Rohit Pal

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EDUCATION

UNIVERSITY OF TORONTO, TORONTO, ON

Ph.D., Chemical Engineering and Applied Chemistry
Expected 2024

M.Eng Chemical Engineering and Applied Chemistry
Sept. 2020
CGPA 3.8

SCHOLARSHIPS

PROVINCIAL

- Ontario Graduate Scholarship 2022-23, 2023-24 *ON Ministry of Education.*

INTERNAL

- Diran Basmadjian Graduate Scholarship in Chemical Engineering and Applied Chemistry 2022-23.
- C.W. Bowman Graduate scholarship in Energy Research 2021-22,*Centre for Global Engineering.*
- MITACS Research Training Award 2020.

SKILLS

PROGRAMS/APPLICATIONS

Experienced:
Python • MATLAB • C# • R • Autocad • Aspen • MS Office • Ansys • Quantum Espresso
Research:
NMR • XPS • Microscopy •XRD •Thin film preparation, Chromatography

SOFT SKILLS

Communication skills • Self-motivated • Problem solving • Multi-disciplinary team work • Mentorship

PUBLICATIONS

Pal,R.,Farnood,R.,et al.,2023
Rangarajan,G.,**Pal,R.**,et al.,2021
Rangarajan,G.,**Pal,R.**,2021
Viganeswar,S.,**Pal,R.**,et al.,2022

RESEARCH EXPERIENCE

UNIVERSITY OF TORONTO | Graduate research assistant
Jan. 2019 – present | Toronto, ON
Project Title:
Photocatalytic C-C bond scissioning for Polycyclic Aromatic Compounds removal from wastewater and tandem gasification

- Synthesized TiO_2 noble metal halide heterojunctions to develop **plasmonic nanomaterials** with superior optical and chemical properties.
- Characterized in-house developed catalysts for elemental and structural composition using **Electron Microscopy (SEM, TEM, HAADF-STEM), X-ray Photoelectron Spectroscopy, X-ray Diffraction**.
- Assembled catalyst cells in glove-box for electrochemical performance **(CV, LSV, CA/CP)** of catalyst material.
- Developed quantum structures of catalysts and intermediate species and performed energy/charge transfer analysis using **PBE0 and B3LYP** correlational function on **Quantum ESPRESSO and GAUSSIAN** hosted on Niagara supercomputer.
- Designed experiments to propose reaction pathways based on **thermodynamic properties and reaction kinetics** and identified aromatic compounds via **EPR/NMR, ICP, gas and liquid chromatography**.
- Prepared research reports and successful proposals for industrial stakeholders summarizing my research output to secure funding.

PROFESSIONAL EXPERIENCE

IMPERIAL OIL | Facilities Engineering Student
Jan. 2020-Jun. 2020 | Calgary, AB

- Performed hydraulic calculations on ASPEN Hysys and AFT for replacing submersible pumps in heavy oil assets of Cold Lake.
- Performed **autocorrelation analysis** on compressor vibration data to troubleshoot intermittent flow variations in gas vent lines
- Worked independently and automated the EHT Piping and instrumentation diagram updates in AutoCAD with a total cost savings of **$10,000**.

ROYAL DUTCH SHELL PLC. | Upstream Technical Specialist
Jun. 2015 – Dec. 2018| Scotland/India

- Completed **Health, Safety, Security, and Environmental audits** for gas wells in Shell operated assets as per the regulations of Oil and Gas Authority, UK.
- Developed signal processing algorithms to filter anomalies in electrical and nuclear petrophysical data for assessing oil well integrity
- Reviewed **HAZID and HAZOP** records with multi-disciplinary teams and developed **Emergency Response Preparedness** strategy.
- Redesigned dashboard to monitor pressure and production rates in the pipelines decreasing the non-productive time and saving **0.7 full time employee cost**.
- Prepared correlation plots between reservoir properties and oil and gas production to estimate hydrocarbon reserves in oilfields.

MEMBERSHIP

2018-Present	Chemical Institute of Canada
2020-Present	Canadian Society for Chemical Engineering
2020-Present	American Institute of Chemical Engineers