Curriculum-Vitae

Dr. ARIJIT BARAL
Associate Professor
Department of Electrical Engineering,
Indian Institute of Technology (Indian School of Mines) Dhanbad Email: arijit@iitism.ac.in

Academic Qualification

S. No.	Degree	Year	Subject	University/Institution	%Marks	Univ. Rank
1	B. Tech	2007	Electrical Engineering	*Maulana Abul Kalam University of Technology, West Bengal	84.20%	1st
2	M. E	2009	Power Systems	#Indian Institute of Engineering Science and Technology, Shibpur	85.77%	1st
3	Ph.D	2015	Engineering	Jadavpur University	NA	NA

* formerly known as West Bengal University of Technology
# formerly known as Bengal Engineering and Science University

Ph.D Dissertation detail

Ph.D thesis Title: *Studies on Condition Assessment of Electrical Power Equipment using Non-linear Model of Insulation*

Guide's Name: Prof. SIVAJI CHAKRAVORTI, Jadavpur University

Year of Award: 2015

Work Experience

S. No.	Position held	Name of the Institute	From	To
1	Lecturer	Calcutta Institute of Engineering and Management, Kolkata, India	01 August 2009	13 April 2011
2	INSPIRE Fellow (IF110058)	High Tension Lab., Jadavpur University, Kolkata, India	02 May 2011	06 August 2014
3	Assistant Professor	Indian School of Mines, Dhanbad, Jharkhand, India	14 August 2014	12 May 2016
4	Assistant Professor	Indian Institute of Technology (Indian School of Mines), Dhanbad, Jharkhand, India	13 May 2016	12 April 2022
5	Associate Professor	Indian Institute of Technology (Indian School of Mines), Dhanbad, Jharkhand, India	13 April 2022	Till Date

Professional Recognition/ Award/ Prize/ Certificate/ Fellowship received

S. No.	Name of Award	Awarding Agency	Year
1	POSOCO Power System Award PPSA-2015	Power System Operation and Control ltd. in association with FITT, IIT-Delhi	2015
2	DST INSPIRE Fellowship	DST, Govt. of India	2011
3	University Medal	Bengal Engineering and Science University (for securing 1st rank in Masters of Engineering Examination)	2009
4	Gold Medal	West Bengal University of Technology (for securing 1st rank in Bachelor of Technology Examination)	2007

Thesis Guidance:

Number of M.Tech Thesis Supervised: **16 (01 ongoing)**
Number of Ph.D Thesis Supervised: **08 (Awarded/Defended Thesis) + 03 (ongoing)**

Details of Awarded / Defended Thesis:

- Title of Ph.D Thesis: "*Advances in Polarization Depolarization Current (PDC) Measurement and Analysis for Effective Diagnosis of Power Transformer*" by Deepak Mishra **(Degree Awarded in 2020)**

- Title of Ph.D Thesis: "*Effect of Temperature on Dielectric Response of Oil-Paper Insulation System*" by Saurabh **(Degree Awarded in 2020)**
- Title of PhD Thesis: "*Condition Assessment of Power Transformer using model of Insulation having Time-Varying Parameters*" by Chandra Madhab Banerjee **(Degree Awarded in 2022)**
- Title of PhD Thesis: "Effects of Metal Oxide Nano-Composites on the Material Characteristics of Silicone Rubber for Outdoor Insulators" by Argha Kamal Pal jointly Guided by Prof. Abhijit Lahiri (external co-supervisor) (**Degree Awarded in 2022**)
- Title of PhD Thesis: "Dielectric Response Analysis Based Condition Assessment of Oil-Filled and Dry-Type Transformer Insulation" by Shalini Mishra (**Degree Awarded in 2023**).
- Title of PhD Thesis: "Electric Field Estimation and Optimization of High Voltage Apparatus" by Suryendu Dasgupta jointly Guided by Prof. Abhijit Lahiri (external co-supervisor) (**Degree Awarded in 2023**)
- Title of PhD Thesis: "Aging Effect on Dielectric Response of Mineral Oil and Ester Based Oil Impregnated Paper Insulation" by Hari Charan Verma (**Degree Awarded 2023**)
- Title of PhD Thesis: "Diagnosis of oil-paper insulation by combining time and frequency domain dielectric response" by Alok Kumar **(Degree Awarded in 2024)**

Subjects Taught:

- *Under Graduate*: Electromagnetic Field Theory and Applications, High Voltage Engineering & Applications, Soft Computing Techniques, Electrical Technology, Analog Electronics, Digital Electronics
- *Post-Graduate*: Advanced Machine Drives, Soft Computing Techniques, Condition monitoring of Electrical Machines

Membership of professional Bodies:

- *Senior Member of IEEE, USA*
- *Member of Dielectrics Insulation Society, IEEE, USA*
- *Member of Instrumentation & Measurement Society, IEEE, USA*
- *Member Institute of Engineers (India)*
- *Associate Fellow, West Bengal Academy of Science and Technology*

Other activities/ Responsibilities

- Faculty In-Charge of B.Tech (EE) 4th Year, IIT(ISM), Dhanbad
- Served as Warden from 02 June 2020 to 29 June 2022 at IIT(ISM), Dhanbad
- Executive Committee member of DEIS Chapter, IEEE KOLKATA SECTION, 2014, 2021, 2022, 2024
- Membership Development Committee Chair of DEIS Chapter, IEEE KOLKATA SECTION for 2015, 2016

Editorial responsibilities

- Associate Editor, **High Voltage Journal**, Co-published by IET and CEPRI.
- Editorial Board member, **Scientific Reports,** Springer Nature.

Research Contribution:

Copyrights: 01

- Copyright on "TRINA-XS", A software developed to assess the condition of Power Transformer insulation, Registration number: SW-7983/2014 dated 06/06/2014, Author: S. Sarkar; T. Sharma; A.Baral; B. Chatterjee; D. Dey; S. Chakravorti.

Book Chapter: 03

- A.Mala; C.M.Banerjee; A.Baral; S.Chakravorti, "Thermal model parameters identification of power transformer using nature inspired optimization algorithms", Smart Innovations in Communication and Computational Sciences, Springer, 2018
- C.M. Banerjee, A. Baral and S. Chakravorti, "Moisture Estimation of Power Transformer Using Transfer Function of Conventional Debye Model" Lecture Notes in Electrical Engineering, Vol 817, Springer, 2022
- S. Dasgupta, A. Baral, A. Lahiri, "Application of Wavelet Neural Network for Electric Field Estimation", Lecture Notes in Electrical Engineering, Vol 984, Springer, 2023

Indian Patents: 03 (Granted)

- Granted Indian patent "A High Frequency Modified Half Bridge Resonant Inverter with AC Input Source" (Patent no. 341969 vide Application No: 1321/KOL/2014, dated 17/12/2014). Inventor: P. K. Sadhu, P. Pal, N. Pal and A. Baral.
- Granted Indian patent "A High Frequency Full Bridge Series Resonant Inverter with AC Input Source", (Patent No. 393014 vide Application No :1081/KOL/2014, dated 24/10/2014). Inventor: P.K. Sadhu, D. Roy,

N. Pal and A. Baral.

- Granted Indian patent "A Hybrid Particulate Matter (PM) Emission Control Device Having Electrostatic Precipitator and High Frequency Induction Heating Coil for Diesel Engine and Method for the Same", (Patent no. 400850 vide Application No : 201731025438, Dated 18/07/2017). Inventors: K. Sit, P.K. Sadhu, A. Baral, K. Bhaumik, M. Chakraborty, S. Chakraborty and N. Pal.

Indian Patents: 01 (applied)

- Applied Indian patent "A hybrid renewable energy driven bidirectional wireless charging system for dynamic and static electric vehicle", (Application No. 202231032196 dated 06/06/2022), Inventors: P.K. Sadhu, A. Goswami, S. Mishra, N. Pal, A. Baral, A. Ghoshal, K.C. Jana

Journal papers published: 46

Latest paper published / Accepted:

V.K.Raushan, S.Ganguly, A.Baral, S.Chakravorti, "A Model with Time-Varying Parameters for Condition Assessment of Transformer Oil", ***IEEE Instrumentation & Measurements Magazine***, In Press, Paper No. IMM-D-24-00117, 2024

S. Ganguly, A. Baral, S. Chakravorti, "Effect of Charges Freed from Shallow and Deep Traps on Dielectric Response and Associated Insulation Diagnosis", ***IEEE Trans. on Dielectrics and Electrical Insulation***, Accepted (Manuscript ID: TDEI-0417-2024), 2024.

S. Ganguly, **A. Baral** and S. Chakravorti "Power Transformer Insulation Diagnosis Using De-Trapped Charge Affected Short-Duration Dielectric Response", ***IEEE Trans. on Instrumentation and Measurement***, Vol. 69, No. 10, pp.7695-7702, 2024.

S. Ganguly, C.M. Banerjee, **A. Baral** and S. Chakravorti "Use of Modified TVM Parameters for Reliable Estimation of Power Transformer Insulation Condition", ***IEEE Trans. on Instrumentation and Measurement***, Vol. 72, pp. 1- 11, 2023.

Papers published in International Conference: 33

Latest paper published:

J. Dey, S.Dutta, A.Baral and S.Chakravorti, "Leakage Current Based Analysis of Suspension Insulator for Effective Determination of ESDD ",8th International Conference on Power Systems (ICPS) 2019

V.Singh, D.Mishra, A.Baral and S.Chakravorti, "A Method to Predict Degree of Polymerization Value of Oil-paper Insulation Using Interfacial charge",8th International Conference on Power Systems (ICPS) 2019

Papers published in National Conference: 05

Research Projects:

#1 Title: "*Analysis of Dielectric Response Function recorded from High Voltage Oil-paper Insulation containing Trapped Charge*"

Duration: 36 months

Role: PI; Funding Agency: IIT(ISM)

Total Cost: 5.36 Lakhs; **Status: Completed**

#2 Title: "*Application of Nano-Chemical Filled HTV/RTV Rubber as an Effective Stress Grading Material for High Voltage Insulators*"

Duration: 06 months

Role: PI; Funding Agency: TEQIP II

Total Cost: 2.0 Lakhs; **Status: Completed**

#3 Title: "*Development of a non-invasive insulation diagnostic system for large power equipment employing cellulose impregnated with alternate dielectric liquid as its primary insulation taking into consideration the influence of trapped charge present in the system*"

Duration: 36 months

Role: PI; Funding Agency: DST, SERB

Total Cost: 32.19 Lakhs; **Status: Completed**

#4 Title: *Dynamic Charging of Electric Vehicles Using Wireless Power Transfer Technique*

Duration: 24 months

Role: Co-PI; Funding Agency: IIT(ISM), Dhanbad

Total Cost: 10 Lakhs; **Status: Completed**
