Arijita Mukherjee Chakraborty

85/3B, Lakshmi Narayan Motilal Road,
Kolkata-700061
+91 7439342776
mukherjeearijita@gmail.com | arijita@vectorideas.com
https://vectorideas.com/about-us/
https://www.linkedin.com/in/arijita-mukherjee/

WORK EXPERIENCE

Co-founder; Consultant Physicist, Faculty and Mentor, Vector Institute of Physics (March 2020 - Present)

- Co-founded an educational startup, aimed at providing the best-in-class science education, with particular emphasis on problem solving, geared at preparing students for various national/international examinations from secondary to master's level.
- Successfully mentored students from Secondary, Post-Secondary, Bachelor's, and master's levels, directly contributing to students' excellent performance examinations across all levels.
- Career counselling to science and engineering aspirants.
- Extremely positive student reviews across all levels.
- Managed both technical and administrative roles as the co-founder of an early-stage educational startup.

STEM Educator and Mentor, AP Guru (August 2022- April 2023)

- Taught advanced Physics, Mathematics and Statistics courses to AP and IB students worldwide.
- Received excellent student feedback for teaching and mentoring.

Yield Analysis Engineer, Intel Corporation, PTD Yield (February 2018-February 2020)

- Led critical projects aimed at designing failure analysis (FA) experiments and analyzing data using statistical tools to investigate the root cause of physical defects resulting in device failure for various process technology nodes.
- Designed experiments and optimized statistical data analysis methodologies to deliver critical parameters that determine fabrication process health at key steps.

EDUCATION

- Ph.D. (Physics), University of Illinois Chicago, (UIC) (2018)
- Master of Science (M.Sc. Physics), Indian Institute of Technology Madras (IIT Madras) (2012)
- Bachelor of Science (B.Sc. Physics Honors), University of Calcutta (2010)

RESEARCH EXPERIENCE

Ph.D. Thesis Project, University of Illinois Chicago

Graduate Research Assistant, Nanoscale Physics Group, UIC

Area of research: Materials science/ Nanoscience/Electrochemistry/ Advanced Transmission Electron Microscopy

June 2014 – December 2017

Advisor: Professor Robert F. Klie

- **Ph.D. Thesis Title: Transmission Electron Microscopy Investigation of Ion Intercalation in Vanadium Pentoxide Polymorphs.**

Master's Thesis Project, IIT Madras

Area of research: Experimental High-energy physics/ Data analysis using C++ and ROOT

August 2011- May 2012

- **M.Sc. Thesis Title: Study of ICAL Detector Efficiency using RPC Prototype Detector.**

ADVANCED PHYSICS COURSEWORK

- Solid state physics, Quantum Mechanics, Classical Mechanics, Electrodynamics, Transmission electron microscopy, Statistical Mechanics, Thermodynamics, Molecular Biophysics, Physics of semiconductor devices.

COMPUTATIONAL SKILLS

- Proficient in using Python, MATLAB, and C programming languages.
- Extensive use of Python coding in Machine Learning Specialization, offered by Stanford Online and DeepLearning.AI through Coursera.
- Advanced coursework in MATLAB, employed for data visualization (UIC).
- Employed C++/ROOT programming in M.Sc. Thesis project (IIT Madras).

TEACHING EXPERIENCE

- Taught Physics, Mathematics and Statistics to students from various levels, globally, with particular emphasis on problem solving, geared towards competitive exams, with extremely positive student feedback as a STEM educator and mentor at Vector Institute of Physics.
- Taught labs and led discussion sections for undergraduate physics courses at University of Illinois-Chicago.
- Teaching Assistant (TA) coordinator of Physics 106 (undergraduate classical mechanics course during Fall 2013 & Spring 2014) at University of Illinois-Chicago. Responsible for designing the course curriculum, supervising other TAs, and in charge of final grading.

AWARDS AND HONOURS

- **LAS PhD Student Travel Award (January 2016 and 2017)**

- **Next Generation Electrochemistry workshop (June 2016)**

- **Scholarship for attending Winter School on High Resolution Electron Microscopy and Post School Course on Aberration corrected Electron Microscopy (January 2015)**
  This competitive scholarship was awarded by Leroy Eyring Center for Solid State Sciences, Arizona State University to cover the cost of attending this workshop.

- **Graduate Aptitude test in Engineering (GATE) (February 2012)**
  All India rank (AIR) 30 out of a total of 6317 test takers in Physics (top 0.5%).

- **Best All Rounder Student award from Lady Brabourne College, Kolkata (June 2010)**
  This award is given annually to one student from the graduating batch of about 600 for demonstrating academic excellence along with accomplishments in extracurricular activities. I was selected for this award for the graduating batch of 2010 for excellent performance in Physics (honors) at the university level examinations and winning several inter college debate and elocution competitions throughout my 3-year tenure.

- **INSPIRE scholarship by Department of Science and Technology, Government of India (August 2009)**
  This prestigious scholarship of $5,200 over a period of 4 years was awarded to me for scoring within top 1% in 10^{th} grade and 12^{th} grade examinations and pursuing basic science education for my bachelor's and master's level.

SELECTED RESEARCH PUBLICATIONS

For a complete list of research publications, please check:
https://scholar.google.com/citations?user=dAUbDQYAAAAJ&hl=en&oi=ao

- J. R. Jokisaari, J. Hachtel, X. Hu, **A. Mukherjee**, O. Krivanek, J. C. Idrobo, and R. F. Klie *Vibrational spectroscopy of water with High Spatial Resolution*, *Advanced Materials*, **2018**,1802702.
- M. Asadi, B. Sayahpour, P. Abbasi, A. T Ngo, K. Karis, J. R Jokisaari, C. Liu, B. Narayanan, M. Gerard, P. Yasaei, X. Hu, **A. Mukherjee**, K. C. Lau, R. S. Assary, F. Khalili-Araghi, R. F Klie, L. A Curtiss, A. Salehi-Khojin, *A lithium–oxygen battery with a long cycle life in an air-like atmosphere*, *Nature*, **2018**, 555, 502.
- J. Andrews, **A. Mukherjee**, H. D Yoo, A. Parija, P.M Marley, D. G Prendergast, J. Cabana, R.F Klie, S.Banerjee, *Reversible Mg ion insertion in a metastable one dimensional polymorph of V_2O_5*, *Chem*, **2018**, 4, 564 – 585.
- **A. Mukherjee**, N. Sa, P. J. Phillips, A. Burrell, J. Vaughey and R. F. Klie, *Direct investigation of Mg intercalation into orthorhombic V_2O_5 cathode using atomic resolution transmission electron microscopy*, *Chem. Mater*. **2017**, 29, 2218-2226.
- N. Sa, **A. Mukherjee**, B. Han, Y. Ren, R. F. Klie, B. Key, J. T. Vaughey, *Direct observation of MgO formation at cathode electrolyte interface of a spinel $MgCo_2O_4$ cathode upon electrochemical Mg removal and insertion*, *J. Power Sources*, **2019**, 424, 68-75.
- A.R Riberio, **A. Mukherjee**, X. Hu, S. Shafiee, R. Ghodsi, K. He, S. Gemini-Piperni, C. Wang, R.F Klie, T. Shokhufar, R. S Yassar, R. Borojevic, L. A Rocha, Jose M. Granjerio , *Bio-camouflage of anatase nanoparticles explored by in situ high-resolution electron microscopy*, *Nanoscale*, **2017**, 10.1039/c7nr02239e

VOLUNTEERING AND OUTREACH ACTIVITIES

- Led science awareness and communication efforts at Vector Institute of Physics.
- Part of interview panel for hiring in the Failure Analysis group at Intel Corporation, (2019-2020).
- Represented UIC Physics at APS March Meeting Graduate School fair (March 2016 and March 2017), interacting with prospective graduate students.
- Conducted lab tours and admission interviews for prospective physics graduate students at various times at UIC Physics.
- Co-chair, UIC Physics, Women in physics group, (2015-2017).
- Represented UIC Physics as a Science fair judge at Poe classical elementary school (2012).