



***Present Address:***

*Department of Electronics Engineering,  
Indian Institute of Technology (ISM), Dhanbad  
Dhanbad- 826004, Jharkhand*

***Permanent Address:***

*15/2 Padma Babu Road, Bally, Howrah.  
Howrah-711201, West Bengal  
e.mail id.: [nirupama@iitism.ac.in](mailto:nirupama@iitism.ac.in)*

**A. Academic Qualifications:**

Examination Passed	Board / University	Class / Division	Year of passing
Ph.D (Tech)	Calcutta University	NA	2012
M.Tech (Instrumentation & Control Engineering)	Calcutta University	1 <sup>st</sup>	2006
B.Tech (Instrumentation Engineering)	Calcutta University	1 <sup>st</sup>	2004

**B. National Award/ Achievements:**

- (a) Received National Scholarship award from Government of India in 2001
- (b) Elevated to IEEE senior member in February 2019

**C. Professional Experiences:**

Department	Designation	Organization	Experience/Duration
Electronics Engineering	Associate Professor	IIT (ISM), Dhanbad, Jharkhand	12.04.2021 to till date
Electronics Engineering	Assistant Professor	IIT (ISM), Dhanbad, Jharkhand	28.06.2013 to 11.04.2022
Electronics & Instrumentation Engineering	Assistant Professor & HOD	Asansol Engineering College, Asansol, WB	upto 27.06.2013

**D. Academic / Administrative work experiences:**

- [1] Chairperson, Documentation Cell, IIT (ISM), Dhanbad: June 2020 to June 2021
- [2] Nodal Officer, Documentation Cell, IIT (ISM), Dhanbad: 14<sup>th</sup> December 2018 to 26<sup>th</sup> June 2020
- [3] Member, Documentation Cell, IIT (ISM), Dhanbad: From 23<sup>rd</sup> April to 13<sup>th</sup> December 2018
- [4] Member, Media and Branding Cell: From 30<sup>th</sup> April 2019 to till date
- [5] Faculty in Charge (Training) in Electronics Engineering Department, IIT (ISM), Dhanbad: From 30<sup>th</sup> September 2013.
- [6] TEQIP III, Departmental Coordinator, IIT (ISM), Dhanbad
- [7] TEQIP II, Departmental Coordinator, IIT (ISM), Dhanbad
- [8] Reviewer of International Journal like IEEE Transaction on Instrumentation and Measurement, IEEE Sensors Journal, Measurement, ISA Transactions, Elsevier.
- [9] Member, Moderation Board, Electronics Engineering Department, IIT (ISM), Dhanbad
- [10] Member, Board of Course Study, Electronics Engineering Department, IIT (ISM), Dhanbad

- [11] Member of Anti-ragging Squad, IIT (ISM), Dhanbad
- [12] Faculty Advisor in IIT (ISM) in every year since joining
- [13] HOD in EIE department, Asansol Engineering College

### **E. Research Details:**

#### **Area of Interest:**

Transducer Development, Controller Design, Process Plant Instrumentation, Process Modeling, Smart sensing system and Smart instrumentation.

### **F. Research Publications:**

#### **International Journal**

1. I. Bhar and N. Mandal, "Design of a Noncontact Passive LC-Based Level Sensor With a Readout System," *IEEE Transactions on Instrumentation and Measurement*, vol. 71, pp. 1-9, January 2022
2. I. Bhar and N. Mandal, "Design of a Noncontact Passive LC-Based Level Sensor With a Readout System," *IEEE Transactions on Instrumentation and Measurement*, vol. 71, pp. 1-9, January 2022
3. I. Bhar and N. Mandal, "A review on advanced wireless passive temperature sensors," *Measurement, Elsevier Science*, vol. 187(110255), Jan. 2022.
4. Anamika Lata, Ishita Bhar, N. Mandal, "Multifunctional Electrode Polarization Impedance Based Sensor for Calculating Flow Rate and Conductivity of Fluid", *IEEE Transactions on Instrumentation and Measurement*, vol.7, December 2021
5. P. Maurya, Sayyed Faizan Ali, N. Mandal, "Design and Development of SAW Sensor based Wireless Target type Flow Transmitter" *IEEE Sensors Journal*, vol.21, no. 19, pp. 21390–21399, August 2021.
6. Sayyed Faizan Ali, N. Mandal, "Design and Development of Wireless Electronic Flow Transmitter Using Circular IDC as Primary Sensor" *IEEE Transactions on Instrumentation and Measurement*, vol.70, 2021
7. B. Mondal, Sayyed F Ali, N. Mandal, "An Approach to Design a Wireless Air Flow Transmitter using Flex Sensor", *IEEE Sensors Journal*, vol.21, Issue. 9, pp. 10498–10505, May 2021.
8. Anamika Lata, N. Mandal, "ANN based liquid level transmitter using Force resistive sensor for minimization of hysteresis and non-linearity error", *IET Science, Measurement & Technology*, vol.14, Issue.10, pp.923-930, March 2021.
9. M. Bandyopadhyay, S. Chowdhury Kolay, S. Chattopadhyay, N. Mandal, "Modification of De' Sauty Bridge Network for Accurate Measurement of Process Variables by Variable Parameter Transducers", *IEEE Transactions on Instrumentation and Measurement*, vol.70, February 2021
- D Anamika Lata, N. Mandal, "Electrode Polarization Impedance and its Application in Flow Rate Measurement of Conductive Liquid: A Review" *IEEE Sensors Journal*, vol.21, Issue. 4, pp. 4018–4029, February 2021.
- II Anamika Lata, N. Mandal, "A Anemometric Type Flow Transmitter Using Transistor as a Primary Sensor.", *IETE Journal of Research*, Taylor & Francis, April 2020.DOI: <https://doi.org/10.1080/03772063.2020.1753586>
- 12 Sayyed F Ali, N. Mandal, "Neural network based target type flow meter for high velocity liquid flow measurement", *IET Science, Measurement & Technology*, vol.14, Issue.6, pp.726-734, July, 2020.
- B Ishita Bhar, N. Mandal "Effect of Position of Electrodes in Polarization type Flowmeter: Analysis and Experimental Evaluation", *IEEE Transaction on Instrumentation and Measurement*, vol. 69, no. 6, pp. 3061-3069, June 2020.
- 14 Mandakinee Bandyopadhyay, N. Mandal, Subrata Chatterjee, S. C. Bera, "Low Cost System of Direct Measurement of Dissipation Factor for High Voltage Electrical Machine" *IEEE Transaction on Instrumentation and Measurement*, vol. 69, no. 4, pp. 1547-1555, April 2020.
15. B. Mondal, R. Sarkar, N. Mandal, "Design and Implementation of an RF based Wireless Displacement transmitter" *IEEE Sensors Journal*, vol.20, Issue. 3, pp. 1383–1392, February 2020.
16. Anamika Lata, N. Mandal, "Investigation of Influence of Area of Electrodes on the Characteristics of Electrode Polarization Based Flow Sensor", *IEEE Sensors Journal*, vol.19, Issue. 19, pp. 8781–8789, October 2019.
17. Anamika Lata, N. Mandal, "Design of Flow Transmitter using a Capacitive type Sensor", *IETE Journal of Research*, April 2019. DOI: 10.1109/JSEN.2019.2911991
18. Anamika Lata, N. Mandal, "Investigation of the Effect of Electrodes Distance on the Polarization Impedance type Flowmeter" *IEEE Sensors Journal*, vol.19, Issue. 15, pp. 6279–6288, August 2019.

19. Sayyed F Ali, N. Mandal, "Design and Development of an Electronic Level Transmitter using Inter Digital Capacitor" *IEEE Sensors Journal*, vol. 19, Issue. 13, pp.5179–5185, July 2019.
20. N. Mandal, B. Mondal, R. Sarkar,, "Design of an Optical Temperature Transmitter for Inflammable Industry" *IET Science, Measurement & Technology*, vol.13, Issue.5, pp.671-677, March, 2019.
21. S. Sinha, N. Mandal, "Design of a Smart Pressure Transmitter and Its Temperature Compensation Using Artificial Neural Network" *Journal of Control Automation and Electrical Systems*, Springer, vol.30, Issue.1, pp. 95-103, February 2019.
22. Sayyed F Ali, N. Mandal, "Design and Development of an Electronic Level Transmitter based on Hydrostatic Principle", *Measurement, Elsevier*, vol. 132, pp. 125-134, January 2019.
23. P. Maurya, N. Mandal, "Design Analysis of Wireless Pressure Measurement by Integrating Surface Acoustic Wave sensor with Bourdon tube" *IEEE Sensors Journal*, vol.18, Issue. 21, pp. 8996–9004, November 2018.
24. P. Maurya, N. Mandal, "Design and Analysis of an Electro-Optic type Pressure Transmitter using Bellows as Primary Sensor" *IEEE Sensors Journal*, vol.18, no. 18, pp. 7330–7340, September 2018.
25. S. Sinha, Rupam, N. Mandal, "Design and Development of a Capacitance Based wireless Pressure Transmitter" *IET Science, Measurement & Technology*, vol.12, Issue.7, pp. 858-864, October 2018.
26. S. Chakraborty, S. K. Bera, S. C. Bera, N. Mandal "Design of a Simple Temperature Transmitter Circuit of an Electric Heater Operated Water Bath" *IEEE Sensors Journal*, vol.18, no. 8, pp. 3140–3151, February 2018.
27. B. Mondal, B. Kumar, N. Mandal, "Design of an Inductive Pickup type Displacement Transducer using an electro-optic effect of lithium niobate based Mach-Zehnder Interferometers" *IET Science, Measurement & Technology*, 2018 vol.12, Issue.3, pp.395-404, May, 2018.
28. A. Lata, B. Kumar, N. Mandal, "Design and development of a level transmitter using force resistive sensor as a primary sensing element" *IET Science, Measurement & Technology*, vol. 12, issue.1, pp. 118-125, January 2018
29. N. Mandal, G.Rajita, "An accurate technique of measurement of flow rate using rotameter as a primary sensor and an improved op-amp based network" *Flow Measurement and Instrumentation, Elsevier*, vol. 58, pp. 38-45, Dec. 2017.
30. G. Rajita, A. Lata, N. Mandal, "Anemometric type flow transmitter using LM335– A temperature sensing IC" *Measurement, Elsevier*, vol. 108, pp. 134-142, Oct. 2017.
31. P. Maurya, N. Singh, N. Mandal "A novel technique on MZI based electro-optic type pressure transmitter using modified bourdon tube" *Optik, Elsevier*, vol. 144, pp. 573-585, Sept. 2017
32. S. Sinha, N. Mandal, "Design and Analysis of an Intelligent Flow Transmitter Using Artificial Neural Network" *IEEE Sensors Letters*, vol. 1, No. 3, June. 2017
33. P. Maurya, S. K. Bera, N. Mandal "Design and analysis of flow measurement of conductive liquid and transmission via optical channel" *Flow Measurement and Instrumentation, Elsevier*, vol. 52, pp. 246-254, Dec. 2016.
34. S. Sinha, N. Mandal, " Optimization of Modified Rotameter using Hall Probe Sensor with respect to Liquid Density and its Calibration using Artificial Neural Network" *International Journal on Smart Sensing and Intelligent Systems*, vol. 9, no. 4, pp. 2204-2218, Dec.2016
35. B. Kumar, N. Mandal, 'Study of an electro-optic technique of level transmitter using Mach-Zehnder interferometer and float as primary sensing elements', *IEEE Sensors Journal*, vol.16, no. 11, pp. 4211–4218, June. 2016
36. B. Kumar, S. K. Bera, N. Mandal, "Design and Development of an Electro-Optic Type-Flow Transmitter Using Mach–Zehnder Interferometer" *IEEE Transaction on Instrumentation and Measurement*, vol. 65, no. 7, pp. 1716-1723, May. 2016
37. S. Sinha, D. Banerjee, N. Mandal, R. Sarkar, S. C. Bera, "Design and Implementation of Real-time Flow Measurement System using Hall Probe Sensor and PC based SCADA" *IEEE Sensors Journal*, vol. 15, no. 10, pp. 5592-5600, Oct. 2015
38. S. Chakraborty, S. K. Bera, N. Mandal, S.C. Bera, "Study on Further Modification of Non-Contact Capacitance type Level Transducer for a Conducting Liquid" *IEEE Sensors Journal*, vol. 15, no. 11, Nov. 2015
39. G. Rajita, D. Banerjee, N. Mandal, S. C. Bera, "Design and Analysis of Hall Effect Probe-Based Pressure Transmitter Using Bellows as Sensor" *IEEE Transaction on Instrumentation and Measurement*, vol. 64, no. 9, pp. 2548-56, Sept. 2015
40. N. Mandal, B. Kumar, R. Sarkar, S. C. Bera "Design of a Flow Transmitter Using an Improved Inductance Bridge Network and Rotameter as Sensor" *IEEE Transactions on Instrumentation and Measurement*, vol. 63, no. 12, pp. 3127-3136, Dec.2014
41. *Brajesh Kumar, G Rajita, and Nirupama Mandal*, "A Review on Capacitive-Type Sensor for Measurement of Height of Liquid Level" *Measurement and Control, SAGE publication*, Vol 47, No 6, pp 219-224, September 2014
42. S. Chakraborty, N. Mandal, S. C. Bera, "Study of an IR Defusing Surface of a Float Used as Non-Contact Level Sensor" *Sensors & Transducers Journal*, vol. 183, Issue. 12, Dec. 2014, pp. 53-59
43. K.Chakraborty, N.Mandal, R.Sarkar "Design of an Electronic Flow Transmitter Using LVDT & Hall Sensor" *IJECT*, vol. 4, issue spl. 1, pp. 180- 182, March 2013

44. S.C. Bera, R. Sarkar, N. Mandal, "An optoisolator based linearization technique of a typical thyristor driven pump" *"ISA Transactions", Elsevier*, vol. 51, Issue.1, pp. 220-228, Jan. 2012
45. S.C. Bera, N. Mandal, R. Sarkar, "A novel technique of using a thyristor driven pump as the final control element and flow indicator of a flow control loop" *"ISA Transactions", Elsevier*, vol. 50, Issue. 3, pp. 496-503 July 2011
46. S.C. Bera, N. Mandal, R. Sarkar, "Study of a Pressure Transmitter Using an Improved Inductance- Bridge Network and Bourdon Tube as Transducer", *IEEE Transaction on Instrumentation and Measurement*, vol. 60, no. 4, pp. 1453-60, April 2011
47. S.C. Bera, R. Sarkar, N. Mandal "Study of the Effect of Excitation Frequency on the Performance of Electrode Polarization Impedance Type Flow Transducer for a Conducting Liquid" *IEEE Transactions on Instrumentation and Measurement*, vol. 59, No. 12, pp.3289-95, Dec. 2010
48. S.C. Bera, N. Mandal, R. Sarkar "Study of an Improved Temperature Indicating Circuit Using Thermocouple" *IET Science Measurement and Technology*, vol.4, Issue.3, pp.169-76, April, 2010
49. S.C. Bera, N. Mandal, R. Sarkar, "An accurate technique of measurement of a transducer output by using a modified two core saturable reactor" *"Measurement", Elsevier*, vol. 42, Issue. 8, pp. 1233-1240, Oct. 2009
50. S.C. Bera, N. Mandal, R. Sarkar, "Design of a PC based mass flow Indicator of an electrical motor driven water lift pump using motor load current as the flow sensing parameter", *Sensors & Transducers Journal*, vol. 108, Issue. 9, pp. 116-127, Sept. 2009
51. S.C. Bera, N. Mandal, R. Sarkar, S. Maity, "Design of a PC based pressure indicator using inductive pick-up type transducer and bourdon tube sensor", *Sensors & Transducers Journal*, vol. 107, Issue. 8, pp. 42-51, Aug. 2009.
52. S.C. Bera, N. Mandal, R. Sarkar, "A modified design of an electronic float transducer for measurement of liquid level", *Sensors & Transducers Journal*, vol. 92, Issue. 5, pp. 10-15, May 2008
53. S.C. Bera, N. Mandal, "A modified Design of an Anemometric Flow Transducer" *Sensors & Transducers Journal*, vol. 89, Issue. 3, pp. 83-92, March 2008
54. S. C. Bera, B. Chakraborty, N. Mandal, R. Sarkar, "Study of Electrode Polarization Impedance Type Transducer for the Measurement of Flow Rate of a Conducting Liquid", *International Journal of Lecturer on Modeling and Simulation*, AMSE France, vol. 8, Issue 3, pp. 1-2-3, 2007

#### **G. Book Publication:**

**N. Mandal and R. Sarkar, "Process Transducer - Design analysis and application in industry" LAP LAMBERT Academic Publishing", Saarbrücken, Germany, ISBN No. 978-620-2-06506-1, pp. 1-233, 2017**

#### **H. R & D Project:**

Sl. No.	Title of the Project	Sponsoring Agency	PI/Co-PI
1.	Design and Development of FRP- Based Instrumented Rock Bolt for Underground Coal Mines Gallery Support	TexMin/TIH	Co-PI
2.	Design, Develop and Fabricate a Piezoelectric Sensor Based Ash Level Measurement System	NTPC NETRA, NTPC Limited	PI
3.	Design, Fabrication and Development of a Real Time Flow Control System using PLC & PC based SCADA	FRS Project fund	PI
4.	Design, Development and Fabrication of pressure transmitter using Diaphragm Measurement System	TEQIP II	PI

#### **I. Patent:**

S.No	Patent Title	Name of Applicant(s)	Name of Inventors(s)	Agency /Country	Status
1.	Design of an IoT based wireless level transmitter	Indian Institute of Technology (ISM) Dhanbad	Nirupama Mandal Sayyed Faizan Ali	Indian	Published

2.	Piezoelectric Sensor Based Fly Ash Detection Module, Device and Method of Detection Thereof	Indian Institute of Technology (ISM) Dhanbad & NTPC Ltd.	Nirupama Mandal Ishita Bhar Anamika Lata R. S. Maurya Jitendra Singh Sandeep Kr. Patel	Indian	Filed
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**J. Ph.D. Guidance:**

Sl. No	Name of the Scholar	Position	Ph.D Status
1.	Mr. Brajesh Kumar	Full Time Research Scholar	<i>Degree Awarded</i>
2.	Mrs. Gurindapalli Rajita	Full Time Research Scholar	<i>Degree Awarded</i>
3	Miss Sunita Sinha	Full Time Research Scholar	<i>Degree Awarded</i>
4	Sudipta chakraborty	Part time scholar	<i>Degree Awarded</i>
5.	Praveen Maurya	Full Time Research Scholar	<i>Degree Awarded</i>
6	Sayed Faizan	Full Time Research Scholar	<i>Degree Awarded</i>
7	Mandakeene Bandopadhyay	Part time scholar	<i>Degree Awarded</i>
8	Mr. Bikas Mondal	Part time scholar	<i>Degree Awarded</i>
9	Anamika Lata	Full Time Research Scholar	<i>Degree Awarded</i>
10	Ishita Bhar	Full Time Research Scholar	<i>Degree Awarded</i>
11.	Anand Kumar	Full Time Research Scholar	<i>On going</i>
12.	Rupesh Kumar	Full Time Research Scholar	<i>On going</i>

**K. M.Tech. Thesis Guided:**

Sl. No.	Name of the student	Title of the Thesis	Year	Institute
1.	Aditya Ravi	Design and development of an inter digital capacitor based wireless level transmitter	2022	IIT (ISM) Dhanbad
2.	Deen Dayal Mishra	Design of Electro-Optic Level Measurement System using Modified Piezo Electric Sensing	2022	IIT (ISM) Dhanbad
3.	Hariom Kumar	Design of IoT based system for pressure measurement using modified Piezoelectric Sensor	2022	IIT (ISM) Dhanbad
4.	Ujjwal	Design and Optimization of Functional Block for Microprocessor	2019	IIT (ISM) Dhanbad & Intel
5.	Abhishek Kumar	An FFT Based Fault Detection using Detection in Induction Motor Using Vibration Analysis	2019	IIT (ISM) Dhanbad
6.	Sanjeev Kumar	KPIT Automated test System	2019	IIT (ISM) Dhanbad & KPIT

7.	Rupam Vandana Kashyap	Desing and Development of an FSK based Pressure and Flow measurement System	2018	IIT (ISM) Dhanbad
8.	Subham Jain	SWMM Run off Model Calibration using genetic Algorithm	2018	IIT (ISM) Dhanbad
9.	Bipin Kumar Singh	A FSR based Data Acquisition System to study the Interaction fo Different Footwear with Different Foot- Regions	2018	IIT (ISM) Dhanbad
10.	Niraj Kumar	Designof wireless pressure transmitter using SAW sensor	2017	IIT (ISM) Dhanbad
11.	Amit Kumar	Design of level transmitter using force resistive sensor and inter-digitated capacitor	2017	IIT (ISM) Dhanbad
12.	Rajbhan Kushwana	System on chip BUS verification (at Samsung)	2017	IIT (ISM) Dhanbad & Samsung
13.	Miss Anamika	Design of a Flow Transmitter using Animimetric method	2016	IIT (ISM) Dhanbad
14.	Mr. Prince Kumar	Design and Calibration of Flow meter using Neural Network.	2015	IIT (ISM) Dhanbad

**L. Short Term Course Organized:**

Sl.No	Title	Venue	Period	Duration
1.	Industrial Automation using PLC	IIT(ISM) Dhanbad	8 <sup>th</sup> Feb 2017-12 <sup>th</sup> Feb 2017	1 week

**M. Subjects Taken in UG & PG:**

Sl. No.	Name of the subject	Sl. No.	Name of the subject
1.	Electronics Engineering	2.	Process Control-I
3.	Industrial Instrumentation-I	4.	Process Control-II
5.	Industrial Instrumentation-II,	6.	Advance Process Control
7.	Bio-Medical Instrumentation	8.	Analytical Instrumentation
9.	Embedded Systems	10.	Electrical & Electronics Measurement and Instrumentation
11.	Smart Instrumentation	12.	Control System
13.	Microprocessors & Microcontrollers	14.	Process Instrumentation & Control

**N. Laboratory set-up in UG/PG:**

Sensors & Transducers Lab, Industrial Instrumentation Lab, Process Control Lab

**A. Personal Details:**

Marital Status : Married  
Sex : Female  
Caste : General  
Nationality : Indian

**Declaration:**

I do hereby declare that the information furnished above is true to the best of my knowledge and belief.

Place: Dhanbad  
Date: 12.01.2022

**(Nirupama Mandal)**