
9. Yuly Vesga, Carlos Díaz, Mary Higgs, Florencio Hernandez (March 2015) *Theoretical study of two-photon circular dichroism on molecular structures simulating aromatic amino acid residues in proteins with secondary structures*. 249th ACS National Meeting & Exposition. Denver, Colorado. Poster Session.

Publications

1. Rémy Passier, James P. Ritchie, Carlo Toro, **Carlos Díaz**, Artëm E. Masunov, Kevin D. Belfield and Florencio E. Hernandez, “Thermally controlled preferential molecular aggregation state in a thiocarbocyanine dye”, *J. Chem. Phys.* **133**, 134508-1–134508-7 (2010).
2. Carlos Toro, Rémy Passier, **Carlos Díaz**, Tero Tuuttila, Kari Rissanen, Juhani Huuskonen, Florencio E. Hernández, “Unveiling electronic transitions in three novel chiral azo-compounds using linear and nonlinear circular dichroism: A theoretical-experimental study”, *J. Phys. Chem. A* **115**, 1186–1193 (2011).
3. **Carlos Díaz**, Andrew Frazer, Alma Morales, Supriyo Ray, Kevin D. Belfield, Florencio E. Hernández “Structural identification of a novel axially-chiral binaphthyl fluorene based Salen ligand in solution using electronic circular dichroism: A Theoretical-experimental analysis”, *J. Phys. Chem. A* **166**, 2453–2465 (2012).
4. **Carlos Díaz**, Na Lin, Carlos Toro, Remy Passier, Antonio Rizzo, and Florencio E. Hernández, “The effect of the π -electron delocalization curvature on the two-photon circular dichroism of molecules with axial chirality”, *J. Phys. Chem. Lett.* **3**, 1808–1813 (2012). *Invited online presentation* @ <http://pubs.acs.org/iapps/liveslides/pages/index.htm?mscNo=jz300577e>
5. Marcelo G. Vivas, **Carlos Díaz**, Lorenzo Echevarria, Cleber R. Mendonca, Florencio E. Hernández, Leonardo De Boni, “Two-Photon Circular-Linear Dichroism of Perylene in Solution: A Theoretical-Experimental Study”, *J. Phys. Chem. B* **117**, 2742–2747 (2013).
6. **Carlos Díaz**, Lorenzo Echevarria, Florencio E. Hernández “Overcoming the existent computational challenges in the ab-initio calculations of the two-photon circular dichroism spectra of large molecules using a fragment-recombination approach”, *Chem. Phys. Lett.* **568-569**, 176–183 (2013).
7. Jose A. Tiburcio-Moreno, Lorenzo Echevarria, **Carlos Díaz**, J. J. Alvarado Gil and Florencio E. Hernandez, “Polarization dependent two-photon absorption spectroscopy on a naturally occurring biomarker (Curcumin) in solution: A Theoretical-experimental study”, *Chem. Phys. Lett.* **583**, 160–164 (2013).
8. **Carlos Díaz**, Lorenzo Echevarria, Florencio E. Hernández “Conformational study of an axially-chiral Salen ligand in solution using two-photon circular dichroism and the fragment-recombination approach”, *J. Phys. Chem. A* **117**, 8416–8426 (2013).
9. **Carlos Díaz**, Lorenzo Echevarria, Antonio Rizzo, Florencio E. Hernández, “Two-photon circular dichroism of an axially dissymmetric disphosphine ligand with strong intramolecular charge transfer, *J. Phys. Chem. A* **118**, 940–946 (2014).
10. Yuly Vesga, **Carlos Díaz**, Mary Higgs, Florencio E. Hernández “Two-photon circular dichroism of molecular structures simulating L-tryptophan residues in proteins with secondary structures, *Chem. Phys. Lett.* **601**, 6–12 (2014) - *Editor's Choice*.
11. Zahra Dezhahang, Mohammad Reza Poopari, Florencio E. Hernandez, **Carlos Díaz**, Yunjie Xu “Diastereomeric Preference of a Triply Axial Chiral Binaphthyl Based Molecule: a Concentration Dependent Study by Chiroptical Spectroscopies”, *PCCP* **16**, 12959–12567 (2014).
12. Yuly Vesga, **Carlos Díaz**, Florencio E. Hernández “Two-photon circular dichroism of molecular structures simulating L-Try, L-Phe and L-His residues in proteins with secondary structures, *RSC Adv.* **4**, 60974–60986 (2014).
13. **Carlos Díaz**, Ligia Llovera, Lorenzo Echevarria, Florencio E. Hernández, “Theoretical-Experimental Approach for the Tautomeric Population Assessment of Benzimidazole Derivatives in Solution via UV-vis Spectroscopy”, *J. Comput. Aided Mol. Des.* **29**, 143–154 (2015).

14. **Carlos Díaz**, Yuly Vesga, Lorenzo Echevarria, Irena G. Stara, Ivo Starý, Emmanuel Anger, Chengshuo Shen, Mehdi El Sayed Moussa, Nicolas Vanthuyne, Jeanne Crassous, Antonio Rizzo, Florencio E. Hernandez, “Two-photon absorption and two-photon circular dichroism of hexahelicene derivatives: a study of the effect of the nature of intramolecular charge transfer” *RSC Adv.* **5**, 17429–17437 (2015).
15. Daniele Padula, Inmaculada R. Lahoz, **Carlos Díaz**, Florencio Hernández, Lorenzo Di Bari, Antonio Rizzo, Fabrizio Santoro, Magdalena Cid “A combined experimental-computational investigation to uncover the puzzling behavior of chiral pydocyclophanes: chiroptical response and one- and two-photon absorption” *Chm. Eur. J.* **21**, 12136-12147 (2015).
16. Julie Donnelly, **Carlos Díaz**, Florencio E. Hernández “OCTET & BIOTEC: A Model of a Summer Intensive Designed to Cultivate the Future Generation of Young Leaders in STEM” *J. Chem. Ed.* DOI: 10.1021/acs.jchemed.5b00664, (2016).
17. Henry E. Williams, **Carlos Díaz**, Gabriel Padilla, Florencio E. Hernández, Stephen M. Kuebler, “Order of Multi-Photon Excitation in the Photoresist SU-8”, *J. Appl. Phys.* **121**, 223104 (2017)
18. Yuly Vesga, **Carlos Díaz**, Jeanne Crassous, Florencio E. Hernández, “TPA and TPCD of a Hexahelicene Derivative with a Terminal Donor-Phenyl-Acceptor Motif”, *J. Phys. Chem. A* **122**, 3365-3373 (2018).