


Brief Biodata

Name: Dr. Govind

Designation:	Senior Principal Scientist & Professor, Academy of Scientific & Innovative Research (AcSIR)	
DP No. and Name:	3.04, Sensor Devices & Metrology	
DU No. and Name:	3, Environmental Sci. & Biomed. Inst. Metrology	
Email:	govind.npl@nic.in , govindnpl@gmail.com	
Date of Joining CSIR- NPL:	23/07/2004	
Phone (office)	+91-11-45609503, 8403, 8488	

Research Area/ Interest

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, Plasmonics, etc.

Educational Qualifications

(Please write latest qualification first)

Degree	Subject	University/ Institute	Year
Ph.D.	Solid State Physics	G.B. Pant Univ. Ag. & Tech. Pantnagar, UK, India	2000
M.Sc.	Physics	G.B. Pant Univ. Ag. & Tech. Pantnagar, UK, India	1996

Academic / Research Experience

Grade / Post	Institute	Duration		Research Field
		From	To	
Senior Principal Scientist & Professor, AcSIR	CSIR-National Physical Laboratory, New Delhi, India	July 2017	Till date	Sensor Devices & Metrology, III-Nitrides Materials growth, Chemiresistive Gas Sensor, Metal Oxides & Two dimensional (2D)
Principal Scientist, & Associate Professor, AcSIR	CSIR-National Physical Laboratory, New Delhi, India	July 2012 -	June-2017	Nitride Epitaxy, Photodetectors, Solar Cells
Senior Scientist, & Assistant Professor, AcSIR	CSIR-National Physical Laboratory, New Delhi, India	July 2008	June 2012	Nitride Epitaxy, Photodetectors, Solar Cells, Surface /Interface,
Scientist	CSIR-National Physical Laboratory,	July 2004 -	July 2008	

	New Delhi, India			
Research Scientist (DST) Research Associate (CSIR)	CSIR-National Physical Laboratory, New Delhi, India	May 2000	July 2004	P.I. Professor S.K. Joshi, Ex-Director General, CSIR
BOYSCAST Fellow	Department of Physics & Astronomy, Rutgers-The State University of New Jersey, New Jersey, USA	June 2007	July 2008	with Prof. Theodore E. Madey, Ex-President, American Vacuum Society (AVS), USA, Director, Laboratory of Surface Modifications, Rutgers-The State University of New Jersey, Piscataway, New Jersey, USA

No. of Publications

No. of Publications in SCI Journals	No. of Publications in non-SCI Journals	No. of Publications in Conference Proceedings	Books	Total
285	13	8	8	314

Selected Publications

<ol style="list-style-type: none"> 1. Preeti Goswami & Govind Gupta Recent Progress of Flexible NO₂ and NH₃ Gas Sensors based on Transition Metal Dichalcogenides for Room Temperature Sensing Materials Today Chemistry, 23, 100726 (2022) 2. Aditya Yadav, Preetam Singh and Govind Gupta Dimension dependency of Tungsten Oxide (WO₃) for efficient Gas Sensing Environmental Nano: Chemical, 9, 40-60 (2022) 3. Urvashi Varshney, Neha Aggarwal & Govind Gupta Current Advances in Solar-blind Photodetection Technology: Oxides & Nitrides Journal of Materials Chemistry C, 10, 1573 (2022) 4. Ajit Dash, Anuj Sharma, S.K.Jain, B. Sachitra Kumar Patra, Abhiram Gundimeda, Sandipan Mallik, Govind Gupta Influence of current conduction paths and native defects on gas sensing properties of polar and non-polar GaN Journal of Alloys & Compounds, 898, 162808 (2022) 5. Shubhendra Kumar Jain, Pargam Vashishtha, Shruti Nirantar, Liangchen Zhu, Cuong Ton-That, Taimur Ahmed, Sharath Sriram, Sumeet Walia, Govind Gupta, Madhu Bhaskaran Influence of Temperature on Photodetection Properties of Honeycomb-like GaN nanostructures Advanced Material Interfaces 8 (14), 2100593 (2021) 6. S.K. Jain, Mei Low, P. Taylor, S. A. Tawfik, Michelle Spencer, Sruthi Kuriakose, Aram Arash, Chenglong Xu, Sharath Sriram, Govind Gupta, Madhu Bhaskaran, and Sumeet Walia 2D/3D hybrid of MoS₂/GaN for a high-performance broadband photodetector ACS Applied Electronic Materials, 3(5) 2407 (2021) 7. Lalit Goswami, Neha Aggarwal, Shubhendra Jain, Pargam Vashishtha, Shruti Nirantar, Jahangeer Ahmed, M. A. Majeed Khan, Rajeshwari Pandey and Govind Gupta Fabrication of GaN Nano-Towers based Self-Powered UV Photodetector Scientific Reports, 11, 10859 (2021) 8. Neha Aggarwal, Shibin Krishna, Lalit Goswami, and Govind Gupta Inclination of Screw Dislocations on the Performance of Homoepitaxial GaN based UV Photodetectors Materials Science & Engineering B, 263, 114879 (2021)
--

9. S.K. Jain, R.R. Kumar, Neha Aggarwal, Pargam Vashishtha, Lalit Goswami, Sruthi Kuriakose, Akhilesh Pandey, M. Bhaskaran, S.Walia, Govind Gupta
Current Transport and Band Alignment study of MoS₂/GaN and MoS₂/AlGaN Heterointerfaces for Broadband Photodetection Application
ACS-Applied Electronic Materials, 2(3), 710 (2020)
10. Lalit Goswami, N. Aggarwal, R.Verma, S.Bishnoi, S.Husale, R. Pandey and Govind Gupta
Graphene quantum dots sensitized ZnO-Nanorods/GaN-Nanotowers heterostructure based high performance UV Photodetector
ACS-Applied Materials Interfaces, 12, 47038 (2020)
11. Neha Aggarwal, and Govind Gupta
Enlightening the Gallium Nitride based UV Photodetectors
Journal of Materials Chemistry C, 8, 12348 (2020)
12. Lalit Goswami, Neha Aggarwal, Manjri Singh, Rajni Verma, Pargam Vashishtha, Shubhendra K. Jain, Jai Tawale, Rajeshwari Pandey and Govind Gupta
GaN Nanotowers Grown on Si (111) and Functionalized with Au Nanoparticles and ZnO Nanorods for Highly Responsive UV Photodetectors
ACS Applied Nano Materials, 3, 8104, (2020)
13. Neha Aggarwal, Shibin Krishna, Shubhendra Kumar Jain, Arzoo Arora, Lalit Goswami, Alka Sharma, Sudhir Husale, Abhiram Gundimeda, Govind Gupta
Impact on Photon-Assisted Charge Carrier Transport by Engineering Electrodes of GaN based UV Photodetectors
Journal of Alloys & Compound, 785, 883-890 (2019)
14. M. Mishra, A. Gundimeda, T. Garg, Ajit Dash, Susanta Das, Vandana, and Govind Gupta
ZnO/GaN based self-powered schottky barrier photodetectors: Influence of interfacial states on UV sensing
Applied Surface Science, 478, 1081-1089 (2019)
15. Shibin Krishna TC, Neha Aggarwal, Abhiram Gundimeda, Alka Sharma, Sudhir Husale, K.K. Maurya, Govind Gupta
Correlation of Donor Acceptor Pair Emission on the Performance of GaN based UV Photodetectors
Material Science in Semiconductor Processing, 98, 59 (2019)
16. Monu Mishra, Naman Kumar Bhalla, Ajit Dash and Govind Gupta
Nanostructured GaN and AlGaIn/GaN heterostructures for catalyst-free low-temperature CO sensing
Applied Surface Science, 481, 379 (2019)
17. Neha Aggarwal, Shibin Krishna, S.K. Jain, K. K. Maurya, S. Singh, M. Kaur and Govind Gupta
Microstructural Evolution of High Quality AlN by modulating the Growth Conditions in PAMBE
Materials Science & Engineering B, 243, 71 (2019)
18. S.K. Jain, N. Aggarwal, S. Krishna, R. Kumar, S. Husale, Vinay Gupta and Govind Gupta
GaN-UV photodetector integrated with Asymmetric MSM structure for enhanced responsivity
Journal of Material Science: Materials in Electronics 1-6 (2018)
19. A. Gundimeda, S. Krishna, N. Aggarwal, A.Sharma, N.Dilawar, K. K. Maurya, S. Husale, Govind Gupta
Fabrication of non-polar GaN based highly responsive and fast UV Photodetector
Applied Physics Letters-110, 103507 (2017)
20. N. Aggarwal, S. Krishna, A. Sharma, L. Goswami, D. Kumar, S. Husale, Govind Gupta
Realization of Highly Responsive Self-driven UV Photodetector using GaN Nanoflowers
Advanced Electronic Materials, 1700036 (2017)
21. M. Mishra, S. Krishna, N. Aggarwal, A. Gundimeda and Govind Gupta
Electronic and Chemical Structure Analysis of Nanoflowers Decorated GaN and AlGaIn/GaN heterostructure
Journal of Alloys & Compound, 708, 385 (2017)
22. M. Mishra, A. Gundimeda, S. Krishna, N. Aggarwal, B. Gahtori, N. Dilawar, V. V. Agrawal, M. Singh, R. Rakshit and Govind Gupta
Wet chemical etching induced stress relaxed nanostructures on polar & non-polar epitaxial GaN films

Physical Chemistry Chemical Physics, 19, 8787 (2017)

23. S. Krishna, A. G. Reddy, N. Aggarwal, M. Kaur, S. Husale, D. Singh, M. Singh, R. Rakshit, K.K. Maurya, Govind Gupta

Enhanced current transport in GaN/AlN based single and double barrier heterostructures

Solar Energy & Solar Materials, 170, 160 (2017)

24. Shibin Krishna, Alka Sharma, Neha Aggarwal, Sudhir Husale and Govind Gupta

Enhanced Photo-responsivity and fast photo-response of Indium Nitride ultra-broadband photo-detector

Solar Energy & Solar Materials- 172, 376-383(2017)

Patents

A PROCESS FOR THE SYNTHESIS OF LUMINESCENT UNDOPED ZN₂SIO₄ NANOPHOSPHOR, Inventors: Dhiraj, Bipin Kumar Gupta, Surinder Pal Singh, Sukhvir Singh, Govind, Avanish Kumar Srivastava Indian Patent no. IN201811002025 Published on 19/07/2019- India

Current Activities

(Not more than 100 words)

- i. Design the recipe, process optimization and growth of thin films and nanostructures based on III-nitrides, metal oxides & 2D materials.
- ii. Fabrication of sensor devices & engineered electrodes for reliable & accurate detection.
- iii. Testing the performance of the fabricated devices in terms of responsivity, repeatability, sensitivity, selectivity and stability.
- iv. Development of prototype broadband Optical detectors & Gas sensor in the laboratory and the field.

Honour(s)/Award(s)/ Fellowship(s)

- FRSC: Fellow, the Royal Society of Chemistry, UK
- FInstP: Fellow of the Institute of Physics, UK
- FIETE: Fellow of the Institute of Electronics & Telecommunication Engineers, India
- International Exchange Award, The Royal Society, UK & The Cambridge University, UK.
- Senior Member, IEEE, USA (2021)
- Associate Academician: Asia Pacific Academy of Materials (APAM)
- Materials Research Society of India (MRSI) MEDAL - Year 2018 for excellent scientific contribution in Materials Science & Technology.
- The National Academy of Sciences, India (NASI)-Young Scientist Platinum Jubilee Award (2010)
- NPL-Outstanding Young Scientist of the Year (OYSY)-(2009)
- BOYSCAST Fellow (Ministry of Science & Technology, GoI) (2007)
- Visiting Scientist, University of Rutgers, New Jersey, USA 2007-2008
- Visiting Scientist, University of Humboldt, Berlin Germany, 2017
- IFW-ICNN Young Scientist Award (2009)
- DST-Young Scientist Research Award: Ministry of Science & Technology, GoI (DST-Fast Track Scheme (2007-2010)
- UGC-CSIR NET (National Eligibility Test)- Dec. 2001
- Research Associateship from Council of Scientific & Industrial Research (CSIR), New Delhi, India (2000)

Contributions to AcSIR

- Involved in teaching the Thin Films Physics & Technology (*AcSIR-32-PS-AD-003*) to registered Ph.D. students.
- Supervised 9 students enrolled for Ph. D under my supervision/co-supervision (6 have completed thesis)
- Supervised 24 students registered for Ph.D. in AcSIR as a member of Doctoral Advisory committee (12 completed, 12 ongoing).
- Involved in various capacity to help AcSIR student in Review, Project, CSIR-800 proposal evaluation.

Membership of Professional Societies/ Institutions

- **Executive Committee Member**, Semiconductor Society of India (SSI)
- **Executive Committee Member**, Electron Microscopy Society of India (EMSI)
- **Secretary & Executive Committee member**, EMSI- North Zone,
- **Member**, Royal Society of Chemistry, UK
- **Member**, Institute of Physics, UK
- **Member**, IEEE, USA
- **Member**, American Chemical Society (ACS), USA
- **Member**, IEEE Electron Devices Society, USA
- **Member**, IEEE Council on Electronic Design Automation
- **Member**: IEEE Nanotechnology Council
- **Member**, IEEE Sensors Council
- **Life Member**, Institute of Electronics & Telecommunication Engineers, India
- **Life Member**, Indian Physics Association
- **Life Member**, Materials Research Society of India (MRSI)
- **Life Member**, Semiconductor Society of India, (SSI)
- **Life Member**, Metrology Society of India, (MSI)
- **Life Member**, Electron Microscopy Society of India Secretary (EMSI)
- **Member**, International Association for Advanced Materials (IAAM)
- **Member**, Vigyan Bharti (Vibha)

Any other Information

(Not more than 100 words)

- 1. Development of Metal Oxide & Nitride based Sensors, MM project, CSIR-NPL (PI) (Ongoing)**
- 2. Fabrication of efficiency enhanced nanostructured InGaN/GaN solar cells (Joint with IITD) funded by DST, 2016-2020 (PI):59.67 Lakh (Completed)**
- 3. MBE grown GaN/In_xGa_{1-x}N high efficiency multi junction Solar cell, under the project DNEED, 12th FYP 2012-1017 funded by CSIR (PI): 8.00 Crore (Completed)**
- 4. Growth & Characterization of III-nitride Hetero-structures for Solid State Lighting, under CSIR “TAP-SUN” 2011-2017 (PI): 3.63 Crore (Completed)**
- 5. Formation of Alkali Metals Nanostructures on reconstructed low & high index silicon surfaces by DST, Fast track Young Scientist 2007-2010 (PI).11.23 Lakh (Completed)**
- 6. Fabrication of LED Devices and Systems for Solid State Lighting, A supra-institutional network project by CSIR under 11th FYP 2007-2012 (TM): 48.35 Crore (Completed)**
- 7. Surface Analysis of dispenser cathodes for high power microwave tubes, A supra-institutional network project by CSIR under 11th FYP 2007-2012 (TM):66.0 Lakh (Completed)**