



Raunak Farhaz

Date of birth: 09/01/1997

Nationality: Indian

Gender: Male

CONTACT



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ABOUT ME

Pursuing my Doctorate at the Institut für Chemie, Humboldt Universität zu Berlin.
I love Mathematics and Computers but maybe a bit Chemistry.

WORK EXPERIENCE

08/2020 – 06/2021 – Germany

Project Internship

Humboldt University, Berlin (supervisor: Dr. Florian Bischoff)

Topic: Familiarization with the technique of Multiresolution Analysis(MRA) in Quantum Chemistry and developing a basic HF code

- The project was done by **Work from Home** scenario, due to unprecedented **COVID-19 outbreak**.
- This project gained me an insight into the technique of using **MRA into quantum chemical calculation** which in very basic level is a calculation without basis sets and representing the wavefunction into a multidimensional grid which suffices the former.
- This project prepared me for **C++ language** as programming tool for computational chemistry.

11/2019 – 06/2020 – India

Master's Thesis Project

Jadavpur University (supervisor: Prof. Kalyan Kumar Das)

Topic: Theoretical study of adsorption of carbon monoxide on zinc oxide clusters: a study on gas sensing

- Analyzing the adsorption of carbon monoxide on zinc oxide clusters in silico. The work involves optimizing the geometries of the zinc oxide clusters with the carbon monoxide in a linear mode binding orientation as well as in a bent mode orientation using LanL2DZ as the basis set in Gaussian 09.

04/2018 – 09/2018 – India

Summer Internship

Indian Association for the Cultivation of Sciences (supervisor: Prof. Abhijit Kumar Das)

Topic: Theoretical study of cross catalytic coupling associated with Aluminium-Sulphur bond formation and hydrogen release

- Studied the thermochemistry and kinetics of a catalytic cycle with sustained hydrogen release. This project was funded by DST- INSPIRE summer internship program, **Govt. Of India**. A draft of the project report has been attached.

EDUCATION AND TRAINING

10/2021 – **CURRENT** – Raum-3'321, Institut für Chemie, Brook-Taylor-Straße 2, Berlin, Germany

Doctorate in Natural Sciences (Dr. Rer. Nat.)

Humboldt Universität zu Berlin

- Mainly developing Post-HF methods using the package for Multiresolution Analysis in Chemistry called M-A-D-N-E-S-S (info available in the link: <https://github.com/m-a-d-n-e-s-s/madness>)
- methods will be developed only for strong magnetic field calculations
- Hartree-Fock already done by PD Dr. F. A. Bischoff : <https://doi.org/10.1103/PhysRevA.101.053413>
- Post HF methods include - Configuration Interactions, Coupled Clusters and Møller-Plesset
- Application -- Analysing the results with actual spectra from the strong magnetic stellar bodies (eg. neutron stars, white dwarfs etc.)



Field(s) of study

- Theoretical Chemistry (Method Development)

Prediction of accurate vibronic spectra of molecules in strong magnetic field
| <https://www.chemie.hu-berlin.de/en/forschung-en/theoretical-chemistry/team/ag-bischoff/team>

07/2018 – 10/2020 – Kolkata, India

Master of Science

Jadavpur University

- Specialization in Physical Chemistry
- Current performance: 63.9%
- Recipient of **DST- Inspire SHE scholarship (registration no: 201500013130)** by **Government of India**

Field(s) of study

- Natural sciences, mathematics and statistics : *Chemistry*

Theoretical study of adsorption of carbon monoxide on zinc oxide clusters: a study on gas sensing | <http://www.jaduniv.edu.in/>

07/2015 – 05/2018 – Kolkata, India

Bachelor of Science

Jadavpur University

- Major in Chemistry
- Overall percentage: 51.3%
- Recipient of **DST- Inspire SHE scholarship 2015 (registration no: 201500013130)** by **Government of India**

Field(s) of study

- Natural sciences, mathematics and statistics : *Chemistry*

51.3% (Second Class with Distinction) | N/A | <http://www.jaduniv.edu.in/>

06/2013 – 05/2015 – Siuri, India

Higher Secondary Examination

Birbhum Zilla School

- West Bengal Council of Higher Secondary Examination
- performance: 86.8%

Field(s) of study

- Natural sciences, mathematics and statistics : *Chemistry* | *Physics* | *Mathematics* | *Statistics*

86.8% | N/A

08/2003 – 05/2013 – Siuri, India

Secondary Examination

St. Andrew's High School

- West Bengal Board of Secondary Examination
- Performance: 93%
- Holder of **HAJI MOHD. MAHASIN SCHOLARSHIP** by the **Govt. Of West Bengal** for achieving excellent grades in Secondary Level examination.

93% | N/A



LANGUAGE SKILLS

MOTHER TONGUE(S): Bengali

OTHER LANGUAGE(S):

English

Listening
C2

Reading
C2

Spoken
production
C1

Spoken
interaction
C1

Writing
C2

DIGITAL SKILLS

Microsoft Office / Proficient User of Latex / FORTRAN 77 / ORCA / Good knowledge in linux terminal / Julia (Programming Language) / GIT & Github / Gaussian 09 / Wolfram Mathematica (Basic)

CONFERENCES AND SEMINARS

02/2022 > - Humboldt Universität zu Berlin

Seminars

Title: "Multiresolution Analysis for Post-HF Methods in Strong Magnetic Fields" organised by Institut für Chemie, Humboldt Universität zu Berlin, Germany

- Speaker: Myself,
- Departmental Seminar (Winter Semester 2021)
- introductory talk for my PhD project and ongoing work

02/2020 > - Jadavpur University

Conferences

NATIONAL CONFERENCE ON: "CHEMICAL SCIENCES: TODAY AND TOMORROW"; UNDER CENTRE FOR ADVANCED STUDIES II PROGRAM; UGC; GOVT. OF INDIA

- Attended scientific lectures based on interdisciplinary fields and core and applied chemical sciences, given by the visiting faculties.
- Got an official certification for the attendance.

03/2019 > - Jadavpur University

Conferences

NATIONAL CONFERENCE ON: "CHEMICAL SCIENCES: TODAY AND TOMORROW"; UNDER CENTRE FOR ADVANCED STUDIES II PROGRAM; UGC; GOVT. OF INDIA

- Attended scientific lectures based on interdisciplinary fields and core and applied chemical sciences, given by the visiting faculties in the summer camp. Attended a special lecture on the topic "The use of synchrotron radiation in crystallography" by Prof Ennio Zangrando, University of Trieste, Italy.
- Got an official certification for the attendance.

SCIENCE CAMP

Science Camp

INSPIRE summer science camp organized by the Department of science and technology (DST), Government of India (June 2013)

- Attended Science camp at the National Institute of Technology (NIT, Durgapur) for three weeks.
- Observed the demonstration of instruments- UV-VIS Spectrometer, XRD, NMR, etc. given by the summer camp coordinators.
- Got an official certification for the attendance.



ACADEMIC ACHIEVEMENTS

Academic Achievements

- Secured 3rd position in the state for "Ajit Chatterjee Memorial Essay Competition" organized by WBGSTA, Govt. Of West Bengal.
- Secured 4th International rank in Mathematics Olympiad organized by *silverzone.org*
- Secured 1st position in the state for TTIS INFOCOM Information Technology QUIZ 2011 organized by TOWER GROUP OF INDUSTRIES.

EXTRA CURRICULAR ACTIVITY

I love ...

- all forms of music and playing guitar is my favourite pass time.
- cooking.
- literature and several forms of art.
- gardening
- travelling and sharing experiences