PRIYANKA KUMARI

Master of Science'23 (Physics).
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EDUCATIONAL QUALIFICATIONS

Qualification	Board/University	Year	CGPA/Percentage
Master of Science (M.Sc. Physics)	Indian Institute of Technology, Jodhpur	2021-Current	8.1 (up to 3rd Semester)
Bachelor of Science (B.Sc.)	Maharaja Surajmal Brij University, Bharatpur Rajasthan	2017-2020	73.04%
Higher Secondary (10+2)	Board of Secondary Education Rajasthan	2017	85.40%
Secondary (10)	Board of Secondary Education Rajasthan	2015	83.83%

AREA OF INTEREST

- Condensed Matter Physics
- Thermodynamics and Statistical Mechanics
- Soft Matter Physics
- Molecular Dynamics Simulation
- Computational Material Science

COURSE WORK

- **Core Course*:*** - Mathematical Physics, Quantum Physics, Classical Mechanics, Statistical Mechanics Electronics, Electrodynamics, Physics of Atoms and Molecules, Condensed Matter Physics, Nuclear, and Particle Physics, Solid State Physics
- **Elective Course*:*** - Relativistic Quantum Mechanics, Introduction to Material Characterization, Magnetization & Superconductivity, Solid Waste Management, Astrophysics, Computational Physics Lab (MATLAB)

M.SC. THESIS

Thesis Title- "*Ion Transport and Glass Transition in pectin loaded [BMIM][PF_6] Battery Electrolytes.*"

Supervisor- Dr. Santosh Mogurampelly (santosh@iitj.ac.in**)**

Duration- 1 Year

Brief Description- Here, we investigated the results of molecular dynamics (MD) simulations of a novel biopolymer electrolyte, pectin with ionic liquid (IL) 1-n-butyl-3-methylimidazole hexafluorophosphate ([BMIM][PF_6]) at room temperature. We found remarkable correlations among cations and anions in ionic diffusivities and ion-pair relaxation time scales that suggest a mechanism observed in IL-containing electrolytes. We also observed decreased interactions with counter ions with higher pectin loadings, which should raise the ionic conductivity. On the other hand, increasing pectin chains also resulted in higher glass transition temperatures (Tg); employing that pectin as a biopolymer electrolyte increases the system's mechanical stability. So, from the results, it can be concluded that pectin is a nature-friendly choice for the IL-containing battery electrolyte.

COMPUTER/ SOFT SKILLS

- **Technical Skills**: Project Experience With GROMACS, xmgrace, Visual Molecular Dynamic (VMD), GNUPLOT, MATLAB, and MS Office.
- **Platforms**: Windows, Linux (Ubuntu).
- **Hands**- Basic experience with 2D materials, Thin-film coating, XRD, and UV spectroscopy.
- **One year experience with** MD Simulations.

ACADEMIC ACHIEVEMENTS

- Online Internships in **STEM Vigyan Shaala in June-September 2022.**
- Online **Summer School** at **Indian Institute of Astrophysics (IIA) July 1-8, 2022.**
- IIT JAM Physics qualified with **AIR 2656** in 2021.
- Banaras Hindu University (BHU) MSc Physics Entrance qualified with **AIR 986** in 2020.
- Central MSc Physics Entrance qualified in 2020.

CONFERENCES & WORKSHOPS

- Attended **ECT** online workshop **"Reduced Density-Matrix Functional Theory: Improving its foundation and extending its scope"** held in Trento (Italy) from Oct 3-14, 2022.
- Poster Presentation at the **"National Conference on Energy Materials and Devices, E-MAD2022"** at the Indian Institutes of Technology Jodhpur (IITJ).

- Attended the **37th National Symposium on Plasma Science and Technology** 2022 at the Indian Institutes of Technology Jodhpur (IITJ).
- Scientific volunteer at the **37th National Symposium on Plasma Science and Technology** 2022 at the Indian Institutes of Technology Jodhpur (IITJ).
- Poster Presentation at Research Scholar Day 2022 at the Indian Institutes of Technology Jodhpur (IITJ).

HOBBIES

- Curious to learn new things
- Listening to music
- Physical fitness

REFERENCES

1. Prof. **Santosh Mogurampelly** (**santosh@iitj.ac.in**)
   Assistant Professor, **Department of Physics**
   Indian Institute of Technology (IIT) Jodhpur, Rajasthan, India
2. **Dr. Somnath Ghosh (somnathghosh@iitj.ac.in)**
   Associate Professor, Department of Physics
   Indian Institute of Technology (IIT) Jodhpur, Rajasthan, India

DECLARATION

I now declare that all the information given is correct to the best of my knowledge.