Dipesh Somvanshi

M.Sc. Chemistry (Computational Chemistry)

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SKILLS

Computational Chemistry	**Neural Networks from scratch**	**Experience with Supercomputers**	**Software Development**	**Quantum Mechanics**
Python	**Gaussian**	**Organic Chemistry**	**Basic Linux**	**Basic Scripting**

EDUCATION

M.Sc. Chemistry

Institute of Chemical Technology | 2018 – 2020

- Physical, Organic, Analytical and Inorganic Chemistry
- Course on Biochemistry in 3rd Semester
- Current GPA: 6.68 out of 10. Grade: BC

B.Sc. Chemistry

Ramnarain Ruia Autonomous College | 2016 – 2018

- Chemistry (Major), Physics (Minor), Mathematics
- GPA: 5.9 out of 7

MASTER'S THESIS

Theoretical Investigations and Predictions on the Catalytic cycle Mechanism of Pd/PTABS using DFT

Guide: Prof Anant Kapdi, Institute of Chemical Technology
Co-Guide: Prof Dilip Maity, Homi Bhabha National Institute (BARC)
Synthesis Collaborator: Prof Carola Schulzke, University of Greifswald, Germany

The project comprised of investigating the mechanism of recently developed catalyst by Kapdi Lab and predicting potential new structures for the next generation of catalyst. The catalyst was unique in nature due to a metal centre and 100+ atom count and a enzyme like behaviour. Various conformers were identified and initial reaction steps were analysed. The calculations were performed with Linux based Gaussian 16 on BARC supercomputer. Python was used for analysis. Experimental work was done by Siva Murty under Prof Carola Schulzke at Greifswald University, Germany.

EXPERIENCE

Institute of Chemical Technology

Junior Researcher (Temporary) | Oct 2020 – Present | Matunga Mumbai, Mumbai
Keywords: *Computational Chemistry*

Guide: Prof Anant Kapdi

- Investigation on backbonding and π-accepting nature of PTABS Ligand.

Tata Institute of Fundamental Research

Junior Researcher (Temporary) | Jun 2020 – Dec 2020 | Colaba, Mumbai
Keywords: *Neural Networks, Computational Chemistry*

Guide: Prof Vamsee Voora

- Application of neural networks on conducting solid state materials.

Hertford College, Oxford University

Junior Researcher (Collaboration) | Aug – Oct 2020 (3 Months) | Ambarnath, Thane
Keywords: *Computational Chemistry, Python, Automation*

Guide: Prof Anant Kapdi **Collaborator:** Prof Fernanda Duarte

- Investigation of possibility of modelling Pd/PTABS system on recently developed autodE software by Prof Fernanda Duarte.

Homi Bhabha National Institute, BARC

Master Project Student Jun 2019 – Jun 2020 (1 year) Anushakti Nagar, Mumbai
Keywords: *Computational Chemistry, Python, Supercomputer, Reaction Modelling*

Guide: Prof Anant Kapdi **Co-Guide:** Prof Dilip Maity
Synthesis Collaborator: Prof Carola Schulzke, University of Greifswald, Germany

- Worked on master thesis.
- Used Gaussian 16 with python and basic scripting, on a linux terminal of 300-core supercomputer.
- The system studied consisted of a organometallic catalyst with Palladium atom core and the catalyst size exceeding 100 atoms, unusual for a typical computational chemistry project.

Homi Bhabha National Institute, BARC

Intern May – Jun 2019 (2 months) Anushakti Nagar, Mumbai
Keywords: *Computational Chemistry, Python*

Guide: Prof Dilip Maity

- Studied theory and application of Computational Chemistry.
- Used Gaussian 09 with python and basic scripting, on a linux terminal of 16-core cluster.

Seminar on "Use of Deep Neural Networks on predicting Molecular properties"

Master Student Dec 2019 ICT, Mumbai
Keywords: *Theory of Neural Networks*

Guide: Prof Jayshree Nagarkar

- Seminar included history and mathematics of Deep Neural Networks and current tools being employed for predicting molecular properties.
- The seminar was presented in front of an external referee.

Bachelor's Research Project

Bachelor Student May 2017 – March 2018 (10 months) Ramnaraian Ruia AutoCollege, Mumbai
Keywords: *Microwave Synthesis, Organic Chemistry*

Guide: Prof Madhavi Badole

- Drastic reduction in reaction time with the use of formamide as a solvent and catalyst in microwave assisted knoevenagel synthesis of benzylidene malononitrile and it's effect on rate of reaction and percentage yield.

iWAB Solutions Pvt Ltd

iOS App Developer Jun – Aug 2016 (3 months) Ambarnath, Thane
Keywords: *iOS App Development, Software Development, Objective C*

- Worked as part of a team in developing an app for a tourism company.
- Responsibility included partial development of front end and UI components of the software with a team member.

iWAB Solutions Pvt Ltd

Intern iOS App Developer Jan – May 2016 (6 Months) Ambarnath, Thane
Keywords: *iOS App Development, Software Development, Objective C*

- Worked on various small projects.
- Responsibility included learning software development and contributing small snippets of code to various ongoing projects.
- Worked with various team members in a collaborative environment.

PUBLICATIONS

A research paper in a reputed journal is currently in progress.
Draft of a paper on Cu system is being prepared.

OTHER ACTIVITIES

Head of Departmental Festival (*Rasayanam*) Event "Lab Tours"

Rasayanam 2019 and 2020

- The event consisted of PhD students of various labs demonstrating university lab instruments.
- Responsibility included getting permissions and coordinating with PhD students (and their guides).
- Responsibility also included working with teammates for proper crowd management and co-ordination.

Attended DAE Computational Chemistry Symposium
November 7-9 2019

- Attended poster presentations and lectures by various computational chemistry experts.

AWARDS

Homi Bhabha Young Scientist
2012

State-wide contest with a written and practical exam.

Gold Medalist (Karate)
2015

Winner of state level karate tournament with a spot on National Team.

LANGUAGES

Marathi
Mother tongue – Fluent

Hindi
National Language – Fluent

English
Working Language – Fluent

Japanese
Upper Intermediate Proficiency

German
Very Elementary Proficiency

HOBBIES

Learning Languages

Karate

Reading