

## Curriculum Vitae

### Dr. Chandni Devi

Assistant Professor

Department of Physics

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### Academic Background:

**Ph.D.: Physics (2016-2021), Degree awarded on 01 October, 2021**

Department of Physics, Central University of Rajasthan, NH-8 Bandersindri-India.

**Thesis Title:** Nanowire-based novel polymer electrolyte for electrochemical energy storage.

**M.Phil. (Physics): 2014-2016**, Central University of Punjab, India.

**M.Sc. (Physics): 2011-2013**, Central University of Himachal Pradesh, India.

**B.Sc. (Physics, Mathematics, Chemistry): 2008-2011**, Himachal Pradesh University, Shimla, India.

### Research Experience:

Five years of research experience on fabrication and characterization of low dimensional materials (Semiconductor InAs nanowires, and TiO<sub>2</sub> nanowires) based novel polymer electrolyte for electrochemical energy storage. The structural properties of self-synthesized nanowire were investigated by X-ray diffraction (XRD), high resolution transmission electron microscopy (HRTEM), scanning electron microscopy (SEM), Raman spectroscopy, and Fourier transform infrared (FTIR) spectrum. The electrical properties of single InAs nanowire based fabricated device were investigated by current-voltage (I-V) measurements at different temperature. Investigation on electrochemical performance of nanowire added novel solid state polymer nanocomposite electrolyte by CH-670 electrochemical workstation.

### Research Interests:

- **Semiconductor Nanostructures:** Synthesis and characterization of nanostructure low dimensional material. Especially, one dimensional III-V nanostructures based devices fabrication for optoelectronic application.
- **Ion beam application:** Use of ion beam for modification of materials, implantation.
- **Polymer Nanocomposite Electrolyte:** Use for energy storage devices.

### Academic Achievements, Awards/Fellowships:

- **Awarded SRF-Direct fellowship 2020-2021**

### Research Skills:

- Ability to work independently as well as in a team with others.
- Expertise in the fabrication of single nanowire based devices by electron beam lithography.
- Good experimental skills on the synthesis of one dimensional nanostructure and polymer

nanocomposite materials and their characterization.

- Good expertise in writing the project proposals and presentations.
- Interested to learn and acquaint new thing in research.
- Guided **M.Sc.** students to complete their project work.

#### **Characterization instruments handling:**

- X-Ray Diffraction (XRD)
- Electrochemical analyzer (CHI-760, USA) for impedance and electrochemical performance like cyclic voltammetry (CV), linear sweep voltammetry (LSV), and Galvano charging-discharging (GCD) etc. of an assembled cell.
- Current-Voltage (I-V) characterization (by Keithley source measurement unit).
- Scanning Electron Microscopy (SEM) with EDS.
- Fourier transform infrared (FTIR) spectroscopy.

#### **Hands on instruments for synthesis:**

- Optical and electron beam Lithography, Physical Vapor Deposition (Thermal evaporation and electron beam vacuum units).
- **Synthesis methods- Bottom up techniques** like Solvothermal/Hydrothermal method, Solution cast method, Spin coating and Sol-gel technique.

#### **Computer Knowledge:**

- **Programming Languages:** C, Linux languages in Linux environment.
- **DOS, WINDOWS 10, 8.1, XP**
- **Software:** Technically proficient in software like MS-OFFICE, and Origin useful for data plots.

#### **Teaching Experience:**

In addition to my research career, I had assisted the Department of Physics, Central University of Rajasthan, in handling the theory, tutorial and practical classes and laboratory for M.Sc. Physics students.

#### **List of publications:**

1. **Chandni Devi**, J. Gellanki, Hakan Petterson, Sandeep Kumar, “ High sodium ionic conductivity in PEO/PVP solid polymer electrolytes with InAs nanowire fillers”, *Scientific Reports* **11** (2021): 1-8. [IF=4.379]
2. **Chandni Devi**, Rahul Singhal, Kleber da Silva, Waldomiro Paschoal Jr, Håkan Pettersson, and Sandeep Kumar, "Electrical transport properties of InAs nanowires synthesized by a solvothermal method”, *Nanotechnology* **31**, no. 23 (2020): 235709. [IF=3.874]
3. **Chandni Devi**, Ram Swaroop, Anil Arya, Shweta Tanwar, A. L. Sharma, Sandeep Kumar, “Fabrication of energy storage EDLC device based on self-synthesized TiO<sub>2</sub> nanowire dispersed polymer nanocomposite films”, *Polymer Bulletin* **78** (2021): 1-19. [IF=2.870]
4. Nanda Shakti, **Chandni Devi**, A. K. Patra, P. S. Gupta, and Sandeep Kumar, "Lithium doping and photoluminescence properties of ZnO nanorods“, *AIP Advances* **8**, no. 1 (2018): 015306. [IF=1.579]
5. Sandeep Kumar, Gregório B. Corrêa Jr, **Chandni Devi**, Daniel Jacobsson, Andreas Johannes, Carsten Ronning, Waldeci Paraguassu, Waldomiro Paschoal Jr, and Håkan Pettersson, "Evaluation of carrier density and mobility in Mn ion-implanted GaAs: Zn nanowires by Raman spectroscopy“, *Nanotechnology* **31**, no. 20 (2020): 205705. [IF=3.874]
6. Corrêa Jr, Gregório B., Sandeep Kumar, Waldomiro Paschoal Jr, **Chandni Devi**, Daniel

Jacobsson, Andreas Johannes, Carsten Ronning, Håkan Pettersson, & Waldeci Paraguassu, "Raman characterization of single-crystalline Ga<sub>0.96</sub>Mn<sub>0.04</sub>As: Zn NWs realized by ion-implantation", *Nanotechnology* **30**, no. 33 (2019): 335202. [IF=3.874]

### **Papers Published in Conference Proceedings:**

1. **Chandni Devi**, Sandeep Kumar, Ram Swaroop, Anil Arya, and A. L. Sharma. "Study of temperature effect on dielectric properties of nanowire doped polymer nanocomposite films", *AIP Conference Proceedings*, vol. 2220, no. 1, p. 020198. AIP Publishing LLC, 2020.
2. **Chandni Devi**, Ram Swaroop, Parul Kumar Sharma, and A. L. Sharma. "Sodium-ion-conducting polymer nanocomposite electrolyte of TiO<sub>2</sub>/PEO/PAN complexed with NaPF<sub>6</sub>". *AIP Conference Proceedings*, vol. 1728, no. 1, p. 020346). AIP Publishing LLC, 2016.
3. **Chandni Devi**, Yagya Dev Bhardwaj, Komal Agnihotri, Sandeep Kumar, and R. K. Verma. "Experimental studies on localized surface plasmon resonance (LSPR) based fiber optic sensors utilizing indium arsenide (InAs) nanowires". International conference on Fiber Optics and Photonics, 2018.
4. Parul Kumar Sharma, M. Sadiq, **Chandni Devi**, and A. L. Sharma. "Correlation of ion-ion interaction with electrical conductivity in solid state polymeric separator for energy storage applications" *AIP Conference Proceedings*, vol. 1728, no. 1, p. 020368). AIP Publishing LLC, 2016.

### **Participation in Conferences/Workshops:**

1. Participated in the International Conference on Recent Trend in Material and Devices (ICRTMD-2015) held at Amity University Uttar Pradesh, Noida. Presented a research paper entitled "Structural and Electrical Properties of Polymer Nanocomposite Films".
2. Participated in the International Conference on Advancements and Futuristic Trends in Mechanical and materials Engineering (AFTMME-2016) held at Baba Farid College of Engineering & Tech. Bathinda, Punjab. Presented a paper entitled "Dielectric Studies of Blend Polymer Nanocomposite Electrolyte Film based on PEMA/PVC Complexed with NaPF<sub>6</sub>."
3. Participated in the National Conference on Photonic and Material Science (NCPMS-2015) organized by Department of Applied Physics, Guru Jambheshwar University of Science & Technology, Hisar and presented a paper entitled "Role of Nano-filler to enhance the Electrical Conductivity of blend Polymer Electrolyte.
4. Participated in the National Symposium on technologically Advanced Functional Materials (NSTAFM-2017) organized by Department of physics, Central University of Rajasthan, held at Central University of Rajasthan. Oral Talk on abstract entitled "Optical Properties of Polymer Nanocomposite Electrolyte films based on PEMA/PVC complexed with NaPF<sub>6</sub>".
5. Participated in 62nd accelerator user workshop conducted from 05/07/2017 to 08/07/2017 organized by Inter University Accelerator Center (IUAC-New Delhi) and participated in oral presentation entitled "Synthesis of Mn doped InAs nanostructures using Ion beam".
6. Presented poster in international conference on Nanobiotechnology on topic entitled "Synthesis and Raman characterization of InAs nanowires" conducted from 05/02/2018 to 06/02/2018 organized by Jamia Millia Islamia, New Delhi.

7. Participated in hands-on training workshop on “Nanofabrication Technologies” conducted from 12/09/2018 to 22/09/2018 organized by Indian Nanoelectronics User Program (INUP) at IISC, Bangalore.
8. Oral presentation in VI Rajasthan Science Congress, 13-15 Oct. 2018 under topic entitled “Electrical properties of single InAs nanowire fabricated device” organized by Central University of Rajasthan, India.
9. Oral presentation in national conference on “Advances in Science and Technology – an Interdisciplinary Approach” (ASTIA – 2018) under topic entitled “Electrical properties of self-synthesized single InAs nanowire with temperature” on 15th– 16th, October, 2018 at Sophia Girls College (Autonomous), Ajmer.

### **Reference:**

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### **Personal Details:**

**Name:** Dr. Chandni Devi  
**Father’s Name:** Ramesh Chand  
**Date of Birth:** 13 March, 1991  
**Nationality:** Indian  
**Sex and Marital status:** Female & unmarried  
**Permanent Address:** Village Kushmal, Post Office Bagora, Tehsil. Palampur, District Kangra, Himachal Pradesh (India)-176059  
**Mobile Number:** +91-8003691991, 8209630538  
**Language Proficiency:** Hindi, English