

CURRICULUM VITAE

Dr. Manoj Kumar, M. Sc., M. Phil., Ph.D.

Department of Physics

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ABOUT ME I am serving as Professor, Department of Physics, Harcourt Butler Technical University (HBTU), Kanpur, India. My primary responsibilities encompass teaching Physics to both undergraduate and postgraduate students. My research is focused on the intriguing field of semiconductor materials and devices

RESEARCH ACCOMPLISHMENTS	53 Research Articles	02 Review Article
	19 Conference Abstracts	
Total Impact Factor (SCI-E): 178,		Maximum: 7.39
Google Scholar Citation: 868	h-index: 17	i10-index: 23
Ph. D Thesis awarded under my Supervision:		01
Ph. D Thesis submitted under my Supervision:		01
Ph. D Research Scholars Registered under my Supervision:		02
PG Major Project Dissertation:		15

SUMMARY OF RESEARCH/TEACHING EXPERIENCES

- **Professor** (From March 15, 2024 – Till Date), Department of Physics, Harcourt Butler Technical University (HBTU), Kanpur, UP, India
- **Associate Professor**, (From July 22, 2019 –March 10, 2024), School of Physical Science, Department of Physics, Starex University, Gurugram, Delhi-NCR, Haryana, India.
- **Assistant Professor**, (From March 01, 2016 – February 28, 2019) Konkuk University, Seoul, South Korea and obtained proficiency in the development of Thin Film Transistors (TFTs), Optoelectronic Devices, Nonvolatile memory devices and Synthesized Nanowires/Nanoparticles. Guided Master and Ph. D. students.
Short course on “Semiconductor Materials and Devices” for Master and Ph. D. Students.
- **Assistant Professor in Research**, (From June 2015 –February 2016) at Konkuk University, Seoul, South Korea, and got expertise in the development of TFTs and TFTs-based nonvolatile memory, UV PDs.

- **Visiting Scientist**, (From February 2014 – February 2015) at Bilkent University, Ankara, Turkey, and gained the skill to develop optoelectronic devices. Guided Master and Ph. D. students.
- **Post-Doctoral Researcher**, (January 2009 – April 2013) Toyohashi University of Technology, Toyohashi, Japan, and obtained proficiency in the Development of Nitride-based intelligent devices; Plasmon enhanced AlGaIn/GaN photodetector.
- **Post-Doctoral Researcher**, (October 2007 – September 2008) Yonsei University, Seoul, South Korea and got expertise in the fabrication & characterization of p and n-type ZnO thin films, hetero and homo-junction by various deposition techniques, and processing of LED.
- **Post-Doctoral Researcher**, (October 2005 – October 2007) Chonnam National University, Gwangju, South Korea, and attained the ability to develop & characterized p and n-type ZnO thin films, homo-junction, LED's fabrication, and p-TCO.
- **Lecturer**, (August 2004 – April 2005) Amity School of Engineering & Technology, New Delhi, India, and taught B. Tech. 1 yr. classes, conducted Laboratory classes in Physics, Microprocessor, Instrument circuit & system, and continued R&D in developing Dye-Sensitized Solar Cell.
- **JRF/SRF**, (August 2003 – July 2004) at the University of Delhi, and obtained proficiency to develop epitaxial thin films and Synthesize of Dye-Sensitized Solar Cell.
- **Researcher** (April 2001 – March 2002) under the Association of International Education Japan (AIEJ) and worked at the Toyohashi University of Technology, Toyohashi, Japan, and got expertise in the fabrication & characterization of epitaxial thin films by PLD & Sputtering. Furthermore, Synthesize Dye-Sensitized Solar Cell

ADDITIONAL ADMINISTRATIVE/ACADEMIC RESPONSIBILITIES

- **Dean, Research & Innovation Cell** (July 2021–March 2024), Starex University, Gurugram, Delhi-NCR, Haryana, India,
- **HOD** (April 2021–March10, 2024) Department of Physics, Starex University, Gurugram, Haryana.
- **Member** of Research Advisory Committee, Starex University, Gurugram, Haryana
- **Member** of Proctorial board committee, Starex University, Gurugram, Haryana
- **Head of BOS**, Department of Physics, Starex University, Gurugram, Haryana
- **Head of SRC**, Department of Physics, Starex University, Gurugram, Haryana

HONORS/FELLOSHIPS

- AIEJ (Association of International Education Japan) fellowship, JAPAN, April 2001-March 2002
- BK21 (Brain Korea) From October 2007 – September 2008
- BK21 (Brain Korea) from June 2015 – February 2016

MEMBERSHIP OF PROFESSIONAL/ACADEMIC BODIES, SOCIETIES

- Semiconductor Society (India), Reg. No. -209, India, <http://www.ssi.org.in>
- National Thermo-physical Society (NTPS), India
- Name listed in the **28th Anniversary edition of Who's Who in the World.**

RESEARCH SKILLS AND EXPERTISE - SUMMARY

19 years or so experience in fabrication and characterization of technologically important electronic materials (Epitaxial and Polycrystalline thin films) and development of devices: Thin Film Transistors (TFTs), Non-volatile Memory, Light Emitting Diodes (LED's) and Photodetectors (PD's).
Compound Semiconductor Nano-Materials: II-VI and III-V (ZnO, GaN)

COMPREHENSIVE KNOWLEDGE AND EXPERTISE

- 1)** Thin film deposition Techniques: Sputtering, PLD, e-beam evaporator, sol-gel, ALD and PECVD
- 2)** Structural, optical and electrical characterization: XRD, AFM/SEM, TEM, PL, UV-VIS, Hall-Effect, etc;
- 3)** Development and Characterization of TFTs, TFTs based Non-volatile Memory, LED's and PD's devices using standard procedure like Photolithography, Inductively coupled plasma reacting Ion etching (ICP-RIE), E-beam evaporator and Lift off process; Layout Designing;
- 4)** Familiar with publishing scholarly research articles in journals with high impact factor

RESEARCH INTERESTS

Fields: Thin film processing/Nanostructure Materials Synthesize/ Device Fabrication

- Wide band gap Semiconductors (II-VI & III-V) Nanostructures for Optoelectronics/Photovoltaic Devices, Thin Film Transistors (TFTs)/TFTs based Nonvolatile Memory: Fabrication of Chip,
- Epitaxial/polycrystalline film growth processing/homo & hetero-structures nanostructures fabrication: for solar-cells, Optical-Sensors, gas-Sensors TFTs, Memory and Oxides
- Energy Storing Devices
- Materials applicable for biotechnology and environmental applications
- Next Generation Lithographic Technologies for making micro/nano devices

Reviewer of the Journals

- | | |
|------------------------------------|--|
| 1. J. Crystal Growth | 8. Solid State Electronics |
| 2. Current Applied Physics | 9. Materials Science in Semiconductor Processing |
| 3. Journal of Electronic Materials | 10. Materials Research Bulletin |
| 4. Applied Surface Science | 12. Journal of Alloys and Compounds |
| 5. Jpn. J. Appl. Phys. | 13. ACS Applied Materials & Interfaces |
| 6. Thin Solid Films | |

TECHICAL SKILLS: Hands-on experience with sophisticated instruments

Thin Film Deposition Techniques: PLD (XeCl and ArF excimer Lasers); RF Magnetron Sputter; Electron Beam Evaporation –SANVAC; Plasma Enhance Chemical Vapor Deposition (PECVD) – SAMCO; Atomic Layer Deposition (ALD) - Savannah; Vacuum Coating Unit; Spin Coating Unit; SolGel Technique;

Characterization Techniques: X-ray diffractometer-Bruker AXS (D 8), Rigaku NINT Grating Incident Angle XRD; Atomic Force Microscopy (AFM)-SPI 400; Scanning Electron Microscopy-(FE-SEM, S4200, Hitachi, Japan); Energy Dispersive X-ray analysis (EDX); Raman (WiTech); Hall Measurement Setup-SPI-7500; Probe station; Current-Voltage (I-V) characteristics-EGK 2000; I-V Measurement Source meter (2400, Keithley);

UV-VIS/FTIR spectrophotometer-JOEL; Reflection High-Energy Electron Diffraction (RHEED) HITACHI-H 300; Photoluminescence (PL) spectra using 325 nm beam of He-Cd laser; DEKTAK³ ST profilometer; Photolithography; Reactive Ion Etching (RIE)-100 iPH; Layout Designing;

ACADEMIC RECORDS

Degree/Subject	University/Institution	Year	Details
PhD (Electronic Science)	University of Delhi, New Delhi, India	2003	Thesis Topic: Growth and Characterization of High Quality Epitaxial n-type ZnO Thin Films
M. Phil. (Material Science)	IIT Roorkee [Formerly: University of Roorkee, Roorkee]	1996	Thesis Topic: Study of some aspects of H-plane sectoral multiplayer solid & hollow dielectric horn antenna
M. Sc. (Physics)	CCS University Meerut, India	1994	Subject: Physics with Electronics
B. Sc.	CCS University Meerut, India	1992	Subject: Physics, Chemistry, Mathematics

LIST OF RESEARCH PUBLICATIONS

Communicated Manuscript

- Vandana Kaushik, Kirti Bhardwaj, Deepak Kumar, Manoj Kumar, Sanjeev K. Sharma, Effect of Molarity, Ageing, Thickness, and Calcined Temperature on Microstructural and Optical Properties of ZnO thin Films Deposited on Quartz Glass by Sol-gel Spin Coating, **Hybrid Advances (Under Review)**

JOURNALS

- Vinay Narwal, Damini Dalal, Amanpal Singh, Dinesh Kumar, Sanjay Kumar Swami, Neha Chaturvedi, Manoj Kumar, Arvind Kumar and Anuj Kumar, "Synthesis of n-ZnO/p-CZTS heterostructure junction by sol-gel spin coating technique", **IETE Journal of Research** (Accepted in July and Published online: 01 Aug 2024), Taylor & Francis, <https://doi.org/10.1080/03772063.2024.2377770>
- Anuj Kumar, Damini Dalal, Sanjay Kumar Swami, Amanpal Singh, Dinesh Kumar, and Manoj Kumar, "Study of Deposition Temperature Effect on Spray-Deposited Copper Oxide Thin Films and Its Schottky Diodes" **Physica Scripta**, Accepted on May 28, 2024 (<https://doi.org/10.1088/1402-4896/ad51b7>)
- Anirudh Kumar, Deepak Kumar, Naini Jain, **Manoj Kumar**, Gajanan Ghodake, Sushil Kumar, Rupendra K. Sharma, Jakub Holovsky, Viswanathan S. Saji, Sanjeev K. Sharma, "Enhanced efficiency and stability of electron transport layer in perovskite tandem solar cells: Challenges and future perspectives" **Solar Energy**, Vol. 266(2023) pp 112185.
- Anuj Kumar, Amanpal Singh, Dinesh Kumar, Ashish Garg, Viresh Dutta, Sanjay Kumar Swami, Neha Chaturvedi, **Manoj Kumar**, "Spray deposited carbon nanotube embedded ZnO as an electrons transport layer in inverted organic solar cells" **Hybrid Advances** 04 (2023) 100088. Elsevier
- Vandana Kaushik, Vikas Kumar, Deepak Kumar, Ravi Kumar, Vishal Singh, **Manoj Kumar**, Sanjeev K. Sharma, "Effect of Aging on microstructural and optical properties of sol-gel dip coated BaTiO₃ thin films" **Applied Surface Science Advances** Vol. 16 (2023) pp 100418 Elsevier.

6. Vandana Kaushik, **Manoj Kumar** and Anuj Kumar, "Structural and optical properties of BaTiO₃ thin film deposited on quartz substrate by sol-gel technique", **Eur. Chem. Bull. Vol. 12, pp 2304-2313 (2023)**.
7. Vandana Kaushik and **Manoj Kumar**, "A brief review of ZnO based Perovskite Solar Cells and its future trends" **Neuroquantology**, Vol. 20, pp 4349-4364, (2022).
8. Youngwook Noh, Gyu Young Kim, Horim Lee, Jaehak Shin, Kunsik An, **Manoj Kumar** and Dongjin Lee "A review on intense pulsed light process as post-treatment for metal oxide thin films and nanostructures for device application" **Nanotechnology**, Vol. 33, pp 272001, (2022).
9. Youngwook Noh, Jaehak Shin, Horim Lee, Gyu Young Kim, **Manoj Kumar**, Dongjin Lee "Decoration of Ag nanoparticle on ZnO nanowire by intense pulsed light and enhanced UV photodetector" **Chemosensors Vol. 09, pp 321 (2021)**.
10. Shrestha Tyagi, Ashwani Kumar, **Manoj Kumar** and Beerpal Singh, "Large Area vertical aligned MoS₂ layers toward the application of thin film transistor", **Materials Letters, Vol. 250, pp 64-67 (2019)**.
11. **Manoj Kumar**, Hakyung Jeong, Dongjin Lee, "Solution processed undoped and Indium doped ZnO thin film transistors: Role of Ag nanowires into InZnO channel layer" **Semiconductor Science and Technology Vol. 34, pp 075019 (2019)**.
12. **Manoj Kumar**, Hakyung Jeong, Dongjin Lee "UV photodetector with ZnO nanoflowers as an active layer and a network of Ag nanowires as transparent electrodes" **Superlattices and Microstructures, Vol. 126, pp 132-138 (2019)** Elsevier.
13. **Manoj Kumar**, Jeong Hykyang and Dongjin Lee, "Solution-processed nonvolatile Hf-doped ZnO thin-film transistor memory with SiO₂ micro- and nanoparticles as a trapping medium", **Material Science & Engineering B, Vol. 236-237, pp 225-228 (2018)** Elsevier.
14. **Manoj Kumar**, Jeong Hykyang and Dongjin Lee, "A solution-processed yttrium-doped ZnO thin film transistors with sol-gel derived yttrium oxide gate dielectric layer", **Semiconductor Science & Technology Vol. 33 pp 105001 (2018)** IOP.
15. **Manoj Kumar**, Jeong Hykyang and Dongjin Lee, "Solution-processed ZnO thin-film transistors codoped with Na and F" **J. materials Science: Materials in Electronics, Vol. 29, pp 13058-13067 (2018)**.
16. **Manoj Kumar**, Jeong Hykyang and Dongjin Lee, "Solution-processed high-mobility ZnO thin film transistors based on multiple-stacked channel layer doped with Hf and Mg", **Superlattices and Microstructures, Vol. 120, pp 395-401 (2018)** Elsevier.
17. Sachin V. Otari, **Manoj Kumar**, Muhammad Zahid Anwar, Nanasahab Thorat, Sanjay K. S. Patel, Dongjin Lee, Jai Hyo Lee, Jung-Kul Lee, Yun Chan Kang, and Liaoyuan Zhang "Rapid synthesis and decoration of reduced graphene oxide with gold nanoparticles by thermostable peptides for memory device and photothermal applications" **Scientific Reports**, DOI:10.1038/s41598-017-10777-1.
18. **Manoj Kumar**, Hakyung Jeong, Amit Kumar, Beer Pal Singh and Dongjin Lee, "Magnetron-sputtered high performance Y-doped ZnO thin film transistors fabricated at room temperature", **Material Science in Semiconductor Processing Vol. 71, pp 204-208 (2017)**, Elsevier.
19. **Manoj Kumar**, Sachin V. Otari, Hakyung Jeong, Dongjin Lee, "Solution-processed highly efficient Au nanoparticles and their reduced graphene oxide nanocomposites as charge trapping media for ZnO thin film transistor nonvolatile memory", **J. Alloys and Compounds Vol. 725, pp 1115-1122 (2017)**, Elsevier.
20. Dongjin Lee, Youngwook Noh, Sungsik Park, **Manoj Kumar**, Young Seek Cho, "Performance enhancement of Pirani gauge on silicon-on-insulator wafer with simple fabrication process" **Sensors and Actuators A, Vol. 263, pp 264-268 (2017)**, Elsevier.

21. **Manoj Kumar**, Jeong Hykyang and Dongjin Lee, *Sol-gel derived Hf- and Mg-doped high-performance ZnO thin film transistors*, **J. Alloys and Compounds**, Vol. **720**, pp **230** (2017), Elsevier.
22. **Manoj Kumar**, Jeong Hykyang and Dongjin Lee, "Nonvolatile memory devices based on undoped and Hf- and NaF-doped ZnO thin film transistors with Ag nanowires inserted between ZnO and gate insulator interface", **RSC Advances** Vol. **7**, pp **27699–27706** (2017), Royal Society of Chemistry.
23. Sachin V. Otari, **Manoj Kumar**, Jai Hyo Lee, and Jung-Kul Lee. *Rapid, thermostable antimicrobial peptide mediated synthesis gold nanoparticles as highly efficient charge trapping medium for sol-gel derived thin film transistor*, **Materials Letters**, Vol. **188**, pp **375** (2017), Elsevier.
24. **Manoj Kumar**, Jeong Hykyang and Dongjin Lee, *Effect of UV/ozone plasma treatment on sol-gel-derived HfO₂ thin films*, **Ceramics International**, Vol. **43**, pp **1174-1179** (2017), Elsevier.
25. **Manoj Kumar**, Jeong Hykyang, Kinyas Polat, Ali Kemal Okyay and Dongjin Lee, "Fabrication and characterization of graphene/AlGa_N/Ga_N ultraviolet Schottky photodetector" **J. Phys. D: Appl. Phys.** Vol. **49**, pp **275105** (2016), IOP.
26. **Manoj Kumar**, Kinyas Polat, Ali Kemal Okyay and Dongjin Lee "Metal-semiconductor-metal UV photodetector based on Ga doped ZnO/graphene interface" **Solid State Communications**, Vol. **224**, pp **37-40** (2015), Elsevier.
27. Eda Cetinorgu-Goldenberg, Turkan Bayrak, Cagla Ozgit-Akgun, Ali Haider, Shahid A Leghari, **Manoj Kumar**, Necmi Biyikli "Effect of O₂/Ar Flow Ratio and Post-deposition Annealing on the Structural, Optical and Electrical Characteristics of SrTiO₃ Thin Films Deposited by RF Sputtering at Room Temperature", **Thin Solid Films**, Vol **590**, pp **193-199** (2015), Elsevier.
28. **Manoj Kumar**, Burak Tekcan, and Ali Kemal Okyay "Performance enhancement of Ga_N metal-semiconductor-metal ultraviolet photodetectors by insertion of ultrathin interfacial HfO₂ layer", **Journal of Vacuum Science and Technology A**, Issue **2**, Vol. **33**, pp **021204** (2015), American Institute of Physics.
29. **Manoj Kumar**, Burak Tekcan, and Ali Kemal Okyay "Atomic layer deposited HfO₂ based metal insulator semiconductor Ga_N ultraviolet photodetectors", **Current Appl. Phys.**, Vol. **14**, pp **1703 - 1706**(2014), Elsevier.
30. **Manoj Kumar**, Chang Yong Lee, Hiroto Sekiguchi, Hiroshi Okada, and Akihiro Wakahara, "Demonstration of a large-area AlGa_N/Ga_N Schottky barrier photodetector on Si with high detection limit", **Semiconductor Science & Technology**, Vol. **28** pp **094005** (2013), IOP.
31. **Manoj Kumar**, Hiroto Sekiguchi, Hiroshi Okada, and Akihiro Wakahara, "Influence of contact shape on AlGa_N/Ga_N Schottky diode prepared on Si with thick buffer layer", **Appl. Phys. A-Materials Science & processing**, Vol. **112**, pp **847-853** (2013) Springer.
32. Amit Kumar, Deepak Chaudhary, **Manoj Kumar**, Beer Pal Singh, "A Novel Approach to use ZnO Thin Film as a Switching in Dynamic Random Access Memory (DRAM) Cell" **Int. J. of Computer Application**, Vol. **44**, pp **1** (2012).
33. **Manoj Kumar**, Jyoti Prakash Kar, In-Soo Kim, Se-Young Choi and Jae-Min Myoung, "Growth of p-type ZnO thin film on n-type silicon substrate and its application as hybrid homojunction" **Current Appl. Phys.** Vol., **11**, pp **65-69** (2011), Elsevier.
34. Amit Kumar, **Manoj Kumar** and Beer Pal Singh, "Nonvolatile resistance memory switching in polycrystalline ZnO thin films grown by RF magnetron sputtering" **Int. J. Adv. Eng. Sci. & Technol.** Vol., **1**, pp **118** (2010).
35. Amit Kumar, **Manoj Kumar** and Beer Pal Singh, "Induction of p-type conduction in sputtered deposited Al-N codoped ZnO thin films" **Optics Communications**, Vol. **283**, pp **3994-3997** (2010), Elsevier.

36. Amit Kumar, **Manoj Kumar** and Beer Pal Singh, "Fabrication and characterization of magnetron sputtered arsenic doped p-type ZnO epitaxial thin films" **Appl. Surf. Sci.**, Vol. 256 pp 7200 -7203 (2010), Elsevier.
37. **Manoj Kumar**, Sang-Kyun Kim and Se-Young Choi, "Formation of Al-N codoped p-ZnO/n-Si (100) heterojunction structure by RF co-sputtering technique", **Appl. Surf. Sci.**, Vol. 256, pp 1329 -1332 (2009), Elsevier.
38. J. P. Kar, M. Kumar, J. H. Choi, S. N. Das, S. Y. Choi, and J. M. Myoung, "Fabrication of ZnO thin film nanowires hybrid homojunction on silicon substrate", **Solid State Communications**, Vol. 149, pp 1337-1341 (2009), Elsevier.
39. **Manoj Kumar**, Jyoti Prakash Kar, In-Soo Kim, Se-Young Choi and Jae-Min Myoung, "Fabrication of As-doped p-type ZnO thin film and ZnO nanowire inserted p-n homojunction structure", **Appl. Phys. A-Materials Science & processing**, Vol. 97, pp 689-692 (2009), Springer.
40. **Manoj Kumar**, R. M. Mehra and Se-Young Choi, "Effect of oxygen ambient on structural, optical and electrical properties of epitaxial Al-doped ZnO thin films on r-plane sapphire by pulsed laser deposition", **Current Appl. Phys.**, Vol. 9 pp 737-741 (2009), Elsevier .
41. In Soo Kim, Eun-Kyung Jeong, Do Yun Kim, **Manoj Kumar**, Se-Young Choi, "Investigation of p-type behavior in Ag-doped ZnO thin films by E-beam Evaporation", **Appl. Surf. Sci.**, Vol. 255 pp. 4011-4014 (2009), Elsevier.
42. **Manoj Kumar** and Se-Young Choi, "Fabrication of As doped p-type ZnO thin films using As₂O₃ as doping source material by E-beam evaporation", **Appl. Surf. Sci.**, Vol. 255 pp. 2173-2175 (2008), Elsevier.
43. Parmod Sagar, **Manoj Kumar** and R. M. Mehra, "The Meyer-Neldel rule in sol-gel derived polycrystalline ZnO:Al films", **Solid State Communications**, 147, pp. 465-469 (2008), Elsevier.
44. **Manoj Kumar** and Byung-Teak Lee, "Improvement of electrical and optical properties of Ga and N co-doped p-type ZnO thin films with thermal treatment", **Appl. Surf. Sci.**, Vol. 254, pp. 6446 -6449 (2008), Elsevier.
45. Parmod Sagar, **Manoj Kumar**, R.M. Mehra, H. Okada, Akihiro Wakahara, Akira Yoshida, "Epitaxial growth of zinc oxide thin films on epi-GaN/sapphire (0001) by sol-gel technique", **Thin Solid Films**, Vol. 515, pp. 3330 - 3334 (2007), Elsevier.
46. Poonam Suri, **Manoj Kumar** and R. M. mehra, "Photovoltaic performance of dye-sensitized ZnO solar cell based on Eosin-Y photosensitizer" **Materials Science-Poland**, Vol. 25, No. 1, pp. 137 - 144 (2007), Springer.
47. **Manoj Kumar**, Tae-Hwan Kim, Sang-Sub Kim and Byung-Teak Lee, "Growth of epitaxial p-type ZnO thin films by co-doping of Ga and N", **Applied Physics Letters**, Vol. 89, pp. 112103 – 112103-3 (2006), American Institute of Physics.
48. **Manoj Kumar**, R. M. Mehra, A. Wakahara, M. Ishida and A. Yoshida, "Pulsed laser deposition of epitaxial Al-doped ZnO film on sapphire with GaN buffer layer", **Thin Solid Films**, Vol. 484, pp. 174 – 183 (2005), Elsevier.
49. Parmod Sagar, **Manoj Kumar** and R. M. Mehra, "Influence of Hydrogen incorporation in sol-gel derived aluminum doped ZnO thin films", **Thin Solid Films**, Vol. 489, pp. 94 - 98 (2005), Elsevier.
50. Parmod Sagar, **Manoj Kumar** and R. M. Mehra, "Electrical and optical properties of sol-gel derived ZnO:Al thin films", **Materials Science-Poland**, Vol. 23, No. 3, pp. 685 - 696 (2005), Springer.
51. **Manoj Kumar**, A. Wakahara, A. Yoshida and R. M. Mehra, "Epitaxial growth of high quality ZnO: Al liconfilm on silicon with a thin γ -Al₂O₃ buffer layer", **Journal of Applied Physics**, Vol. 93, No. 7, pp. 3837 – 3843 (2003), American Institute of Physics.
52. A.V. Singh, **Manoj Kumar**, A. Wakahara, A. yoshida, and R. M. Mehra, "Al doped Zinc Oxide (ZnO:Al) thin films by pulsed laser", **J. Indian Inst. Sci.**, Vol. 81 pp. 527 - 533 (2001).

53. A.V. Singh, **Manoj Kumar**, A. Wakahara, A. yoshida, and R. M. Mehra, "Study of ZnO:Al thin films prepared by ArF excimer laser ablation", **Indian J. of Engineering & Materials Sciences**, Vol. 7 pp. 259 -263 (2000).

PROCEEDINGS

1. **Manoj Kumar**, A. Wakahara, A. Yoshida and R. M. Mehra, "Epitaxial Growth of ZnO: Al Thin Film on Sapphire (0001) with Slant-axis Configuration by r. f. Sputtering", **Int. Conf. on Electrical Engineering 2004/ Asia-Pasific Conf. on Transducers and Micro-Nano Technology 2004 (ICEE2004/APCOT MNT 2004)**, July 4-8, 2004, Sapporo, PO3-13, **Proceedings**, Vol.1, pp.652-656
2. **Manoj Kumar**, R. M. Mehra, Akihiro Wakahara and Akira Yoshida, "Epitaxial Growth of ZnO:Al High Quality Thin Film on epi-GaN/Sapphire (0001) by Pulsed Laser Ablation", **Proceedings of the 20th International Workshop on Physics of Semiconductor Devices (IWPSD)-2003**, IIT Madras, Vol 1, Page 206-208.
3. Ravinder Kaur, P. Sagar, **Manoj Kumar**, S. K. Sharma, R. S. Gupta and R. M. Mehra, "Preparation and Characterization of Sol-Gel Derived Rare Earth Doped Zinc Oxide Films", **Proceedings of the 20th IWPSD-2003**, IIT, Madras, Vol 1, pp 212-214.
4. Tae-Hwan Kim, **Manoj Kumar**, Sang-Sub Kim and Byung-Teak Lee, "Growth and characterization of undoped, Ga-doped n-type and Ga-N codoped p-type ZnO thin films on ZnO wafer using RF magnetron sputtering", **Proceeding in the 4th International Workshop on ZnO and Related Materials**, University of Giessen, Germany, October 3-6, OR 11.40, 2006.
5. I-S. Kim, T. H Kim, **M. Kumar**, S. S. Kim and B. T. Lee, "Growth and Characterization of high-quality undoped, n-type and p-type ZnO thin films using RF magnetron sputtering", **Proceeding in Indo-Japan Workshop**, University of Delhi South Campus, December 17-19, pp. 1- 5, 2006.
6. A.V. Singh, **Manoj Kumar**, A. Wakahara, A. yoshida, and R. M. Mehra, "Highly conducting and transparent n-and p-type Zinc Oxide thin films in oxygen ambient", **Proceedings of the 11th IWPSD**, IIT, New Delhi, pp-212 - 214, 2001.

CONFERENCES

1. **Manoj Kumar**, Hiroto Sekiguchi, Hiroshi Okada¹ and Akihiro Wakahara "AlGaIn/GaN Schottky barrier photodetector on Si with high detection limit" **ISPlasma Jan. 28-Feb 1, 2013**, Nagoya University, Nagoya, Japan.
2. **Manoj Kumar**, Ajay Tiwari, Hiroshi Okada, Yuzo Furukawa and Akihiro Wakahara, "Metal selection for surface plasmon polaritons excitation at metal/dielectric interface in mid-UV wavelength range", **ISPlasma March 7-10, 2010**, Meijo University, Nagoya, Japan.
3. **Manoj Kumar**, I. S. Kim, & Se-Young Choi, "Fabrication of p-ZnO/n-Si heterojunction diode by co-sputtering", **30th International Symposium on Dry Process (DPS2008)**, Nov. 26-28, 2008 Kokuto Hall, Minato-ku, Tokyo JAPAN.
4. **Manoj Kumar**, I. S. Kim, and Se-Young Choi, "Realization of p-type conduction in Al-N codoped ZnO thin films by RF co-sputtering", **25th Korea-Japan International Seminar**, November 19 - 21, 2008, Gangneung, South Korea.
5. Poonam Suri, **Manoj Kumar** and R. M. Mehra, "Dye Sensitized Solar Cell using Nano Size ZnO", **3rd International Conference on Materials for on Advanced Technologies (ICMAT 2005) & 9th International Conference Advanced Materials (ICAM 2005)** July 3 - 8, 2005, Singapore.

6. Poonam Suri, **Manoj Kumar** and R. M. Mehra, "Degradation of dye sensitized solar cell (ZnO electrode)", **3rd International Conference on Materials for on Advanced Technologies (ICMAT 2005) & 9th International Conference Advanced Materials (ICAM 2005) July 3-8, 2005, Singapore.**
7. Ravinder Kaur, A.V. Singh, **Manoj Kumar**, R. S. Gupta and R. M. Mehra, "Electrical Transport in Sol-Gel Derived Al Doped ZnO Films", **Proceedings in PV in Europe from PV Technology to Energy Solution, Paris, France, 7-11 June 2004, pp 377.**
8. **Manoj Kumar**, and R.M. Mehra, "Characterization of n-Type ZnO:Al thin films prepared by ArF Excimer laser ablation", **International Conference on Advanced Materials (ICAM-2000, Dec. 26-28, 2002, C.C.S University, Meerut, India).**
9. A.V. Singh,**Manoj Kumar**, and R. M. Mehra, "Transparent Conducting ZnO:Al Thin Films prepared By ArF Excimer Laser Ablation", **Tenth International Workshop on Physics of Semiconductor Devices (Dec. 14-18, 1999, IIT, Delhi) pp-1198.**
10. A. V. Singh,**Manoj Kumar**, and R. M. Mehra, "Highly and conductive transparent Al doped Zinc Oxide (ZnO:Al) thin films by pulsed laser ablation", **Tokai-section joint conference of the eight institutes of electrical and related engineers. (Sept. 2000, Hamamatsu-Japan) pp-135.**
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DECLARATION

I undersigned, declare that the entire information provided in this CV is correct and up to date to the best of my knowledge and belief.

Manoj Kumar

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