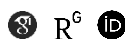


Aritra Roy

Theoretical Chemist

M.Sc. chemistry Student with a strong working knowledge of the **Chemical Information Science** and **Chemical Bonding Analysis**.

Interested in Theoretical Research of **Materials Designing, Nanomaterials, Electronic Structures, Catalysis, Energy Storage, DFT Calculations, Programming and AI-ML**



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github.com/aritraroy24 🐙

aritraroy24.medium.com 📖

SKILLS & TOOLS

Basic Computer Skills

MS Office (Excel, Word, PowerPoint) Knowledge Windows 10 Linux (Debian-based Distro) Touch Typing

Terminal (Bash, cmd, PowerShell) Troubleshoot Graphic Design (Ps, Canva) Googling

Chemistry Skills & Tools

- Physical Chemistry Inorganic Chemistry Organic Chemistry Theoretical Computational Chemistry Semiconductors Nanomaterials Surface Chemistry Basis Set Potential Energy Surface DOS PDOS Band Structure Dirac Cone Phonon Dispersion Chemical Bonding Borophene TD-DFT Electronic Structures Excited States

- Gaussian 16 GaussView 6.0 Spartan '14 WinCACAO ChemDraw Professional Origin 2018 Materials Studio 2017 Avogadro Math Editor EndNote X9 Multiwfn VMD

Programming Skills & Tools

- Python 3.x SciPy NumPy Matplotlib MATLAB C Programming Java HTML5 CSS3 JavaScript React Astro Build SASS
- GitHub Git Version Control Visual Studio Code Node Package Manager (npm) Yarn Firebase Expo CLI Chrome DevTools Netlify Deploy GitHub Pages

EDUCATION

- M.Sc. in Chemistry from Pondicherry University (3rd Position)
- B.Sc. in Chemistry from Ramakrishna Mission Vivekananda Centenary College, Rahara

CGPA 8.88 | July, 2019-Aug, 2021

CGPA 7.34 | July, 2016-May, 2019

- 10+2 Board Exam from Nabadwip Bakultala High School 89.2% | May, 2015-June, 2016
- Madhyamik Board Exam from Nabadwip Bakultala High School 90% | July, 2016-May, 2019

CHEMISTRY PROJECTS

- **Doping Induced Charge Transfer for Functionalized Graphene**

DOI: NA (Ongoing Project)

Jul, 2023 - Present

Felipe Fantuzzi Group (Kent University, UK): Guest Researcher

In this study, we will study charge transfer activities for different heteroatoms such as H, O, F and group like PhSO₃H doping on Graphene monolayer.

- **Be₂C Monolayer For Sensing Of COVID-19 Biomarkers And Drug Delivery: A DFT Study**

DOI: NA (Ongoing Project)

Jul, 2023 - Present

Dr. Motahareh Noormohammadbeigi (Arak University, Iran): Collaborator

We will investigate the surface adsorption of Ethyl Butyrate(EB), Favipiravir and 5-fluoro-salicylamide on Be₂C nanosheet, where EB will be used as COVID-19 biomarker, and the others two will act as drug delivery systems.

- **Surface Adsorption and Encapsulated Storage of H₂ in a Cage-like (MO)_x Cluster**

DOI: NA (Ongoing Project)

Aug, 2022 - Present

Dr. Saeedeh Kamalinahad (Arak University, Iran): Collaborator

We will investigate the surface adsorption and encapsulated storage of H₂ molecules in a cage-like metal-oxide cluster. This is completely a theoretical project collaborating with Dr. Saeedeh and Dr. Felipe from Kent University.

- **Electronic Structure and Reactivity of an Allyl-Like Trialuminium Compound**

DOI: NA (Ongoing Project) 

Jun, 2022 - Present

Felipe Fantuzzi Group (Kent University, UK): Guest Researcher

Our main objective is to find the reason behind the abnormal C-C activation in a allyl-like trialuminium compound and its reactivity using DFT calculations to support the experimental work (theoretical+experimental collaborative project). The experimental group is led by Prof. Dr. Holger Braunschweig from University of Würzburg.

- **A simple copper(II) dppy-based receptor for sensing of L-Cysteine and L-Histidine in aqueous acetonitrile medium**

DOI: NA (Submitted for review)

Dec, 2022 - July, 2023

Dr. Biswa Nath Ghosh (NIT Silchar, India): Collaborator

Finding different binding modes of Cysteine amino acid with Cu(II) meta-ligand complex due to its crucial significance in various biological processes, such as energy transduction, protein regulation, and cell signaling.

- **Highly efficient and thermally stable fullerene-free organic solar cells based on a rhodanine acceptor to enhance photovoltaic performance: A DFT study**

DOI: NA (Submitted for review)

Sep, 2022 - July, 2023

Faheem Abbas (Tsinghua University, China): Collaborator

Finding the impact of side-chain engineering for organic molecules with donor and acceptor site for efficient organic solar cells and photovoltaic performance.

- **First-Principles Study of CO Gas Sensing on Elite Metal-Oxides**


DOI: NA (Submitted for review)

Nov, 2021 - Sept, 2022

Chemical Information Science Laboratory (Pondicherry University, India)

Our main target was to benchmark CO sensing performances based on the selectivity, sensitivity, and adsorption energy calculations on different hybrid metal-oxides using DFT calculations.

• Finding a More Stable Semiconductor Borophene Using the Theoretical Approach

DOI: 10.13140/RG.2.2.18066.32965 (M.Sc. Thesis) 

Dec, 2020 - Jul, 2021

Chemical Information Science Laboratory (Pondicherry University, India)

The basic purpose of this project was finding a kinetically stable semiconductor borophene for application purposes using Quantum Calculations like DFT.

PROGRAMMING PROJECTS

• Google Contacts Using Gmail API

Three Days

A python program to get the contacts associated with Google Account. Python3.x and Gmail API is used to get all the contacts. Also a blog has been written based on this project on Medium platform.

Achievements

- This one is my **first python project** and also I've written my **first blog** based on this project.
- **Gmail API gives us the permission to get all the contacts** stored in Google Contacts.
- Without Gmail API **maximum 30 contacts** can be fetched from Google Contacts.
- The blog based on this project was published under one of the well-known Analytics and Data Science Company **Analytics Vidhya**.

• CompChemNews Bot Using Python & Tweepy

One Week

A Twitter Bot made using python tweepy and beautifulsoup4 module for automatically getting latest news in the field of Computational Chemistry.

Achievements




- The Twitter Bot is made using **python3.x** programming language.
- Learned two new python modules **tweepy** and **beautifulsoup4 (bs4)**.
- Also learned to host a python program online and schedule the script to run per day using **WayScript Time Trigger**.

RESEARCH INTERESTS

- Computational
- DFT Calculations
- Materials Design
- Catalysis
- Semiconductor
- Programming and Development
- Theoretical
- MD Simulations
- Nanomaterials
- Energy Materials
- Fuel Cells
- AI-ML

COURSES & CERTIFICATES

• Chemistry Courses

- Computational Quantum Mechanics of Molecular and Extended Systems (MIT OpenCourseWare) 
- Fundamentals of Macroscopic and Microscopic Thermodynamics 
- Nanotechnology and Nanosensors 

• Programming Courses

- State Govt. Python Programming Course (90%-100%) [↗](#)
- State Govt. Java Programming Course (80%-90%) [↗](#)
- State Govt. C Programming Course (80%-90%) [↗](#)
- Front-End Web Development with React (Coursera Course with Honors) [↗](#)

BLOGS

• Chemistry Articles

- Fascinating Power of Googling in Computational Chemistry [↗](#)
- How to Make Your Chemical Synthesis Process Absolutely Easier Using AI Advantage [↗](#)
- Basic Introduction to Computational Chemistry Tools: Spartan [↗](#)
- Introduction to Computational Chemistry Calculations: PES and Saddle Point [↗](#)

• Programming Articles

- Retrieving Email and Phone No. from Google Contacts Using Python and Gmail API [↗](#)
- Oh-My-Posh V3 is Out in the Market [↗](#)
- Personal Website: Why You Should Have One Right Now and How? [↗](#)

YOUTUBE TUTORIALS

- How to Build High-Quality MEP Surface Using Multiwfn & VMD from Gaussian CheckPoint File? [↗](#)
- Do This: Gaussian 16 Linux Version on Windows 10/11 Using WSL in 15 Minutes! [↗](#)
- Best Materials Studio Tutorial: How to Build Any Structure from Scratch? [↗](#)

SYMPOSIUMS

• Chemistry Seminars

- Julia Language for Computational Chemists [↗](#)
- CSIR-Central Electrochemical Research Institute Skill Development Training Programme [↗](#)

• Programming Seminars

- Microsoft AI Classroom Series, Microsoft [↗](#)
- Machine Learning | Lyrics Generation, Coding Blocks [↗](#)

RECOMMENDATIONS

- Dr. Felipe Fantuzzi - f.fantuzzi@kent.ac.uk (+44 (0)1227 82 3462) [University of Kent]
- Dr. M. M. Balakrishnarajan - mmbkr.che@pondiuni.edu.in (+91 98943 60048) [Pondicherry University]
- Dr. Biswa Nath Ghosh - bnghosh@che.nits.ac.in (+91 80181 23682) [NIT Silchar]
- Dr. Sougata Sarkar - sougata.sarkar81@gmail.com (+91 94774 02759) [RKMVC College]

LANGUAGES

English ● *Bengali* ● *Hindi* ●

- International English Language Testing System (IELTS Academic): **7.0 (Minimum 6.0 in Each Module)** ⇒ CEFR Level: C1

EXTRACURRICULAR ACTIVITIES

- Participated in Relief Works under Ramakrishna Mission: 2016-2019
- NSS (National Service Scheme) Volunteer for 2 Years: 2016-2018
- 3rd Year Completion Certificate with Distinction in Drawing: 2015
- 1st Prize in State Level Essay Competition: October 2012
- 'A' Certificate of N.C.C. under 54 Bengal Bn, Kalna: March 2013
- Participated in District Level 'Youth Mock Parliament' competition: 2013

HOBBIES

- Drawing
- Travelling
- Violin (Indian Classical Music)
- Story Books
- Drama
- NGO

ADDRESS

512, Pirtala, Poramatala Road, Nabadwip, Nadia, West Bengal, India - 741302

N.B.

All the programming skills learned on my own interest. No academic (chemistry) projects have been done using those so far.