



Dr. Sudhansu Kumar Pati, Ph.D.

Name : Sudhansu Kumar Pati

Designation : addl. Professor

Department : Department of Electronics and Communication
Engineering

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RESEARCH INTERESTS

- ✓ The research interests are in the field of Semiconductor devices through Modeling and Simulation.
- ✓ Mainly focussed on the Physics and the characterization of Metal-Oxide-Semiconductor (MOS) Field-Effect-Transistors, High speed Electron Mobility Transistors (HEMT) and MOS-HEMT devices.
- ✓ Investigating the new channel material of the MOS device structures to overcome the shortfall of performances in the new trend technology.
- ✓ To explore the new CMOS structures to fit in SoC fabrication by the Noise and RF analysis.

Academic Qualifications

Ph. D. (ECE), Jadavpur University, Kolkata, India

M. Tech. (EE), NIT Rourkela, Odisha, India

Specialisation: Electronic Systems & Communication

Teaching Experience/Industrial Experience/Research Experience

- ✓ Teaching experience-16 years
- ✓ Research experience-9 years

JOURNAL & CONFERENCES

- [1]. **Sudhansu Kumar Pati**, Hemant Pardeshi, Godwin Raj, N. Mohankumar and Chandan Kumar Sarkar, "Flicker and thermal noise in an n-channel underlap DG FinFET in a weak inversion region", Journal of Semiconductors- IOP Publishers, Vol. 34, No. 2, pp. 1-6, February 2013. ISSN:1674-4926, DOI: 10.1088/1674-4926/34/2/024002, (SCI-Impact factor 1.18)
- [2]. **Sudhansu Kumar Pati**, Hemant Pardeshi, Godwin Raj, N. Mohankumar and Chandan Kumar Sarkar, "Impact of gate length and barrier thickness on performance of InP/InGaAs based Double Gate Metal-Oxide-Semiconductor Heterostructure Field-Effect Transistor (DG MOS-HFET)", Superlattices and Microstructures - ELSEVIER Publishers, Vol. 55, Pages: 8-15, 2013. ISSN: 0749-6036, DOI: 10.1016/j.spmi.2012.12.002 (SCI-Impact factor 2.12)
- [3]. **Sudhansu Kumar Pati**, Kalyan Koley, Arka Dutta, N. Mohankumar and Chandan Kumar Sarkar, "A New Approach to Extract the RF Parameters of Asymmetric DG MOSFET with NQS Effect", Journal of Semiconductors- IOP Publishers, Vol. 34, No. 2, pp. 1-5, November 2013. ISSN:1674-4926, DOI: 10.1088/1674-4926/34/11/114002 (SCI-Impact factor 1.18)
- [4]. **Sudhansu Kumar Pati**, Kalyan Koley, Arka Dutta, N. Mohankumar and Chandan Kumar Sarkar, "Study of body and oxide thickness variation on analog and RF performance of underlap DG-MOSFETs", Microelectronics Reliability-Elsevier Publishers, Vol. 54, No. 6-7, Pages: 1137-1142, 2014. ISSN: 0026-2714, DOI: 10.1016/j.microrel.2014.02.008
- [5]. Hemant Pardeshi, **Sudhansu Kumar Pati**, Godwin Raj, N. Mohankumar and Chandan Kumar Sarkar, "Effect of underlap and gate length on device performance of an AlInN/GaN underlap MOSFET", Journal of Semiconductors, IOP Science publishers, Vol. 33, No. 12, pp. 1-7, 2012. ISSN:1674-4926, DOI: 10.1088/1674-4926/33/12/124001 (SCI-Impact factor 1.18)
- [6]. Hemant Pardeshi, **Sudhansu Kumar Pati**, Godwin Raj, N. Mohankumar and Chandan Kumar Sarkar, "Investigation of asymmetric effects due to gate misalignment, gate bias and underlap length in III-V heterostructure underlap DG MOSFET", Physica E: Low-dimensional Systems and Nanostructures, Elsevier, Vol. 46, pp. 61-67, 2012. ISSN: 1386-9477, DOI: 10.1016/j.physe.2012.09.011 (SCI-Impact factor 3.57)
- [7]. Hemant Pardeshi, Godwin Raj, **Sudhansu Kumar Pati**, N. Mohankumar and Chandan Kumar Sarkar, "Comparative Assessment of III-V Heterostructure and Silicon Underlap Double Gate MOSFETs", Semiconductors, Springer, Vol. 46, No. 10, pp. 1299-1303, 2012. ISSN: 1090-6479, DOI: 10.1134/S1063782612100119 (SCI-Impact factor 0.641)
- [8]. Godwin Raj, Hemant Pardeshi, **Sudhansu Kumar Pati**, N. Mohankumar and Chandan Kumar Sarkar, "Physics Based Charge and Drain Current

- Model for AlGaN/GaN HEMT Devices", Journal of Electron Devices, Vol. 14, pp. 1155-1160, 2012. ISSN: 1682-3427
- [9]. Godwin Raj, Hemant Pardeshi, **Sudhansu Kumar Pati**, N. Mohankumar and Chandan Kumar Sarkar," Polarization based charge density drain current and small-signal model for nano-scale AlInGaN/AlN/GaN HEMT devices", Superlattices and Microstructures, Elsevier, Vol. 54, pp. 188–203, 2013. ISSN: 0749-6036, DOI: 10.1016/j.spmi.2012.11.020 (SCI-Impact factor 2.12)
- [10]. Hemant Pardeshi, Godwin Raj, **Sudhansu Kumar Pati**, N. Mohankumar and Chandan Kumar Sarkar," Influence of barrier thickness on AlInN/GaN underlap DG MOSFET device performance", Superlattices and Microstructures, Elsevier, Vol. 60, pp. 47–59, 2013. ISSN: 0749-6036, DOI: 10.1016/j.spmi.2013.04.015 (SCI-Impact factor 2.12)
- [11]. Hemant Pardeshi, Godwin Raj, **Sudhansu Kumar Pati**, N. Mohankumar and Chandan Kumar Sarkar," Performance assessment of gate material engineered AlInN/GaN underlap DG MOSFET for enhanced carrier transport efficiency", Superlattices and Microstructures, Elsevier, Vol. 60, pp. 10–22, 2013. ISSN: 0749-6036, DOI: 10.1016/j.spmi.2013.04.019 (SCI-Impact factor 2.12)
- [12]. Sanjit Kumar Swain, Sarosij Adak, **Sudhansu Kumar Pati**, Hemant Pardeshi and Chandan Kumar Sarkar," Analysis of flicker and thermal noise in p-channel Underlap DG FinFET", Microelectronics Reliability, Elsevier, Vol. 54, No. 8, pp. 1549–1554, 2014. ISSN: 0026-2714, DOI: 10.1016/j.microrel.2014.04.002 (SCI-Impact factor 1.535)
- [13]. Sarosij Adak, Sanjit Kumar Swain, Avtar Singh, Hemant Pardeshi, **Sudhansu Kumar Pati** and Chandan Kumar Sarkar," Study of HfAlO/AlGaIn/GaN MOS-HEMT with source field plate structure for improved breakdown voltage", Physica E: Low-dimensional Systems and Nanostructures, Elsevier, Vol. 64, pp. 152–157, 2014. ISSN: 1386-9477, DOI: 10.1016/j.physe.2014.07.021 (SCI-Impact factor 3.57)
- [14]. Sarosij Adak, Arghyadeep Sarkar, Sanjit Swain, Hemant Pardeshi, **Sudhansu Kumar Pati** and Chandan Kumar Sarkar, "High Performance AlInN/AlN/GaN p-GaN Back Barrier Gate-Recessed Enhancement-Mode HEMT", Superlattices and Microstructures, Elsevier, Vol. 75, pp. 347–357, 2014. ISSN: 0749-6036, DOI:10.1016/j.spmi.2014.07.036 (SCI-Impact factor 2.12)
- [15]. Sanjit Kumar Swain, Sarosij Adak, Bikash Sharma, **Sudhansu Kumar Pati** and Chandan Kumar Sarkar, "Effect of Channel Thickness and Doping Concentration on Sub-Threshold Performance of Graded Channel and Gate Stack DG MOSFETs", Journal of Low Power Electronics, American Scientific Publishers, Vol. 11, pp. 366-372, 2015, ISSN:1546-1998 DOI: 10.1166/jolpe.2015.1395
- [16]. Sanjit Kumar Swain, Arka Dutta, Sarosij Adak, **Sudhansu Kumar Pati** and Chandan Kumar Sarkar, "Influence of channel length and high-K oxide thickness on subthreshold analog/RF performance of graded channel and gate stack DG-MOSFETs", Microelectronics Reliability, Elsevier, Vol. 61, pp. 24-29, 2016, . ISSN: 0026-2714, DOI:10.1016/j.microrel.2016.03.001 (SCI-Impact factor 1.535)

- [17]. Sanjit Kumar Swain, Sarosij Adak, **Sudhansu Kumar Pati** and Chandan Kumar Sarkar, "Impact of InGaN back barrier layer on performance of AlInN/AlN/GaN MOS-HEMTs", Superlattices and Microstructures, Elsevier, Vol. 97, pp. 258-267, 2016. ISSN: 0749-6036, DOI: 10.1016/j.spmi.2016.06.032 (SCI-Impact factor 2.12)
- [18]. **Sudhansu Kumar Pati**, Arghyadeep Sarkar, HemantPardeshi, Godwin Raj, N Mohankumar and Chandan Kumar Sarkar, "Analytical Drain Current Model for Symmetrical Gate Underlap DGMOSFET", IJCA Proceedings on International Conference on Communication, Circuits and Systems 2012 iC3S(3):26-28, June 2013.
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- [20]. **Sudhansu Kumar Pati**, HemantPardeshi, Godwin Raj, N Mohankumar and Chandan Kumar Sarkar, "Performance Comparison of III-V Heterostructure and Silicon Double Gate MOSFET", 2nd International Conference on Advances in Engineering and Technology (ICAET2012), March 28 & 29, 2012.
- [21]. Sarita Misra, Sudhanshu Mohan Biswal, Biswajit Baral, Sanjit Kumar Swain, **Sudhansu Kumar Pati**, 'Study of Effect of downscaling on the Analog/RF Performance of Gate all Around JLMOSFET' , 2018 IEEE Electron Devices Kolkata Conference (EDKCON), 234-241, DOI:10.1109/EDKCON.2018.8770424, Corpus ID: 198929394
- [22]. Sudhanshu Mohan Biswal, Biswajit Baral, Sanjit Kumar Swain, **Sudhansu Kumar Pati**, "Performance Analysis of Down Scaling Effect of Si based SRG Tunnel FET" 2018 IEEE Electron Devices Kolkata Conference (EDKCON), 344-348, DOI: 10.1109/EDKCON.2018. 8770447

ANY OTHER

Book Chapter
Conferences attended