



# Dr. Kurmendra

ITANAGAR, ARUNACHAL PRADESH, INDIA 791112

+91-8415912663 kurmendra.nits@gmail.com

## LINKS

- <https://orcid.org/0000-0003-2770-9418>
- <https://www.scopus.com/authid/detail.uri?authorId=57113639100>
- <https://www.researchgate.net/profile/Dr-Kurmendra-2>

## PROFESSIONAL SUMMARY

I am highly motivated research candidate with demonstrated research expertise in RF MEMS discipline. I have gained good experience in modeling and simulation of MEMS based devices. I am proficient with technical software like COMSOL Multiphysics, MATLAB, Latex, Xilinx, LTspice Simulator etc. I have good command in Conceptualization, Methodology, Investigation, Analysis, Writing and Editing for journal articles. I have supervised students of Masters successfully and helped them in execution of their projects.

## SKILLS

- Analytical approach to defining scientific questions
- Design of scientifically testable hypotheses
- Broad based and cross-disciplinary knowledge acquisition
- Detailed knowledge of specific research area
- Experimental design
- Data analysis and interpretation
- Effective search strategies and critical evaluation of the literature
- Scientific publishing processes

## WORK HISTORY

### ASSISTANT PROFESSOR

03/2016 to CURRENT

**Rajiv Gandhi University, Itanagar, India (Under Ministry of Education, Govt. of India) | Doimukh, India**

Teaching Faculty Member

Researcher

Administrative Responsibilities

### GUEST FACULTY MEMBER

07/2015 to 02/2016

**MNNIT, Allahabad (Under Ministry of Education, Govt. of India) | Allahabad, Uttar Pradesh, India**

Teaching Faculty Member

## EDUCATION

**Ph.D. | Electronics & Communication Engineering (RF MEMS)**

04/2021

**NERIST (Ministry of Education, Govt. of India), Nirjuli, Arunachal Pradesh, India**

- Graduated with Honors [9.00] CGPA
- Thesis: [DESIGN AND ANALYSIS OF MEMS SHUNT HIGH SPEED CAPACITIVE SWITCH FOR RF APPLICATIONS]
- Overview of the work:

Developed two methods to select materials for Beam and Dielectric layers in RF MEMS Switches.

Developed Capacitance evaluation model for evaluating capacitance in RF MEMS capacitive switches.

RF performance studies were performed for proposed RF MEMS switch and impact of different materials on RF performance was also studied.

Switching time study for proposed RF MEMS switch was also performed and switch resulted in good switching characteristics.

**Master of Technology (M. Tech.)** | Microelectronics & VLSI Design 05/2015

**National Institute of Technology, Silchar, Assam, India**

- Graduated with Honors [8.73] CGPA
- Received GATE-MHRD Fellowship from MHRD, Govt. of India[2013-2015]
- Thesis: [Variation of confinement energy, wavelength and susceptibility with different size and different quantum dots materials: Quantum confinement effect]
- Overview of the work:

In this thesis, I have carried out study about the Eigen energy and Wave function calculation of Quantum dot in tight binding model for the different quantum dots with different shape and sizes. Further, I have discussed quantum Confinement Effect which shows the dependency of Wavelength of different quantum dots on dot radius (size) and shape and result shows the exponential dependency of wavelength of light emitted on the size of quantum dots. Then, the nonlinearity in the quantum dots in terms of susceptibility was explored in terms of dot size, photon energy, and electric field.

**Bachelor of Technology** | Electronics & Communication Engineering 07/2012

**Uttar Pradesh Technical University, Lucknow, India**

- Graduated with First Class [67.28] %
- Awarded [Excellence in Attendance for 100% Attendance]

## AFFILIATIONS

- Institute of Electrical and Electronics Engineers [IEEE Student Member- 92752323]
- International Association of Academicians (IAASSE) [Member UID- IAASSE20195111]

## LANGUAGES

**Hindi:** Native language

**PUBLICATIONS:**
**Journals:15, Book Chapter:01, Conference:06**
**Science Citation Index (SCI) Journals**

- [1]Pertin, O. and Kurmendra (2018). Pull-in-voltage and RF analysis of MEMS based high performance capacitive shunt switch. *Microelectronics journal*, 77, 5-15. **[IF- 1.401]**
- [2] Kurmendra and Kumar, R. (2020). Novel capacitance evaluation model for microelectromechanical switch considering fringe and effect of holes in pull-up and pull-down conditions. *Microsystem Technologies*, 26(3), 873-884. **[IF- 1.737]**
- [3] Kurmendra and Kumar, R. (2021). Investigations on beam membrane and dielectric materials using Ashby's methodology and their impact on the performance of a MEMS capacitive switch. *Microsystem Technologies*, 1-21. **[IF- 1.737]**
- [4] Kurmendra and Kumar, R. (2021). Materials Selection Approaches and Fabrication Methods in RF MEMS Switches. *Journal of Electronic Materials*, 1-20. **[IF- 1.774]**
- [5] Kurmendra and Kumar, R. (2019). MEMS based cantilever biosensors for cancer detection using potential bio-markers present in VOCs: a survey. *Microsystem Technologies*, 1-15. **[IF- 1.737]**
- [6] Kurmendra and Kumar, R. (2020). A review on RF micro-electro-mechanical-systems (MEMS) switch for radio frequency applications. *Microsystem Technologies*, 1-18. **[IF- 1.737]**

**Scopus/WoS(ESCI) Journals**

- [1] Kurmendra and Kumar, R. (2019). Design and analysis of MEMS shunt capacitive switch with Si<sub>3</sub>N<sub>4</sub> dielectric and Au beam material to improve actuation voltage and RF performance in consideration with and without circular perforations. *Transactions on Electrical and Electronic Materials*, 20(4), 299-308.
- [2] Kurmendra and Kumar, R. (2017). Design analysis, modeling and simulation of novel rectangular cantilever beam for MEMS sensors and energy harvesting applications. *International Journal of Information Technology*, 9(3), 295-302.
- [3] Eid, M. M., Rashed, A. N. Z. and Kurmendra (2020). High speed optical switching gain based EDFA model with 30 Gb/s NRZ modulation code in optical systems. *Journal of Optical Communications*, 1(ahead-of-print).
- [4] Kurmendra, Rahul, J., and Kumar, R. (2019). Micro-cantilevered MEMS biosensor for detection of malaria protozoan parasites. *Journal of Computational Applied Mechanics*, 50(1), 99-107.
- [5] Kurmendra and Kumar, R. (2019). Design and simulation of MEMS shunt capacitive switch for lower switching time. *3C Technologia*, 167.

**UGC Listed/Peer Reviewed Journals**

- [1] Jagdeep Rahul, Kurmendra. Analysis of MEMS based Micro-hot Plate for Gas Sensor. *Journal of Semiconductor Devices and Circuits*. 2019; 6(2): 1–5p. (Peer-reviewed)

[2] Kurmendra, Rajesh Kumar. Comparative Study of Microelectromechanical Switches for RF Applications: A Review. *Journal of Semiconductor Devices and Circuits*. 2019; 6(2): 6–12p. (Peer-reviewed)

[3] Anil Chamuah, Kurmendra and Rajesh Kumar. Piezoelectric energy harvesters using MEMS Structures: A Review, *IJSART*. 2018, 4(2): 610-614p. (Peer-reviewed UGC Listed)

[4] Kurmendra, Non-linear Study of Zinc Oxide Quantum Dot for Optoelectronics Applications, *Journal of Nanoscience and Technology*. 2017, 3(3), 281-283p. (Peer-reviewed UGC Listed)

#### **Book Chapter**

[1] Kurmendra, Kumar, R., Pertin, O. (2019). Design of an improved micro-electro-mechanical-systems switch for RF communication system. In *Recent Trends in Communication, Computing, and Electronics* (pp. 3-13). Springer, Singapore.

#### **Conference/Conference Proceedings**

[1] Kurmendra, Paul, M., & Mandal, D. K. Dependency of Wavelength of CdSe, ZnS And GaAs Quantum Dots on Dot Radius: Quantum Confinement Effect. In *2015 International Conference on Electrical, Electronics, Signals, Communication and Optimization (EESCO)*.

[2] D. Mondal, M. Paul & Kurmendra. Eigen energy and Wave function calculation of Quantum dot in tight binding model, *International conference on nanotechnology(ICNT)*, 2015, Kolkata.

[3] Kurmendra, Chamuah, A., & Kumar, R. (2018, November). A Novel Structure for Piezoelectric Based MEMS Energy Harvester. In *2018 5th IEEE Uttar Pradesh Section International Conference on Electrical, Electronics and Computer Engineering (UPCON)* (pp. 1-4). IEEE.

[4] Kurmendra and Kumar, R. (2020). A modified capacitance model of shunt micro switch based on MEMS technology in actuation mode: simulation and analytical study. In *Journal of Physics: Conference Series* (Vol. 1432, No. 1, p. 012007). IOP Publishing.

[5] Kurmendra and Rajesh Kumar (2019) Switching time analysis of RF MEMS shunt capacitive switch, *International conference on Green Computing and Engineering Technologies*, Aalborg University, Denmark.

[6] Kurmendra and Kumar, R. (2021). Dielectric Material Selection for High Capacitance Ratio and Low Loss in MEMS Capacitive Switch using Ashby's Methodology. In *IOP Conference Series: Materials Science and Engineering* (Vol. 1020, No. 1, p. 012029). IOP Publishing.