

DOUGLAS M. FRANZ

- E-mail: dfranz@mail.usf.edu
- [Google Scholar](#)
- [Github](#)
- [LinkedIn](#)

EDUCATION

- Palm Harbor University High School, 2009
 - GPA: 4.07
 - Summa Cum Laude International Baccalaureate Programme Diploma (35 university credits)
- University of South Florida, Honors College. B.S. Degree, Aug. 10, 2013
 - GPA: 3.22; 136 credits
 - Major: *Environmental Science & Policy*
- University of South Florida, Dept. of Chemistry, 2014 – present
 - Third year Ph.D. candidate, expected graduation: Aug. 2019
 - Concentration: *Computational chemistry*
 - Mentor: Dr. Brian Space

WORK EXPERIENCE (OLDEST FIRST)

- **Web Developer and Programming Consultant, March 2007 – present.**
 - <http://www.spapartsnet.com>
 - <http://arborist.forest.usf.edu>
 - <http://www.ultramx.com>
 - <http://www.getdtsi.com>
 - <http://www.bellamichelledayspa.com>
 - <http://www.neosmassage.com>
 - <http://www.comfortcareac.com>
- **Maintenance, Countryside Christian Center, Clearwater, FL, January 2008-August, 2009.**
 - Prepared rooms and sanctuary for services, set up chairs, cleaned rooms, set up the sound equipment, often ran the soundboard during service
- **Cashier, Sweetbay Supermarket, Tampa, FL, March 2010 – January 2011.**
 - Cashier and bagger
- **SAT Teacher, The Princeton Review, Tampa, FL, February 2011 – April 2011.**
 - Taught and tutored students for the SAT

- **Manager, Bella Michelle Day Spa, Clearwater, FL, April 2012 – June 2012.**
 - Dealt with clients, answered phones, coordinated spa services, cleaned the facility, handled payroll, etc.
- **Academic Tutor, University of South Florida Athletic Dept., Tampa, FL, September 2012 – February 2013.**
 - Tutoring in subjects including math up to Calculus II, General Chemistry, Professional Ethics, Oceanography and Environmental Sciences
- **Chemistry Lab Instructor, University of South Florida, Tampa, FL, August 2014 – present.**
 - Teaching Assistant position for:
 - General chemistry (I and II) labs and lecture
 - Organic chemistry (I and II) labs
 - Physical chemistry lecture
 - Intro-chemistry discussion sections
- **Research Associate, University of South Florida Information Technology / Chemistry, Tampa, FL, January 2017 – present.**
 - Computational studies of metal-organic framework interactions with adsorbed molecules.

ACADEMIC AWARDS AND SCHOLARSHIPS

- USF Presidential Scholars Award (2009, 2010)
 - Bright Futures Academic Scholars Award (2009 - 2013)
 - Federal Pell Grant (2009, 2010, 2012, 2013)
 - USF Honors College Scholarship (2009, 2010, 2012, 2013)
 - USF Undergraduate Research Scholarship (2009, 2010)
 - Florida Student Assist Grant (2009, 2010)
 - USF UR ONS Scholarship (2010)
 - Fred L. & Helen Tharp Endowed Scholarship (2010)
 - Federal SMART Grant (2010)
 - Outstanding Undergraduate Research Presentation Award, Environmental Sciences, Florida Academy of Sciences (2011)
 - Study Abroad Scholarship for study in Germany (Universität Osnabrück) (2013)
 - Martin Travel Award for Graduate Research (to U. Texas at Austin) (USF) (2015)
 - First Place Graduate Talk, USF Chemistry Castle Research Conference (2016)
 - Alexiou Award in Environmental Chemistry, USF Dept. of Chemistry (2017)
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RESEARCH EXPERIENCE

- Dr. Bill Baker (USF), *Discovery of Chemotherapeutic agents from marine invertebrates and other species. 2009.*
 - Involved basic biochemical lab work assisting graduate students: cleaning receptacles, working with various chemicals and treating biological samples with methanol.
- Dr. Dean Martin (USF), *Removal of contaminants from water using Octolig. 2010-2013.*
 - Performed column chromatography and batch experiments to determine the capacity of a polyethylene diimine (Octolig) and its metal derivatives (Cuprilig, Ferrilig, Cobaltilig and others) to remove contaminants (phosphate, nitrate, arsenate, BPA model compounds and others) from water.
- Dr. Brian Space (USF), *Computational/Theoretical analysis of gas sorption capacities of Metal-organic materials. 2014 – present.*
 - Involves development of better metal organic materials for environmental and industrial application using ab-initio quantum mechanical calculations and classical Monte Carlo methods to simulate sorption of different gases in different metal-organic materials.
- Dr. Randy Larsen (USF), *Investigations of Ruthenium bipyridine interactions with metal-organic frameworks. 2017 – present.*
 - Involves determination of bound-structure of the Ruthenium complex in metal-organic frameworks for use as electron-transfer media.

PRESENTATIONS / TRAVEL

- Oral Presentation: “Comparison of anion removal capacities of Octolig and Cuprilig.” Florida Academy of Sciences 50th Annual Meeting, Melbourne, FL. **2011.**
- Poster Presentation: “Bisphenol acetone: what to do when an apparently good invention goes wrong?” National Academy of Inventors 2nd Annual Conference, Tampa, FL. **2013.**
- Poster Presentation: “Removal of BPA model compound using metalloligs, metal derivatives of Octolig(R)”. University of South Florida Castle Conference, Tampa, FL. **2013.**
- Poster Presentation: “Understanding MOF/gas interactions by calculation of relative atomic charges in the MOF NOTT-112”. University of South Florida Castle Conference, Tampa, FL. **2015.**

- Summer Supercomputing Institute Attendee. Texas Advanced Computing Center (TACC), University of Texas at Austin. **2015**.
- Oral Presentation: “Hydrogen Gas Sorption in MOF NOTT-112”. University of South Florida Castle Chemistry Conference, Tampa, FL, **2016**.
- Oral Presentation: “Gas sorption in rht-MOF-9”. University of South Florida Castle Chemistry Conference, Tampa, FL, **2017**.
- Oral Presentation: “Gas sorption in rht-MOF-9”. ACS FAME Conference. Palm Harbor, FL, **2017**.
- Oral Presentation: “Gas sorption in rht-MOF-9”. LAMMPS Conference, Sandia National Laboratories, Albuquerque, NM, **2017**.

PUBLICATIONS

1. Martin, Dean F. and Douglas M. Franz (**2011**): Comparison of anion removal capacities of Octolig® and Cuprilig, *J. Environ. Sci. Hlt, Part A*. 46:14, 1619-1624. <http://www.tandfonline.com/doi/abs/10.1080/10934529.2011.623634>
2. Franz, Douglas M. and D. F. Martin (**2011**), Evaluation of the removal capacities of Octolig®, a supported polyethylimine, for selected anions. *Florida Scientist*, 74 (S1), 70-71.
3. Franz, Douglas. M. and Dean. F. Martin (**2013**), Enhanced removal of aqueous BPA Model Compounds Using Metalloligs, *J. Environ. Sci. Hlt, Part A*. 49, 307-312. <http://www.tandfonline.com/doi/abs/10.1080/10934529.2014.846637#.Uv1nWLRnF9Y>
4. Franz, Douglas M. (**2013**), Removal of aqueous BPA Model Compound 4-t-butylphenol Using Metalloligs, *USF Honors College Research Theses in Chemistry Spring 2013*, 41 pages.
5. Franz, D.; Forrest, K. A.; Pham, T.; Space, B. Accurate H₂ Sorption Modeling in the rht-MOF NOTT-112 Using Explicit Polarization. *Cryst. Growth Des.* **2016**, DOI: [10.1021/acs.cgd.6b01058](https://doi.org/10.1021/acs.cgd.6b01058).
6. Pham, T.; Forrest, K.; Franz, D.; Space, B. Predictive Models of Gas Sorption in a Metal-Organic Framework with Open-Metal Sites and Small Pore Sizes. *Phys. Chem. Chem. Phys.* **2017**, DOI: [10.1039/C7CP02767B](https://doi.org/10.1039/C7CP02767B)

7. Pham, T.; Forrest, K.; Franz, D.; Space, B. Experimental and Theoretical Investigations of the Gas Adsorption Sites in rht-Metal–Organic Frameworks. *Cryst. Eng. Comm.* (2017). [DOI: 10.1039/C7CE01032J](https://doi.org/10.1039/C7CE01032J)

MEMBERSHIP, LEADERSHIP & SERVICE ACTIVITIES

- *Research Mentor for High School teachers*, USF RET Summer Program (2016 – pres.)
 - Ileana Luna (2017)
 - Nicholas Hutchinson (2016)
 - Jesse Hope (2015)
- *Research Mentor for undergraduates*, USF (2014 – pres.)
 - Zac Dyott
 - Matthew Mostrom
 - Sean Carter
 - Luci Laratelli
 - Logan Ritter
- *Research Conference Committee planning member*, USF Castle Conf. (2016, 2017)
- *University Lab and Field Safety Committee Member*, USF (2014 – pres.)
- *Environmental Health & Lab Safety Committee Member*, Dept. of Chemistry, USF (2014 – pres.)
- *Volunteer*, Hospice of Florida Suncoast, Jan. 2006 – Jun. 2009 (over 200 hrs.)
- *Youth/Children's Leader*, Countryside Christian Center (2006 - 2014)
- *Member*, National Society of High School Scholars
- *Member*, American Chemical Society
- *Member*, Florida Academy of Sciences
- *Member*, Phi Sigma Theta National Honor Society
- *Member*, National Society of Collegiate Scholars
- *Member*, USF Honors College Alumni

LANGUAGE SKILLS AND GLOBAL EXPERIENCE

- 5 years of **Spanish** education and 9 months of language immersion in Colombia, South America (**2011 - 2012**). Conversationally fluent.
- Elementary skill in **German & Hebrew**.
- Traveled to Germany for lingual and historical study-abroad for one month. **2013**.
- Traveled to Israel for a historical tour. **2014**.
- Missions team member:
 - Jamaica, **2006** (1 week)
 - Worked on construction of a church/children's facility and assisted with children's ministry
 - Dominican Republic, **2007** (1 week) & **2008** (1 week)
 - Brought medicinal supplies and gave free medical aid to villages

- with no healthcare.
- Honduras, **2010** (2 weeks)
 - Worked on construction of a fish farm for locals and assisted in children's food kitchen in Cusuna, a seaside village. Also assessed water supply quality using analytical supplies provided by Dr. Dean Martin from USF. Samples were tested for ionic contamination by Tampa Bay Water, thanks to Mr. Stephen Foster.

TEST SCORES

- SAT: 780/800 Math; 640/800 Reading; 720/800 Writing; 12/12 Essay, **2009**
- GRE: 163/170 Verbal; 160/170 Quantitative; 4.5/6 Writing, **2012**
- American Chemical Society Graduate Qualifying exams passed, **2015**
 - Organic
 - Physical
 - Analytical

SKILLS

- Laboratory chemistry skills:
 - Electrochemistry
 - Spectrophotometry
 - Organic synthesis
 - Column chromatography
- Programming language proficiencies:
 - Advanced:
 - HTML, CSS, PHP (OOP, MVC), MySQL, JavaScript, jQuery, Python, BASH, LaTeX, C, C++
 - Intermediate:
 - XML, Java, SQLite, QML
 - Basic:
 - C#, XAML, VBScript
- Advanced Proficiency with the following software:
 - Microsoft Office & Linux equivalent
 - Q-Chem, NWChem, Orca (Quantum Chemistry software)
 - Visual Molecular Dynamics, Molden (Chemical visualization software)
 - Android Studio, Qt Creator (app development IDEs)
 - Macromedia Dreamweaver (web app development IDE)
 - Notepad++, Geany, gEdit, sublime, vim (code editors)
 - Microsoft Visual Studio
 - Intuit Quickbooks
 - Salon Iris
 - GIMP (Graphic design tool)

- R-Studio (Statistics software)
- And the following operating systems:
 - Windows 2000, XP, Vista, 7, 8, 10
 - Mac OSX
 - Linux Ubuntu, Fedora, RedHat
- Other:
 - Acoustic and electric guitar, drums, and piano
 - Metallurgy (smelting and casting); electroplating
 - Natural product distillation
 - Electrical engineering (soldering circuit boards)