(Dr. Saima Beg)

Associate Professor, Department of Electronics & Communication Engineering,
Faculty of Engineering,
Integral University, Lucknow
(+91 9415069765, saimabeg@iul.ac.in)
(HTTPS://SCHOLAR.GOOGLE.CO.IN/CITATIONS?USER=_HKRW2KAAAAJ&HL=EN, | HTTPS://ORCID.ORG/0000-0001-9601-6047, "BEG, SAIMA" 57454292200)

PROFILE

LEVEL	BOARD/ UNIVERSITY	YEAR OF PASSING	MARKS (%)
PHD	INTEGRAL UNIVERSITY , LUCKNOW	2018	AWARDED
M.TECH	INTEGRAL UNIVERSITY , LUCKNOW	2011	70.80
B.TECH	A.M.U. (A.M.U. ALIGARH)	2005	65.50
DIPLOMA IN ELECTRONICS ENGINEEERING	A.M.U. (A.M.U. ALIGARH)	2001	83.30
X	Z.H. S.SC. SCHOOL (ALIGARH)	1998	73.33

RESEARCH INTEREST:

VLSI

SUMMARY OF RESEARCH ACCOMPLISHMENT:

A TREMENDOUS GROWTH IN LASER DEVICES HAVE BEEN OBSERVED IN LAST THREE DECADES IN TERMS OF EFFICIENCY, SIZE AND SPEED OF OPERATIONS. THIS WORK COVERS THE RESEARCH AND DEVELOPMENT ACTIVITY IN THE III-V GROUP COMPOUND LASING HETERO STRUCTURES THAT HELPS IN REFLECTING THE INSTANCES OF HIGH DEGREE OF UPCOMING REVOLUTIONARY CHANGES IN SCIENTIFIC AND INDUSTRIAL WORKS DUE TO REMARKABLE ACHIEVEMENTS IN USAGE OF LASERS IN SCIENCE AND TECHNOLOGY APPLICATIONS. THIS WORK PRESENTED A DETAILED ANALYSIS AND UP-TO-DATE PERFORMANCE EVALUATION USING THE BAND PARAMETERS FOR THE TECHNOLOGICALLY IMPORTANT III–V COMPOUND SEMICONDUCTORS HETEROSTRUCTURES OF INGAAS/GAAS AND ALGAAS/GAAS IN TERMS OF GAIN SPECTRUM ALONG WITH THEIR WAVELENGTH VARIATION WITH RESPECT TO QUANTUM WELL/BARRIER THICKNESS, RELAXATION TIME AND CONCENTRATION. CURRENT WORK IS FOCUSED ON DESIGN TECHNOLOGIES WHICH ARE INVOLVED IN LASER DIODES FOR III-V GROUP HETEROSTRUCTURES. IN ADDITION TO A WELL-BALANCED SURVEY OF DIFFERENT MATERIAL SPECIAL ATTENTION IS PROVIDED ON ALGAAS AND INGAAS HETEROSTRUCTURES DUE TO THEIR VAST POPULARITY IN SCIENTIFIC AND INDUSTRIAL APPLICATIONS. IT HAS BEEN OBSERVED THAT FUTURE IMPROVEMENTS IS STILL REQUIRED IN LASER HETEROSTRUCTURE DESIGNS THAT CAN INCREASE THE EFFICIENCY , REDUCE THE THERMAL SIDE EFFECTS AND IMPROVE THE RELIABILITY OF THESE DEVICES.

IN THIS WORK AT DIFFERENT PARAMETERS WE COLLECTED MAXIMUM GAIN AND WAVELENGTH FOR TWO DIFFERENT HETEROSTRUCTURE CONFIGURATIONS. INGAAS/GAAS AND ALGAAS/GAAS BOTH HETEROSTRUCTURES CONFIGURATIONS PERFORMANCE WITH RESPECT TO BARRIER THICKNESS, WELL THICKNESS, AND RELAXATION TIMES ARE SEPARATELY GENERATED BY SIMULATION MODEL TO GET MORE MAXIMUM GAIN CONDITION AS OUTPUT PARAMETERS. WAVELENGTHS ARE COLLECTED WITH DIFFERENT COMPOSITION AND BEST WELL THICKNESS AND BARRIER THICKNESS ARE FOUND TO ANALYZE THE PHOTOLUMINESCENCE SPECTRA AS WELL AS THE LASING WAVELENGTH OF THE DEVICES. ALGAAS/GAAS PROVIDES MAXIMUM GAIN AT BARRIER THICKNESS OF 40 TO 55 NM. AS THE WELL THICKNESS IS INCREASED THE GAIN KEEPS INCREASING IN TE MODE BUT IN TM MODE HIGHEST GAIN IS ACHIEVED AT 10NM AT LOWER CONCENTRATION OR AT 50NM FOR HIGHER CONCENTRATION X. THE GAIN IS HIGHER IN TM MODE FOR ALGAAS/GAAS AS COMPARED TO TE MODE. WAVELENGTH AND ENERGY IS INDEPENDENT OF CHANGE IN WELL AND BARRIER THICKNESS BUT AS THE CONCENTRATION X IS INCREASED WAVELENGTH DECREASES AND EV IS INCREASED. AS THE RELAXATION TIME IS INCREASED GAIN INCREASES IN BOTH TE/TM MODE BUT WAVELENGTH REMAINS CONSTANT WITH RESPECT TO RELAXATION TIME. SIMILAR OBSERVATIONS ARE ALSO OBSERVED FOR INGAAS/GAAS.

THE MOTIVATION FOR THIS THESIS IS TO CONSTRUCT A LASER TO OPTICALLY EXAMINE A LASER DEVICE. THIS TRANSITION MAKES IT POSSIBLE TO PROBE THE LASER THROUGH FLUORESCENCE OR ABSORPTION IMAGING. THIS HAS A COMPLETELY SIZEABLE RESULT AND OPENS MANY EXPERIMENTAL POSSIBILITIES.

COURSE TAUGHT:

1. BASIC ELECTRONICS
2. ELECTRONIC DEVICES & CIRCUITS
3. DIGITAL ELECTRONICS
4. INTEGRATED CIRCUITS
5. FUNDAMENTAL OF ELECTRONICS
6. CONSUMER ELECTRONICS
7. SEMICONDUCTOR MATERIAL & POWER DEVICES
8. BASIC PHYSICS & RADIATION PHYSICS
9. RADIATION HAZARDS, PROTECTION & CONTROL
10. OPTOMETRIC OPTICS-I
11. OPTOMETRIC OPTICS –II
12. MICROELECTRONICS TECHNOLOGY

ADMINISTRATIVE/DEPARTMENTAL RESPONSIBILTY

1. MEMBER OF WOMEN'S GRIEVANCE CELL
2. FACULTY COORDINATOR FOR THE ANNUAL FUNCTION (FIESTA)
3. INCHARGE OF DEPARTMENTAL LIBRARY
4. DEPARTMENTAL CRITERION I INCHARGE
5. MEMBER OF PROCTORIAL BOARD
6. INCHARGE OF DEPARTMENTAL EVENT COORDINATOR

STUDENTS SUPERVISION

1. NIVEDITA MISHRA
2. RUPALI GUPTA
3. SHINJINI YADAV
4. ABDUL FAHAD

PUBLISHED/ACCEPTED SCI/SCOPUS RESEARCH PAPERS

1. "NOVEL DESIGN OF DOUBLE M STRUCTURE RECTANGULAR MICROSTRIP PATCH ANTENNA FOR WIRELESS COMMUNICATION " INTERNATIONAL JOURNAL OF

MECHANICAL ENGG, **SCOPUS,** VOLUME 6, ISSUE 3, DEC 2021., NIVEDITA MISHRA , SAIMA BEG, PREETI SINGH.

2. "DESIGN AND COMPARATIVE ANALYSIS GATE STACKED SILICON DOPED HFO_2 FERROELECTRIC VERTICAL TFET", SILICON , **SCI** , 12 FEB 2022 ,RUPALI GUPTA , SAIMA BEG, SHAILENDRA SINGH.
3. "A MINIATURIZED MICROSTRIP ANTENNA FOR ULTRA –WIDEBAND APPLICATIONS" ADVANCED ELECTROMAGNETICS, AEM **ESCI** , VOLUME 11, ISSUE 2, JUNE 2022, NIVEDITA MISHRA , SAIMA BEG.
4. "EVALUATION OF DESIGN AND PERFORMANCE OF BIOSENSOR UTILIZING FERROELECTRIC VERTICAL TUNNEL FIELD EFFECT TRANSISTOR (V-TFET)", SILICON , **SCI** , 22 MARCH 2024 , RUPALI GUPTA , SAIMA BEG, SHAILENDRA SINGH.
5. "DESIGN OF AN ACTIVE INDUCTOR BASED ENHANCEMENT CMOS LNA CIRCUIT" **SCOPUS**, VOLUME 20, ISSUE S4, PAGES 1143 – 1155, MAY 2024, SHINJINI YADAV, SAIMA BEG.

PAPER PUBLISHED IN NATIONAL CONFERENCES

1. "A COMPLETE ANALYSIS : FROM MODEL TO DEVICE LEVEL OF TUNNEL FIELD EFFECT TRANSISTORS", PROCEEDING OF TRENDS IN ELECTRONICS AND HEALTH INFORMATICS TEHI 2021.

2. " REVIEW OF THE LOW NOISE AMPLIFIER CMOS DESIGN PERFORMANCE BASED ON ANALYSIS IN RF APPLICATIONS", PROCEEDINGS OF THE INTERNATIONAL CONFERENCE ON EMERGING TRENDS IN IOT AND COMPUTING TECHNOLOGIES (ICEICT-2022), TAYLOR AND FRANSIS GROUP , APRIL 22-23, 2022, LUCKNOW, INDIA.

3. "DESIGN OF ULTRA WIDE BAND MICROSTRIP ANTENNA FOR MULTIPLE BAND REJECTION" AT THE GLOBAL MULTI-TRACK CONFERENCE (STAR 2023) HELD BETWEEN OCTOBER 8 AND 14, 2023 AT INTEGRAL UNIVERSITY, INDIA, UP.

PUBLISHED NON-SCI-SCOPUS BUT PEER REVIEWED RESEARCH PAPERS

1. "IMPLEMENTATION OF FSM BASED AUTOMATIC DISPENSE MACHINE WITH EXPIRY DATE FEATURE USING VHDL" INTERNATIONAL JOURNAL OF

MODERN ENGINEERING RESEARCH (IJMER) VOL. 4 ISSUE 4, APRIL 2014. MOHD. SUHAIL, SAIMA BEG, MOHAMMAD JUNED ANSARI.

2. "IMAGE PROCESSING BASED TRAFFIC DENSITY ESTIMATION AND CONTROL AT INTERSECTION "INTERNATIONAL JOURNAL OF ENGINEERING AND TECHNICAL RESEARCH (IJETR) ISSN: 2321-0869, VOLUME-3, ISSUE-3, MARCH 2015, SAIMA BEG, KRISHNA CHANDRA SHUKLA, ARCHANA YADAV
3. "OPTICAL FIBER SENSORS APPLICATIONS ANALYSIS AND FUTURE TRENDS" IJSART - VOLUME 1 ISSUE 5 –MAY 2015, SAMAR SIDDIQUI , ARCHANA YADAV , SAIMA BEG.
4. "BLUETOOTH BASED PATIENT MONITORING SYSTEM" INTERNATIONAL JOURNAL OF ENGINEERING AND TECHNICAL RESEARCH (IJETR) ISSN: 2321-0869, VOLUME-3, ISSUE-3, MARCH 2015 TABISH AZAD, SAIMA BEG, NAUSHIN KULSUM, SHAQUIB KHAN, ATIF PASHA.
5. "REVIEW ON LASER SOURCES BASED ON THIRD FIFTH" INTERNATIONAL JOURNAL OF RESEARCH AND DEVELOPMENT IN APPLIED SCIENCE AND ENGINEERING (IJRDASE), VOL 2, ISSUE 8, JANUARY 2016, SAIMA BEG, ARCHANA YADAV, SYED HASAN SAEED.
6. "A REAL TIME APPROACH FOR SECURE TEXT TRANSMISSION BY USING VIDEO CRYPTOGRAPHY" INTERNATIONAL JOURNAL OF RESEARCH AND DEVELOPMENT IN APPLIED SCIENCE AND ENGINEERING (IJRDASE) , VOL 9,ISSUE 2, APRIL 2016. RASHMI SHARMA , SAIMA BEG, ARCHANA YADAV.
7. "IMAGE PROCESSING TECHNIQUE FOR THE ENHANCEMENT OF BRAIN TUMOR PATTERN" INTERNATIONAL JOURNAL OF RESEARCH AND DEVELOPMENT IN APPLIED SCIENCE AND ENGINEERING (IJRDASE)
   VOL 9, ISSUE 2, APRIL 2016. ALKA PANDEY , SAIMA BEG, ARCHANA YADAV.
8. "APPLICATIONS OF OPTICAL FIBER SENSORS IN WILD LIFE: A REVIEW" IJSART - VOLUME 2 ISSUE 3 –MARCH 2016,SUPRIYA AWASTHI , PRIYA SINGH, ARCHANA YADAV, SAIMA BEG .
9. "A COMPREHENSIVE STUDY AND REVIEW ON WIRELESS SENSOR NETWORKS BASED ON HETEROGENEOUS ENERGY DISTRIBUTION AND MULTIZONE ALGORITHM" INTERNATIONAL JOURNAL OF ADVANCE RESEARCH IN

COMPUTER AND COMMUNICATION ENGINEERING IJARCCE, VOLUME 5 ISSUE 4 APRIL 2016, AMITA SINGH, ARCHANA YADAV, SAIMA BEG, S.H.SAEED.

10. "III-V COMPOUND SEMICONDUCTOR LASER HETEROSTRUCTURES PARAMETRIC PERFORMANCE EVALUATION FOR INGAAS/GAAS AND ALGAAS/GAAS" ADVANCES IN COMPUTATIONAL SCIENCE AND TECHNOLOGY (ACST) UGC CARE,VOLUME 10, ISSUE 10,2017 ,SAIMA BEG , SYED HASAN SAEED , M.J.SIDDIQUI.
11. "LOW NOISE AMPLIFIER PERFORMANCE ENHANCEMENT BY INCORPORATING STABILIZATION AND INPUT OUTPUT COMPONENTS MATCHING DESIGN FOR LOW ENERGY TECHNOLOGY APPLICATIONS", VOLUME 12, ISSUE S3, FEB 2023, SHINJINI YADAV, SAIMA BEG.

BOOK EDITED/ AUTHORED

1. AUTHORED A BOOK TITLE ,"SEMICONDUCTORS AND NANO HETEROSTRUCTURE" , SAIMA BEG AND SYED HASAN SAEED , EDITION 2021, PUBLISHED BY AARGON PRESS.

BOOK CHAPTERS

1. AUTHORED A BOOK CHAPTER TITLE," INDUSTRIAL TANK TEMPERETAURE , PRESSURE AND HUMIDITY CONTROLLER USING MICROCONTROLLER , EDITION 2021, PUBLISHEED BY AARGON PRESS IN BOOK EMERGING TRENDS IN NON CONVENTIONAL ENERGY RESOURCES.

2. AUTHORED A BOOK CHAPTER TITLE," CURRENT MIRROR INTEGRATOR& ANALOG SIGNAL PROCESSING, EDITION 2021, PUBLISHEED BY AARGON PRESS IN BOOK CIRCUIT DESIGN & SIGNAL PROCESSING.

3. AUTHORED A BOOK CHAPTER TITLE," PROTON IRRADIATION STUDY OF HFO_2, A HIGH K DIELECTRIC, EDITION 2021, PUBLISHEED BY AARGON PRESS IN BOOK CIRCUIT DESIGN & SIGNAL PROCESSING.

4. AUTHORED A BOOK CHAPTER TITLE," REVIEW OF THE LOW NOISE AMPLIFIER CMOS DESIGN PERFORMANCE BASED ON ANALYSIS IN RF APPLICATIONS", PROCEEDINGS OF THE INTERNATIONAL CONFERENCE ON EMERGING TRENDS IN IOT AND COMPUTING TECHNOLOGIES (ICEICT-2022), TAYLOR AND FRANSIS GROUP , APRIL 22-23, 2022, LUCKNOW, INDIA