

KRYŠTOF BŘEZINA

Theoretical Chemical Physics

@ krystof.brezina@uochb.cas.cz

+420 722 086 106

Prague, Czech republic

github.com/krystofbrezina

HIGHER EDUCATION

BSc. Studies (General Chemistry)

**Institute of Organic Chemistry and Biochemistry, AS CR
University of Chemistry and Technology**

Sept 2014 – June 2017

Prague, Czech republic

- Biophysical research in theoretical studies of large protein systems, namely insulin.
- Focus on interaction with small biogenic ligands.
- Advisor: Pavel Jungwirth (IOCB AS CR)
- BSc. thesis "Interaction of Arginine with Insulin and Effect on its Aggregation" (defended 2017).
- Collaboration with experimentalists in the fields of protein crystallography and electrophoresis.

MSc. Studies (Physical Chemistry)

**Institute of Organic Chemistry and Biochemistry, AS CR
University of Chemistry and Technology**

Sept 2017 – June 2019

Prague, Czech republic

- Research of solvated electrons and their application in organic chemistry with respect to the native solvated environment of liquid ammonia.
- Using the methods of *ab initio* molecular dynamics.
- Advisor: Pavel Jungwirth (IOCB)
Consultant: Ondřej Maršálek (MFF UK)
- MSc. thesis: "Quantum Chemistry Calculations of Solvated Electrons in the Context of the Birch Reduction" (defended 2019).

PhD. Studies (Theoretical Chemical Physics)

**Charles University, Faculty of Mathematics and Physics
Institute of Organic Chemistry and Biochemistry, AS CR**

2019 – Present

Prague, Czech republic

- Advisor: Ondřej Maršálek
- Focus on molecular simulations of hydrogen bonded liquid systems including nuclear quantum effects

PUBLICATIONS

- "Can Arginine Inhibit Insulin Aggregation? A Combined Protein Crystallography, Capillary Electrophoresis, and Molecular Simulation Study". JPC B 122(44), 2018 (Main author).
- "Valence and Core-Level X-ray Photoelectron Spectroscopy of a Liquid Ammonia Microjet", JACS 142(5), 2019 (Co-author).

SKILLS

Software Skills

- Knowledge of multiple programming languages including Python and Bash for with specialization in MD data analysis.
- Basics in deep learning (NVIDIA certified)
- Knowledge of Windows and UNIX-based OS.
- Experience in MD simulation program packages including CP2K, Gromacs and Amber.
- Preference to \LaTeX typesetting, but with a fluent knowledge of office text editors.

Academic Knowledge

- Successful completion of advanced university classes in mathematics, quantum mechanics, statistical mechanics and chemical thermodynamics.

Languages

- Fluent written and spoken English and Czech. Conversation level of French and German.

ACHIEVEMENTS

- Representation of the Czech republic at the 45th International Chemistry Olympiad in Moscow, Russia. Bronze medal award.
- 2013 Praemium Bohemiae award
- Regular awards of excellence scholarships and both BSc. and MSc. studies graduated with honors.
- Second prize in the UCT Student Scientific Conference in November 2018.

OTHER INTERESTS

- Side-by-side studies of Piano at the Prague Conservatoire between 2016 – 2017. Successful participation in international piano competitions around Europe, including a First prize award in the Valsesia Musica Junior Competition in Varallo Sesia, Italy in 2016.