Jeff Lengyel

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Professional Experience

Research Assistant
Florida State University
2013 – 2018

- Synthesized, and characterized molecular materials to rationally design new dielectrics.
- Performed routine maintenance and troubleshooting on single-crystal diffractometer in the departmental X-ray facility.

Teaching Assistant
Florida State University
2013 – 2019

- **Recitation:** General Chemistry II (1046)
- **Laboratory:** Advanced Physical Chemistry (4411L), Organic Chemistry (2211L), General Chemistry I (1045L), General Chemistry II (1046L)

Research Assistant
Kent State University
2009 – 2013

- Synthesized low-coordinate transition metal complexes and characterized them using single-crystal X-ray diffraction.
- Secured three months of funding from the research experience for undergraduates (REU) program sponsored by the NSF.

Teaching Assistant
Kent State University
2011

- **Laboratory:** Chemistry in our World (10030)

Education

Materials Chemistry (Ph.D.)
Expected 2019
Florida State University

- **Dissertation:** *Dielectric and Magnetic Properties of Hydrogen Bonded Molecular Co-crystals*.
- Traveled to Oak Ridge National Laboratory (ORNL) in July 2018 to perform single-crystal neutron diffraction measurements using the TOPAZ instrument.
- Jointly advised by Prof. Naresh Dalal and Prof. Michael Shatruk.

Education Continued

Chemistry (B.S.)
Received 2013
Kent State University

- **Honors Thesis:** *The Synthesis, Characterization, and Reactivity of Low-Coordinate, Metal Amides*.
- Advised by Prof. Scott Bunge.
- Awarded scholarships from the Honors College and Choose Ohio First for academic achievements.

Participant in Research Projects

- **Light-Induced Magnetic Switching as a Trigger for Phase Transitions in Molecular Materials**
  Michael Shatruk (PI), Naresh Dalal (Co-PI)
  Funded by National Science Foundation (1464955)
  Total award $477,169 (September 2015 – April 2019)
  I was one of the graduate students participating in this NSF-funded research project.
- **Planning Grant: Toward Rational Design and Discovery of Organic Ferroelectrics**
  Michael Shatruk (PI), Naresh Dalal (Co-PI)
  Funded by Florida State University Council on Research and Creativity
  Total award $13,000 (December 2016 – December 2017)
  I was the sole graduate student who worked on this seed research grant.

Mentoring Experience

- **Chuming Wang:** Undergraduate student research experience (2018)
- **Jasmine Zou:** High-school student research experience (2016)
- **Emily Case:** High-school student research experience (2015)
- **Gary Soza:** Undergraduate student research experience (2014)

Awards & Honors

- **Cover Art:** Produced a piece of original artwork intended to convey the scientific content of Ryan et. al. 2018. This artwork was selected as the August 2018 cover of the *Journal of the American Chemical Society*.
- **Media Appearances:** Interviewed by WTXL, Florida State University Department of Media Relations and Chemistry World regarding Ryan et. al. 2018.

Awards & Honors Continued

- **Travel Grants:** Received an award of $400 from the Department of Chemistry & Biochemistry at Florida State University to apply toward conference travel expenses and award of $250 from the Gordon Research Conference on Conductivity and Magnetism in Molecular Materials.

Technical Skills

- Inert atmosphere synthesis including glovebox and Schlenk line
- Single-crystal X-ray crystallography of small molecules (SCXRD)
- Single-crystal neutron crystallography of small molecules (TOPAZ Diffractometer at Oak Ridge National Laboratory)
- Powder X-ray crystallography (PXRD
- SQUID magnetometry
- Capacitance measurements for dielectric properties
- Differential scanning calorimetry (DSC) and thermogravimetric analysis (TGA)
- Infrared and UV-vis spectroscopy, including variable-temperature measurements.
- Standard laboratory and chemical safety

Software Experience

- **Data Visualization:** Origin, Microsoft Excel, MatPlotLib
- **Crystallography:** X-Seed, Olex-2, APEX II & III, Mercury, VESTA
- **Databases:** SciFinder, Reaxsys, Cambridge Crystallographic Database
- **Image Editing:** Adobe Photoshop, In-Design, and Illustrator
- **Languages:** Python, HTLM, CSS, JavaScript

Language Proficiency

- **English:** Native in speaking, writing and reading.
- **French:** Elementary in speaking, writing and reading.

Conferences & Workshops

- **Anti-Ferroelectricity in an Organic Acid-Base Salt (Oral Presentation)**
  Florida Inorganic and Materials Symposium 2018
  University of Florida, Gainesville, FL

CONFERENCES & WORKSHOPS CONTINUED

- **Anti-Ferroelectric Transition in an Organic Acid-Base Salt (Poster Presentation)**
  Gordon Research Conference & Symposium – Conductivity & Magnetism in Molecular Materials 2018
  Bryant University, Smithfield, RI
- **Small Molecule Crystallography School 2018 (Workshop Attendee)**
  University of Southern Florida, Tampa, Florida
- **Spin-Frustration in a Hexanuclear Iron(III) Complex (Poster Presentation)**
  Gordon Research Conference & Symposium, *Conductivity & Magnetism in Molecular Materials 2016*
  Mount Holyoke, South Hadley, MA
- **NMR Training Workshop 2016 (Workshop Attendee)**
  Florida State University, Tallahassee, Florida
- **Spin-Crossover Complexes & Hydrogen Bonding Motifs (Poster Presentation)**
  Florida Annual Meeting and Exposition 2015
  Tampa, FL
- **Molecular Ferroelectrics (Poster Presentation)**
  Florida Inorganic and Materials Symposium 2015
  University of Florida, Gainesville, FL
- **Multifunctional Molecules: Combining Spin Crossover and Dielectric Anomalies (Poster Presentation)**
  North American Solid-State Chemistry Conference 2015
  Florida State University, Tallahassee, FL
- **Molecular Analogues to Multiferroics: Coupling Ferroelectricity to Spin-Transitions (Poster Presentation)**
  Florida Annual Meeting and Exposition 2014
  Tampa, FL
- **Molecule Based Multiferroics (Poster Presentation)**
  Florida Inorganic and Materials Symposium 2014
  University of Florida, Gainesville, FL

REFEREED JOURNAL ARTICLES

1. Lengyel, J., Choi, E.S., Besara, Schoenemann, R.U., Ramakrishna, S. K., Balicas, L., McGill, S., Dalal, N.S., Shatruk, M. An antiferroelectric phase transition in a squaric acid and 2,3-dimethylpyrazine co-crystal. *(Just Submitted)*.
2. Lengyel, J., Stoian, S. A., Dalal, N., Shatruk, M. Directed synthesis and magnetic properties of a hexanuclear ferric cluster. *Polyhedron* **2018**.
3. Ryan, K., Lengyel, J., Shatruk, M. Crystal structure prediction via deep learning. *J. Am. Chem. Soc.* **2018**, *140*, 10158–10168.

REFEREED JOURNAL ARTICLES CONTINUED

4. Hrudka, J. J., Phan, H., Lengyel, J., Rogachev, A. Y.; Shatruk, M. The power of three: Incremental increase in the ligand field strength of n-alkylated 2,2′-biimdazoles leads to spin crossover in homoleptic Fe(II) complexes. *Inorg. Chem.* **2018**, 57, 5183–5193.
5. Yergeshbayeva, S., Hrudka, J. J., Lengyel, J., Erkasov, R., Stoian, S. A., Dragulescu-Andrasi, A., Shatruk, M. *Inorg.* Heteroleptic Fe(II) complexes with N_4S_2 coordination as a platform for designing of spin-crossover materials. *Inorg. Chem.* **2017**, 56, 11096–11103.
6. Singha Mahapatra, T., Basak, D., Chand, S., Lengyel, J., Shatruk, M., Bertolasi, V., Ray, D. Competitive coordination aggregation for V-shaped [Co_3] and disc-like [Co_7] complexes: synthesis, magnetic properties and catechol oxidase activity. *Dalton Trans.* **2016**, 45, 13576–13589.
7. Pait, M., Shatruk, M., Lengyel, J., Gómez-Coca, S., Bauzá, A., Frontera, A., Bertolasi, V., Ray, D. Two types of nitrito support for μ_4-oxido-bridged [Cu_4] complexes: synthesis, crystal structures, magnetic properties and DFT analysis. *Dalton Trans.* **2015**, 44, 6107–6117.