


Faculty Profile



Title	Dr.	First Name	Yogesh	Last Name	Pratap	Photograph
Designation	Assistant Professor					
Address	Department of Electronic Science University of Delhi, South Campus New Delhi – 110 021					
Phone No Office	91-11-24157193 (Direct) 91-11-24110440 (office)					
Residence						
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Educational Qualifications						
Degree	Institution				Year	
Ph.D (Microelectronics)	University of Delhi, New Delhi				2016	
M.Tech (VLSI Design)	C-DAC, Guru Gobind Singh Indraprastha University, New Delhi				2011	
M.Sc. (Electronics)	Kanpur University, U.P.				2008	
B.Sc.	Kanpur University, U.P.				2006	
Career Profile						
Organization	Designation	Duration	Role			
Department of Electronic Science, University of Delhi South Campus, Delhi-110021	Assistant Professor	09.03.2022 - Till Date	Teaching & Research			
Department of Instrumentation, Shaheed Rajguru College of Applied Science for Women, Vasundhara Enclave, Delhi-110096	Assistant Professor	06.01.2016 – 07-03-22	Teaching & Research			
Administrative Assignments						
<ul style="list-style-type: none"> • Execom member IEEE Electron Devices Society Delhi Chapter, 2018- till date • Member, DRC, DOES UDSC, 2022- till date • Member, COC, DOES UDSC, 2022- till date • Convenor, Robotics Club, SRCASW- 2019-20 and 2020-21 • Convenor, Movie Club, SRCASW- 2019-20 and 2020-21 • Local Organizing Committee Member in First National Conference on Recent Developments In Electronics (NCRDE 2013) January 1820, 2013; Organized by IEEE EDS Delhi Chapter, New Delhi and Department of Electronic Science, University of Delhi South Campus, New Delhi- 						

110021,India

- Member of Event Management and Canteen Comity in Shaheed Rajguru College of Applied Science for Women, University of Delhi, Delhi-110096, India.

Areas of Interest / Specialization

Nanoelectronics-Modelling, simulation and characterization of Nano electronics devices, Compact modelling, DC, CV and RF Characterization, Low power VLSI/ULSI design
Nano-bioelectronics-Semiconductor devices for bio-sensing applications,

Subjects Taught

- Signals and Systems
- Control Systems
- Embedded Systems
- Virtual Instrumentation
- Programming Using Matlab

Chapters in Books:

1. Neha Garg, **Yogesh Pratap**, Mridula Gupta, Sneha Kabra, Impact of Trap Charges and High Temperature on Reliability of GaAs/Al₂O₃-Based Junctionless FinFET, pp 434- 440 , Computers and Devices for Communication, Part of the Lecture Notes in Networks and Systems book series (LNNS), volume 147, Springer, ISBN: 978-981-15-8366-7
2. **Yogesh Pratap**, S. Haldar, R. S. Gupta and Mridula Gupta, "Hot Carrier Reliability Issues of Junctionless Transistor due to Interface Trap Charges for Analog /RF Applications," Physics of Semiconductor Devices, Environmental Science and Engineering, Springer, Cham. https://doi.org/10.1007/978-3-319-03002-9_76, ISBN: 978-3-319-03001-2

Publications in International Journals:

3. **Yogesh Pratap**, S. Haldar, R. S. Gupta and Mridula Gupta "Performance Evaluation and Reliability Issues of Junctionless CSG MOSFET for RFIC," IEEE Transactions on Device and Materials Reliability, Vol. 14, no. 1, pp. 418-425, March 2014. (Impact Factor: 1.583)
4. **Yogesh Pratap**, Pujarini Ghosh, S. Haldar, R. S. Gupta and Mridula Gupta, "An analytical subthreshold current modeling of cylindrical gate all around (CGAA) MOSFET incorporating the influence of device design engineering," Microelectronics Journal, Elsevier, Vol. 45, no. 4, pp. 408-415, April 2014. (Impact Factor: 1.284)
5. **Yogesh Pratap**, S. Haldar, R. S. Gupta and Mridula Gupta "Localized charge-dependent threshold voltage analysis of gate-material-engineered junctionless nanowire transistor," IEEE Transactions on Electron Devices, Vol. 62, no. 8, pp. 2598-2605, June 2015. (Impact Factor: 1.583)
6. J. H.K Verma, **Yogesh Pratap**, S. Haldar, R. S. Gupta and Mridula Gupta, "Capacitance Modeling of Gate Material Engineered Cylindrical/Surrounded Gate MOSFETs for Sensor Applications," Superlattices and Microstructures, Elsevier, Vol. 88, pp. 271-280, December 2015. (Impact Factor:

2.384)

7. **Yogesh Pratap**, R. Gautum, S. Haldar, R. S. Gupta and Mridula Gupta, "Physics Based Drain Current Modeling of Gate-All-Around Junctionless Nanowire Twin-Gate Transistor (JN-TGT) for Digital Applications," *Journal of Computational Electronics*, Springer, Vol. 15, no. 2, pp. 492-501, June 2016. (Impact Factor: 1.637)
8. A. Sharma, A. Jain, **Yogesh Pratap**, and R. S Gupta, "Effect of High-k and Vacuum Dielectrics as Gate Stack on a Junctionless Cylindrical Surrounding Gate (JL-CSG) MOSFET," *Solid State Electronics*, Elsevier, Vol. 123, pp. 26-32, September 2016. (Impact Factor: 1.492)
9. **Yogesh Pratap**, S. Haldar, R. S. Gupta and Mridula Gupta "Gate Material Engineered Junctionless Nanowire Transistor (JNT) with Vacuum Gate Dielectric for Enhanced Hot Carrier Reliability," *IEEE Transactions on Device and Materials Reliability*, Vol. 16, pp. 360-369, 2016. (Impact Factor: 1.583)
10. M. Kumar, **Yogesh Pratap**, S. Haldar, R. S. Gupta and Mridula Gupta "Cylindrical Gate All Around Schottky Barrier MOSFET with Insulated Shallow Extensions at Source/Drain for Removal of Ambipolarity: A Novel Approach," *Journal of Semiconductor*, vol. 38, no.12, pp. 124002, 2018.
11. **Yogesh Pratap**, M. Kumar, Sneha Kabra, S. Haldar, R. S. Gupta and Mridula Gupta "Analytical Modeling of Gate-All-Around Junctionless Transistor based Biosensor for Detection of Neutral Biomolecule Species," *Journal of Computational Electronics*, Springer, vol. 17 (1), pp.288-296, 2018. (Impact Factor: 1.637)
12. Tushar Gauba, **Yogesh Pratap**, Sonam Rewari and R S Gupta, "Traps induced Greens function based mathematical modeling for BaTiO₃-SrTiO₃ gate stack dual metal GAA MOSFET" *Semiconductor Science and Technology*, Vol. 34, No. 11, October 2019. (Impact Factor: 2.654)
13. Praveen Pal, **Yogesh Pratap**, Mridula Gupta and Sneha Kabra, "Modeling and simulation of AlGaN/GaN MOS-HEMT for biosensor applications" *IEEE Sensors Journal*, vol. 19, no. 2, pp. 587-593, Jan. 2019. (Impact Factor: 2.853)
14. Neha Garg, **Yogesh Pratap**, Mridula Gupta and Sneha Kabra, "Impact of different localized trap charge profiles on the short channel double gate junctionless nanowire transistor based inverter and Ring Oscillator circuit" *AEU - International Journal of Electronics and Communications*, Volume 108, August 2019, Pages 251-261, ISSN: 1434-8411, 2019. (Impact Factor: 2.853)
15. **Yogesh Pratap**, and Jaihind Kumar Verma, "Temperature Dependent Performance Evaluation and Linearity Analysis of Double Gate-all-around (DGAA) MOSFET: an Advance Multigate Structure" *Silicon- Springer*, Vol 12, pp. 2619-2626, 2020.
16. Neha Garg, **Yogesh Pratap**, Mridula Gupta and Sneha Kabra, "Reliability Assessment of GaAs/Al₂O₃ Junctionless FinFET in the presence of Interfacial layer defects and radiations" *IEEE Transactions on Device and Materials Reliability*. Volume: 20 , Issue: 2, pp.452-458 June 2020 , Impact Factor: 1.407
17. N. Garg, **Yogesh Pratap**, M. Gupta, and S. Kabra, "Dielectric Separated Independent Gates Junctionless Transistor (DSIG-JLT) For Highly Scaled Digital Logic Implementation," *IEEE Trans. On Nanotechnology*, vol. 20, pp. 262-269, 2021, doi: 10.1109/tnano.2021.3066814. Impact Factor: 2.196

18. Praveen Pal, **Yogesh Pratap**, Mridula Gupta, and Sneha Kabra. "Analytical Modeling and Simulation of AlGaIn/GaN MOS-HEMT for High Sensitive pH Sensor." IEEE Sensors Journal, Volume: 21, Issue: 12, June15, 15 2021. (Impact Factor: 3.3)
19. H. D. Sehgal, **Yogesh Pratap**, M. Gupta and S. Kabra, "Performance Investigation of novel Pt/Pd-SiO₂ Junctionless FinFET as a high sensitive hydrogen gas sensor for Industrial applications," IEEE Sensors Journal, Volume: 21, Issue: 12, June15, 15 2021 . (Impact Factor: 3.3)
20. Praveen Pal, **Yogesh Pratap**, Mridula Gupta, and Sneha Kabra, "Open gate AlGaIn/GaN HEMT biosensor Sensors: Sensitivity analysis and optimization" Elsevier Superlattices and Microstructures, Vol 156, pp-106968, 2021. (Impact Factor: 2.65)
21. **Yogesh Pratap**, Sachin Kumar, R.S. Gupta and Mridula Gupta, "Performance evaluation of dielectric modulation and metalloid T-shaped source/drain on gate-allaround junctionless transistor for improved analog/RF application" Springer Journal of Materials Science: Materials in Electronics, Vol 32, 10943-10950, 2021. (Impact Factor: 2.47)
22. H. D. Sehgal, **Yogesh Pratap**, M. Gupta and S. Kabra "Performance Analysis and Optimization of Under-gate Dielectric Modulated Junctionless FinFET biosensor" IEEE Sensors Journal, Volume: 21, Issue: 17, Sept.1, 1 2021. (Impact Factor: 3.3)
23. H. D. Sehgal, **Yogesh Pratap**, and S. Kabra "Detection of breast cancer cell-MDAMB-231 by measuring conductivity of Schottky Source/Drain GaN FinFET" IEEE Sensors Journal, 2022. (Impact Factor: 3.3)

International Conferences:

1. "A single chip implementation of simplified data encryption standard (DES) algorithm," **Yogesh Pratap**, R. K. Tripathi, and R. Sharma, ICMARS, December2011, Jodhpur. India.
2. "32-bit modulus based barrel sifter for RC6 algorithm," Manoj Kumar and **Yogesh Pratap**, ICMARS, December-2011, Jodhpur. India
3. Analog/RF Performance of Gate Material Engineering Cylindrical/Surrounding Gate (CGT/SGT) MOSFETs," **Yogesh Pratap**, J.H.K Verma, S. Haldar, R. S. Gupta and Mridula Gupta, ICMARS, 13th-15th December-2012, Jodhpur. India.
4. "Analytical Effect of ITC on the Characteristics of Junctionless Nanowire Transistor (JLNWT) for Future ULSI Applications: Semi-analytical Modeling Approach," **Yogesh Pratap**, S. Haldar, R. S. Gupta and Mridula Gupta, INDICON, 13th-15th December-2013, IIT Bombay, India.
5. "Analytical Capacitance Modeling and Simulation of Dual material-Graded channel - Gate stack Cylindrical/Surrounding (DMGCGS CGT/SGT) MOSFET," J.H. K Verma, **Yogesh Pratap**, S. Haldar, R. S. Gupta and Mridula Gupta, International Semiconductor Device Research Symposium (ISDRS), 11th-13th December-2013, Maryland, USA.
6. "Hot Carrier Reliability Issues of Junctionless Transistor due to Interface Trap Charges for Analog /RF Applications," **Yogesh Pratap**, S. Haldar, R. S. Gupta and Mridula Gupta, International Workshop on Physics of Semiconductor Device (IWPSD), 10th13th December-2013, Noida, India.

7. "Scattering parameter based simulation of cylindrical double gate (CDG) MOSFET for Submillimeter-Wave Application," J.H.K Verma, **Yogesh Pratap**, S. Haldar, R. S. Gupta and Mridula Gupta, ICMARS, 11th-15th December-2013, Jodhpur. India.
8. "Linearity Performance Investigation of high-k Spacer based Junctionless Nanowire Transistor (JLNWT) for RFIC Design," **Yogesh Pratap**, S. Haldar, R. S. Gupta and Mridula Gupta, International Semiconductor Device Research Symposium (ISDRS), 11th-13th December-2013, Maryland, USA.
9. "RF Performance Analysis and Small Signal Parameter Extraction of Cylindrical Surrounding Double Gate MOSFETs for Sub-millimeter Wave Applications," J. H. K Verma, **Yogesh Pratap**, S. Haldar, R. S. Gupta and Mridula Gupta, ICDCS, 6th-8th March-2014, Coimbatore, India.
10. "Damage Immune III-V Compound Material based Vacuum Junctionless Nanowire Transistor (VAC-JNT) for Improved Electrostatic Control and Hot Carrier Reliability," **Yogesh Pratap**, S. Haldar, R. S. Gupta and Mridula Gupta, 3rd International Conference on Nanotechnology (NANOCON04), 14th-15th October-2014, Pune, India.
11. "Impact of asymmetric gate stack on a junctionless CSG MOSFET for enhanced hot carrier reliability," Aniruddh Sharma, Arushi Jain, **Yogesh Pratap**, and R. S. Gupta, Annual IEEE India Conference (INDICON), 17th-19th December-2015, New Delhi.
12. CSDG MOSFET: An Advanced novel architecture for CMOS technology," J.H.K Verma, **Yogesh Pratap**, S. Haldar, R. S. Gupta and Mridula Gupta, Annual IEEE India Conference (INDICON), 17th-19th December-2015, New Delhi.
13. "DMG Insulated Shallow Extension Cylindrical GAA Schottky Barrier MOSFET for Removal of Ambipolarity: A Novel Approach," Manoj Kumar, **Yogesh Pratap**, S. Haldar, R. S. Gupta and Mridula Gupta, 7th IEEE International Nanoelectronics Conference (IEEE-INEC), 9th-11th May-2016, Chengdu, China.
14. "Sensitivity Investigation of Gate-All-Around Junctionless Transistor for Hydrogen Gas Detection," **Yogesh Pratap**, Manoj Kumar, S. Haldar, S. S. Deswal, R. S. Gupta and Mridula Gupta, 7th IEEE International Nanoelectronics Conference (IEEE-INEC), 9th-11th May-2016, Chengdu, China.
15. A review on the Eye Stick: Boon to Visually Impaired, Anushka Singh, Deeksha Agarwal, Pratibha Sangam, Prerna Singh, Shivani Ranjan, **Yogesh Pratap**, Sneha Kabra International Conference on Advances in Nanomaterials and Nanotechnology (ICAN 2016) 4th and 5th November 2016, Centre for NanoScience and Nanotechnology, Jamia Millia Islamia. ISBN:978-93-85000-94-2
16. **Yogesh Pratap**, Reshma Sinha, Praveen Pal, Sarul Malik and Sneha Kabra "Performance analysis of metalloid source/ drain GaAs-finFET for analog/RF applications", IEEE 4th International Conference on circuits, devices and systems organised by Karunya University, Coimbatore from 16-17 March 2018. Pp. 219-222, ISBN: 978-1-5386-3476-9/18
17. Neha Garg, **Yogesh Pratap**, Mridula Gupta and Sneha Kabra, "Analysis of Interface Trap Charges of Double gate Junctionless Nanowire Transistor (DG-JNT) for Digital Circuit Applications" , IEEE Electron Device Kolkata Conference (2018 IEEE EDKCON)", November 24-25, 2018, Kolkata organized by IEEE EDS Kolkata Chapter.
18. Himani Dua, **Yogesh Pratap**, Mridula Gupta and Sneha Kabra, "Impact of different Cavity Structures

on Bio-Sensing Response of Junctionless FinFET” Poster presentation in 4th International Conference on Emerging Electronics, December 17th - 19th 2018, Bangalore.

19. Praveen Pal, **Yogesh Pratap**, Mridula Gupta and Sneha Kabra "Comparative analysis of oxides to improve performance of DC-MOS-HEMTs” IEEE International Conference on Modeling of System Circuits and Devices (MOS-AK India 2019), organised by IEEE Hyderabad Section from February 25th to 27th 2019, IIT - Hyderabad.
20. Himani Dua, **Yogesh Pratap**, Mridula Gupta, Sneha Kabra, “Comparative Analysis of Dielectric Modulated Junctionless FinFET Biosensor and Junctionless DG MOSFET Biosensor for Medical Instrumentation” International Conference on Power Electronics, Control & Automation (ICPECA 2019),16-17 November 2019, Jamia Millia Islamia, Delhi
21. Praveen Pal, **Yogesh Pratap**, Mridula Gupta and Sneha Kabra Performance of AlGaN/GaN based Common Drain Dual HEMT (CDD-HEMT) for high power applications, 7th IEEE MTT-S International Microwave & RF Conference (IMaRC2019), held at IIT Mumbai, India, December 13-15 2019
22. Neha Garg, **Yogesh Pratap**, Mridula Gupta and Sneha Kabra , “Impact of Trap Charges and High Temperature on Reliability of GaAs/Al₂O₃ based JunctionlessFinFET” 7th International Conference on Computers and Devices for Communication, CODEC 2019, 19th-20th December 2019 at Kolkata (Poster Presentation)
23. Himani Dua, Yogesh Pratap, Prof. Mridula Gupta and Sneha Kabra “Comparative Analysis of Junctionless FinFET and Inverted Mode FinFET as Phosphine (PH₃) Gas Sensor”, in International Conference on Device, Circuits & Systems (ICDCS), Karunya Institute, Coimbatore, 5th -6 th March 2020.
24. Praveen Pal, Yogesh Pratap, Mridula Gupta and Sneha Kabra “Performance analysis of ScAlN/GaN High Electron Mobility Transistor (HEMT) for biosensing application.” 5 th International Conference on Devices, Circuits and Systems (ICDCS’20), at Karunya University, Coimbatore from 5 th to 6 th March 2020.

National Conferences:

1. Yogesh Pratap, J.H.K. Verma, Sneha Kabra, Subhasis Haldar, R. S. Gupta and Mridula Gupta, Analog Characteristics and Linearity Analysis of Gate-All-Around Junctionless Nanowire Transistor (JNT) under wide Operating Temperature Ranging from 200K to 500K, 2nd National conference on Recent developments in Electronics, (NCRDE 2017), Feb 17-18, 2017 organised by IEEE EDS Delhi Chapter and Department of Electronic Science, University of Delhi. Pp.172-176, ISBN: 978- 81-933475-3-9
2. Deeksha Agarwal, Anushka Singh, Pratibha Sangam, Purna Singh, Shivani Ranjan, Sneha kabra, Yogesh Pratap, “The Eyestick: A Boon to Visually Impaired”, B.Tech Project Presentation in Conjunction with 2nd National conference on Recent developments in Electronics, (NCRDE 2017), Feb16-18 2017, pp. 215-216 ISBN: 978-81-933475-3-9

Research Projects (Major Grants/Research Collaboration)

Awards and Distinctions

- "Best Paper Presentation Award" for the paper entitled "Analog/RF performance of gate material engineering cylindrical surrounding gate (CGT/SGT) MOSFETs" in 8th International Conference on Microwave, Antenna, Propagation & Remote sensing (ICMARS 2012), Jodhpur, India.
- "Best Paper Award" for the paper entitled "CSDG MOSFET: An Advanced novel architecture for CMOS technology" in Annual IEEE India Conference (INDICON), 17th-19th December-2015, New Delhi, India.
- UGC Junior Research Fellowship (JRF) Award from 19 Sep. 2011 to 18 Sep. 2013
- UGC Senior Research Fellowship (SRF) Award from 19 Sep. 2013 to 5 November 2015.

Association With Professional Bodies

Reviewing :

- IEEE Transactions on Electron Devices
- IEEE Transactions on Device and Materials Reliability
- IEEE Electron Device Letters
- Microelectronics Reliability
- Microelectronics Journal

Memberships :

- Member of IEEE and IEEE Electron Device Society , Member No.: 92277494
- Member of International Association of Engineers (IAENG)
- Member of Universal Association of Computer and Electronics Engineers (UACEE) with membership ID A7800686

Other Activities

- Participated in one week Hands on Training in IIT-BOMBAY.
- Completed the course on " Nanotechnology Journey from Quantum Physics to Nanoengineering" Jointly organized by Dept. of Electronic Science, University of Delhi & IEEEEDS Delhi Chapter, Held at University of Delhi South Campus, New Delhi, January, 2014.
- I was part time involved in layout designing project entitled "Data base Development for Digital IC Layout Design" (funded by Department of Information and Technology, Govt. of India) at CDAC Noida in year 2011.
- Have been actively engaged in various activities of the Department of Electronics, University of Delhi South Camus, New Delhi (August 2013-August 2016).
- Have been actively engaged in various activities of the Department of Instrumentation, Shaheed Rajguru College of Applied Science of Women (January 2016 to till date).