

# Ryan A. Beck

GRADUATE STUDENT

Seattle, WA

✉ rbeck4@uw.edu | 📱 rbeck4

## Education

### University of Washington

Seattle, WA

PH.D. IN CHEMISTRY

Sept. 2016 - Current

ADVISOR: PROF. XIAOSONG LI

GPA: 3.49 / 4.0

### York College of Pennsylvania

York, PA

B.S. IN CHEMISTRY, *Magna Cum Laude*. MINORS IN COMPUTER SCIENCE AND MATHEMATICS

Aug. 2012 - May 2016

GPA: 3.89 / 4.0

## Experience

### University of Washington

Seattle, WA

DIRECT TRAINEE

Mar. - June 2019

- Machine-learning collaboration with Maria Chan at Argonne national lab investigating material properties given geometric and elemental properties
- Used python ML packages to attempt to refine search for important descriptors

### York College of Pennsylvania

Seattle, WA

ORGANIC AND PHYSICAL CHEMISTRY LABORATORY PREPARATION

Aug. 2014 to May 2016

- Responsibilities include preparing and monitoring chemicals and supplies used during labs.

### York College of Pennsylvania

Seattle, WA

LAB ASSISTANT

Jan. 2013 to May 2016

- Responsibilities include monitoring students to ensure safe and time efficient behaviors.

## Honors & Awards

2018 - 2019 **Data Intensive Research Enabling Clean Technologies (DIRECT) Fellowship**, University of Washington

Seattle, WA

2016 **Excellence in Chemistry Graduate Fellowship Award**, University of Washington

Seattle, WA

2016 **South Eastern Pennsylvania Section of the American Chemical Society Outstanding Chemist**, York College of Pennsylvania

York, PA

2015 - 2016 **Alpha Chi Honor Society**, Pennsylvania Delta Chapter

York, PA

2012 - 2016 **Dean's List**, York College of Pennsylvania

York, PA

2012 **Eagle Scout**, Boy Scouts of America Troop 26

Wrightsville, PA

## Publications

6. Beck, R.A.; Lu, L.; Petrone, A.; Ong, A.C.; Pauzauskie, P.; Li, X., Spectroscopic Signatures of the B and H<sub>4</sub> Polyatomic Nitrogen Aggregates in Nanodiamond. *J. Phys. Chem. C*, **2020**, Submitted.
5. Sun, S.; Beck, R.A.; Williams-Young, D.B.; Li, X., Simulating Magnetic Circular Dichroism Spectra with Real-Time Time-Dependent Density Functional Theory in Gauge Including Atomic Orbitals. *J. Chem. Theory Comput.*, **2019**, 15, 6824-6831. DOI: 10.1021/acs.jctc.9b00632.
4. Crane, M.; Petrone, A.; Beck, R.A.; Lim, M.; Zhou, X.; Li, X.; Stroud, R.M.; Pauzauskie, P., High Pressure, High Temperature Molecular Doping of Nanodiamond. *Sci. Adv.*, **2019**, 5, eaau6073. DOI: 10.1126/sciadv.aau6073.
3. Leger, J.; Friedfeld, M.; Beck, R.A.; Gaynor, J.; Petrone, A.; Li, X.; Cossairt, B.; Khalil, M., Carboxylate Anchors Act as Exciton Reporters in 1.3 nm Indium Phosphide Nanoclusters. *Phys. Chem. Lett.*, **2019**, 10, 1833-1839. DOI: 10.1021/acs.jpclett.9b00602.
2. Petrone, A.\*; Beck, R.A.\*; Kasper, J.M.; Huang, Y.; Crane, M.; Pauzauskie, P.; Li, X., Electronic Structures and Spectroscopic Signatures of Silicon-Vacancy Containing Nanodiamonds. *Phys. Rev. B*, **2018**, 98, 205405. DOI: 10.1103/PhysRevB.98.205405.

1. **Beck, R.A.\***; Petrone, A.\*; Kasper, J.M.; Crane, M.; Pauzauskie, P.; Li, X., Effect of Surface Passivation on Nanodiamond Crystallinity. *J. Phys. Chem. C.*, **2018**, 122, 8573-8580. DOI: 10.1021/acs.jpcc.8b00354.

\*Co-First Authors

## Presentations

---

- |            |   |                          |
|------------|---|--------------------------|
| Oct. 2019  | <b>Beck, R.A.</b> ; Sun, S.; Liu, H.; Li, X., <i>Investigation of Layered Chromium Iodide Structures</i> . (Oral Presentation) Materials Research Science and Engineering Center.   | University of Washington |
| Sept. 2019 | <b>Beck, R.A.</b> ; Lu, L.; Petrone, A.; Ong, A.C.; Pauzauskie, P.; Li, X., <i>Spectroscopic Signatures of the Nitrogen B and H<sub>4</sub> Aggregates in Nanodiamonds</i> . (Poster) European Summerschool in Quantum Chemistry. | Sicily, Italy            |
| June 2019  | <b>Beck, R.A.</b> ; Sun, S.; Liu, H.; Li, X., <i>Investigation of Magnetic Properties of a Two-Dimensional Chromium Iodide Material</i> . (Oral Presentation) Northwest Theoretical Chemistry Conference.                         | Pullman, WA              |
| Sept. 2018 | <b>Beck, R.A.</b> ; Petrone, A.; Li, X., <i>Examination of Spectroscopic Signatures of Nanodiamond Defects</i> . (Oral Presentation) Materials Research Science and Engineering Center.   | University of Washington |
| Oct. 2017  | <b>Beck, R.A.</b> ; Petrone, A.; Li, X., <i>Spectroscopic Response to the Loss of Nanodiamond Surface Crystallinity</i> . (Poster) Northwest Theoretical Chemistry Conference   | Richland, WA             |
| Oct. 2017  | <b>Beck, R.A.</b> ; Petrone, A.; Li, X., <i>Spectroscopic Signatures of Surface Reconstructions of Nanodiamond</i> . (Oral Presentation) Materials Research Science and Engineering Center.                                       | University of Washington |
| Aug. 2017  | Petrone, A.; Williams-Young, D.B.; <b>Beck, R.A.</b> ; Li, X., <i>Surface Reorganization and X-ray Spectra of Nitrogen-Vacancy Containing Nanodiamonds</i> . (Oral Presentation) 254 <sup>th</sup> ACS National Meeting           | Washington D.C.          |
| Mar. 2016  | Esmeralda, L.; <b>Beck, R.A.</b> ; Halligan, K., <i>Crosslinking of the Antibody Anti-Human IL-13R Alpha 2 Peptide IgY to FITC via PDPH</i> . (Poster) 251 <sup>st</sup> ACS National Meeting                                     | San Diego, CA            |

## Extracurricular Activity

---

### Clean Energy Institute Ambassadors

University of Washington

- Solar cell demonstration at MESA Day
- Solar car derby at Thorton Creek Elementary
- Solar car derby at Engineering Discovery Days

### York College Chemistry Society

York College of Pennsylvania

- Chemistry Society secretary (2015-2016)
- Organization and facilitation of chemistry demonstrations to York Suburban High School
- Organization and facilitation of chemistry demonstrations for "Perspective Student" and "New Student" activities