CURRICULAM VITAE

NAME: Dr. Amit Kumar Mauraya
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Google Scholar: https://scholar.google.com/citations?user=hSLaUfEAAAAJ&hl=en

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EDUCATIONAL QUALIFICATIONS

CURRENT DEGREE

PhD in Physics (2017-2023)

Area: Heterojunction based thin- film Gas Sensors

(Title: Preparation and Characterization of Junction- Engineered Metal Oxide based Gas sensors for CO detection)

Institute: CSIR- National Physical Laboratory, New Delhi

2014: M.Sc. in Applied Physics: 66.56 %

(Six Month Project: A review on metal oxide-based LPG gas sensors)

Institute: Baba Saheb Bhimrao Ambedkar University (BBAU), Lucknow

2012: B.Sc. (PCM): 59.89%,

Institute: Lucknow Christian Degree College, Lucknow (Lucknow University)

Current Position : Assistant Professor (MSD State University, Azamgarh)

Hands on experiences

- Expert in Thin film deposition process
  Physical Methods: Thermal evaporation, Sputtering, PLD and also assisted MBE
  Chemical Methods: Sol-gel, Spin coating, Drop-casting, Hydrothermal
- **Characterisations:** Stylus Profilometer, UV- visible spectroscope Dynamic gas sensing setup,
- **Software:** ORIGIN, IMAGEJ, WSXM, XPS-PEAK, Full-Prof,
- Efficient in working on MS-office (Word, Power-point)
- Can speak Hindi and English

Achievements

CSIR-UGC JRF Fellowship (Govt. of India)

List Of Publications

1. **Amit Kumar Mauraya,** P. Singh, S. Muthiah, S. S. Kushvaha and S K Muthusamy, "Effect of postoxidation processes and thickness of SnO_2 films prepared by vacuum evaporation on CO gas sensing characteristics" Ceramics International 47 **(2021)** 13015–13022. DOI: 10.1016/j.ceramint.2021.01.165. **(Q1)**
2. **Amit Kumar Mauraya,** D. Mahana, P. Pal, S. Muthiah, and S K Muthusamy, "Effect of bulk and surface modification of SnO_2 thin films with PdO catalyst on CO gas sensing characteristics prepared by vacuum evaporation process," Journal of Alloys and Compounds 843 **(2020)** 155979. DOI: 10.1016/j.jallcom.2020.155979. **(Q1)**
3. **Amit Kumar Mauraya,** D. Mahana, G. Jha, B. Kumar Pradhan, Roopa, S. Tomer, Vandana, P. Singh, S. S. Kushvaha and S K Muthusamy "Heterostructure nanoarchitectonics with ZnO/SnO_2 for ultrafast and selective detection of CO gas at low ppm levels" Ceramics International 48 **(2022)** 36556-36569 DOI: 10.1016/j.ceramint.2022.08.215. **(Q1)**
4. **Amit Kumar Mauraya**, D. Mahana, B. Kumar Pradhan, Roopa and S K Muthusamy, "Studying the bandoffset of PdO/SnO_2 heterostructures using X-ray photoelectron spectroscopy, JMS: Mat. Electron. 33, (**2022**) 1-11, DOI: 10.1007/s10854-022-09214-5. **(Q2)**
5. **Amit Kumar Mauraya,** D. Mahana, P. Tyagi, Ch Ramesh, A. K. Shukla, S. Husale, S. S. Kushvaha and M S Kumar, "Structural and ultraviolet photo-detection properties of laser molecular beam epitaxy grown GaN layers using solid GaN and liquid Ga targets" Phys. Scr. 96 (**2021**) 085801DOI: 10.1088/14024896/abfcef . **(Q2)**
6. Ch Ramesh, P Tyagi, **Amit Kumar Mauraya**, M Senthil Kumar and S. S. Kushvaha "Structural and optical properties of low temperature grown single crystalline GaN nanorods on flexible tungsten foil using laser molecular beam epitaxy, Mater. Res. Express 6 (**2019**) 085919. DOI: 10.1088/2053-1591/ab2966. **(Q2)**
7. Ch. Ramesh, P. Tyagi, S. Gautam, **Amit Kumar Mauraya**, S. Ojha, G. Gupta, M. Senthil Kumar, S.S. Kushvaha, "Self-induced growth of GaN nanorod assembly on flexible niobium metal foil using laser molecular beam epitaxy" Vacuum, 181 (**2020**) 109643. DOI: 10.1016/j.vacuum.2020.109643. **(Q1)**
8. D. Mahana, **Amit Kumar Mauraya**, P. Pal, P. Singh and S K Muthusamy "Comparative study on surface states and CO gas sensing characteristics of CuO thin films synthesised by vacuum evaporation and sputtering processes" Materials Research Bulletin 145 (**2022**) 111567. DOI: 10.1016/j.materresbull.2021.111567. **(Q1)**
9. P. Tyagi, B. Kumar Pradhan, **Amit Kumar Mauraya**, D. Mahana, V. Aggarwal, Govind Gupta, S. S. Kushvaha and S K Muthusamy "Effect of substrate nitridation and a buffer layer on the growth of a nonpolar a-plane GaN epitaxial layer on an r-plane sapphire substrate by laser molecular beam epitaxy" Materials Advances 3 (**2022**) DOI: 10.1039/d2ma00782g **(Q1)**
10. V. Aggarwal, C. Ramesh, U. Varshney, P. Tyagi, S. Gautam, **Amit Kumar Mauraya**, B. S. Yadav, G. Gupta, R. Ganesan, M. S K and S. S. Kushvaha, "Correlation of crystalline and optical properties with UV photodetector characteristics of GaN grown by laser molecular beam epitaxy on a-sapphire" Appl. Phys. A 128, (**2022**) 989. DOI: 0.1007/s00339-022-06134-3. **(Q2)**
11. D Mahana, **Amit Kumar Mauraya**, P Singh, SK Muthusamy, "Evolution of CuO thin films through thermal oxidation of Cu films prepared by physical vapour deposition techniques." Solid State Communications 366, 1151523 **2023**. **(Q2)**
12. D Mahana, **Amit Kumar Mauraya**, S Kumaragurubaran, P Singh, SK Muthusamy, "Synthesis of CuO thin films by a direct current reactive sputtering process for CO gas sensing application" Physica Scripta 98 (3), 035709 6 **2023**. DOI: 10.1088/1402-4896/acb866 **(Q2)**
13. V Aggarwal, S Gautam, U Varshney, **Amit Kumar Mauraya**, R Kumar, G Gupta, ''Fabrication of ultraviolet photodetector on laser MBE grown epitaxial GaN nanowalls on sapphire (11–20)" Journal of Materials Research 38 (2), **2023,** 429-438 DOI: https://doi.org/10.1557/s43578-022-00828-3. **(Q2)**
14. BK Pradhan, P Tyagi, S Pal, **Amit Kumar Mauraya**, Roopa, V Aggarwal, et al. Role of Surface Chemistry of Ta Metal Foil on the Growth of GaN Nanorods by Laser Molecular Beam Epitaxy and Their Field Emission Characteristics, ACS Applied Materials & Interfaces, **2024, (10), 13178–13190.** https://doi.org/10.1021/acsami.3c16892 **(Q1)**

15. Roopa, B. K. Pradhan, **Amit Kumar Mauraya,** K. Chatterjee, P. Pal, S K Muthusamy, "High-sensitive and fast-responsive In_2O_3 thin film sensors for dual detection of NO_2 and H_2S gases at room temperature" Applied Surface Science, **2024, (678), 161111.** https://doi.org/10.1016/j.apsusc.2024.161111 **(Q1)**

List Of Papers Presented (Oral/Poster) At International Conferences

1. **Amit Kumar Mauraya**, Debashrita Mahana, and M. Senthil Kumar, "PdO decorated SnO_2 thin film grown by vacuum evaporation and post oxidation process for -based CO gas sensing", **India International Science Festival (IISF-2020)** 22-25th December 2020 **(Oral Presentation)**.

2. **Amit Kumar Mauraya,** Bipul Pradhan, Debashrita Mahana and M Senthil Kumar, "PdO/SnO_2 heterojunction-based thin film gas sensor for CO gas detection" **International Conference on Thin films and Nanotechnology - Knowledge, Leadership and Commercialization (ICTN-KLC 2021)**, Indian Institute of Technology Delhi, New Delhi 24-26th August 2021.

3. **Amit Kumar Mauraya,** Bipul Pradhan, Debashrita Mahana and M Senthil Kumar, "Surface modification of Tin oxide thin film by CuO nanoparticles for CO gas sensing applications prepared by vacuum-evaporation post oxidation method" **International Conference on Nano Technology for Better Living (ICNBL 21),** National Institute of Technology, Srinagar, 7-11th September 2021.

4. **Amit Kumar Mauraya,** Subash Nimanpure, Guruvandra Singh, Preetam Singh, Dibakar Roy Chowdhury, Senthil Kumar Muthusamy, and Mukesh Jewariya, "Terahertz spectroscopy of PVD grown Tin oxide thin film" XLIV OSI SYMPOSIUM, **Frontiers in Optics and Photonics (FOP 21)** Indian Institute of Technology Delhi, New Delhi, 24-27th September 2021.

5. **Amit Kumar Mauraya,** Subhash Nimanpure, M. Senthil Kumar and Mukesh Jewariya, "Terahertz optical studies of SnO_2 thin films prepared by vacuum evaporation process" **7th Theme Meeting on Ultrafast Sciences (UFS-2021)** UM-DAE, University of Mumbai, 12-14th November 2021.

6. **Amit Kumar Mauraya**, Debashrita Mahana, and M. Senthil Kumar, "CuO/SnO_2 thin film-based CO gas sensors grown by vacuum evaporation and post oxidation process" **IEEE: 5th International Conference on Emerging Electronics, Indian Institute of Technology Delhi, India,** 26-28th November 2020.

7. **Amit Kumar Mauraya,** Preetam Singh and M. Senthil Kumar, "CO gas sensing characteristics of Pd-added SnO_2 thin films prepared by thermal evaporation-post oxidation method" **XXth International Workshop on Physics of Semiconductor Devices (IWPSD 2019),** 17-20th December 2019.

8. **Amit Kumar Mauraya**, Nitish Saini, Preetam Singh, K.M.K. Srivatsa, Govind and M. Senthil Kumar, "Preparation of SnO_2 Thin Films by a Simple Thermal Evaporation Method for CO Gas Sensing Applications" **Recent Innovation in Advanced Materials (RIAM 2018), Bhopal** 17-19th September 2018.

9. **Amit Kumar Mauraya**, Preetam Singh, K.M.K. Srivatsa, Vishal Baloria, Govind, and M. Senthil Kumar, "Preparation and Characterization of Tin Oxide Thin Films by A Simple and Cost-Effective Thermal Oxidation Process for Gas Sensing Applications" I**nternational Conference on Thin Films (ICTF 2017), New Delhi, India,** 13 – 17th November 2017.

References

1. Dr. M. Senthil Kumar (Sr. Principal Scientist)
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Sensor Devices and Metrology
Environment Sciences and Biomedical Metrology
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- Plasma Assisted MBE, MOCVD and Laser MBE growth of III-Nitride epitaxial layers and
- Heterostructures for electronic, optoelectronic and energy applications.
- Metal-Semiconductor & Metal-Oxide/Ferroelectric-semiconductor structures
- Development of Metal Oxide Thin films & Nanostructures for gas sensing, field emission and photo-catalytic applications
- Density controlled alignment of CNTs on metal electrodes with electric filed.

2. PROF. (Dr.) BAL CHANDRA YADAV
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Areas of Research (Maximum Five Bullet Points)

- Nanoscience & Technology
- Physics & Technology of Sensors
- Nano-optoelectronics
- Renewable Energy
- Acoustics

3. Dr. Govind,

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- III-Nitrides Materials growth,
- Chemiresistive Gas Sensor,
- Metal Oxides & Two dimensional (2D)
- Materials Growth & Device fabrication,
- Optoelectronic device fabrication,
- Surface & Interface Physics,
- Electronic Structure, Optical Characterization,
- Plasmonic, etc