



**Mohammed Arifuddin Mallick**

**Professor, Department of Electrical Engineering, Faculty of Engineering,  
Integral University, Lucknow**

**+91-9838849825, [mamallick@iul.ac.in](mailto:mamallick@iul.ac.in), [mamallick2019@gmail.com](mailto:mamallick2019@gmail.com)**

[Google Scholar Citations](#), | [Orchid Id](#), [Scopus](#) | [Web of Science](#) | | [Research Gate](#) | [LinkedIn](#)

## PROFILE

---

**Mohammed Arifuddin Mallick** joined the department of Electronics and Communication Engineering as a Lecturer in July 1999 in Institute of Integral Technology (Presently Integral University). Before joining the university he had worked as Scientific Officer under a CSIR sponsored project. He has worked as Sr.Lecturer from Oct 2005 to July 2008 in Electrical and Electronics Engg department. Thereafter, he worked as Assistant Professor from Aug.2008 upto July 2011. He was promoted to the post of Asso. Professor in Aug 2012. Since Jan.2013 he has been working as Professor in the department of Electrical Engg. His research focuses on Renewable Energy, Power Quality, Electric Vehicles, Smart Grid, Energy Policy, Biomedical Instrumentation, Distributed Generation, Energy Forecasting, Multilevel Inverters. Prof. Mallick had his B.Sc. Engg.(Electrical Engg.) and M.Sc. Engg.(Power System and Drives) degree from Aligarh Muslim University in 1994 and 1998 respectively. He has done his Ph.D. in Electrical Engineering from Integral University Lucknow. He had worked as head of department of Electrical and Electronics Engg. from 2009 to 2016.

### RESEARCH INTEREST:

- Renewable Energy
- Biomedical Instrumentation
- Electric Vehicles
- Smart Grid
- Energy Policy
- Multilevel Inverters
- Distributed Generation

### SUMMARY OF RESEARCH ACCOMPLISHMENT:

- Number of publications in SCI indexed journals :02
- Number of publications in Scopus indexed journals :14
- Number of publications in Non SCI/Scopus indexed journal(peer reviewed): :25

- Number of publications in International Conferences :07
- Number of Patents(Published/Grant) :06
- Number of Books published :03
- Book Chapters :08
- Number of Books Edited :01
- Presentation in International Conferences :02
- The referee for various scientific journals :11
- Citations :280
- H index :10
- i10 index :11
- Invited talk as a resource person :03

**My Ph.D. Thesis Topic:** Modeling of Renewable Energy Systems

**Ph.D Awarded (Guided):** 10

**Ph.D (Under Guidance ):04**

- **Mr. A J Ansari** was awarded Ph.D on the thesis titled “Techno Economic Analysis of Distributed Electricity Generation through Renewable Energy Systems in India” in 2014.
- **Mr. Malik Rafi** was awarded Ph.D on the thesis titled “Reliability Evaluation with Intermittent Renewables in a Wind Generation System” in 2016.
- **Mr. Imran Khan** was awarded Ph.D on the thesis titled “Security Analysis of Electrical Power Systems by Margin and Sensitivity Enhancement by FACTS Devices” in 2017.
- **Mr. Mirza Md Shadab** was awarded Ph.D on the thesis titled “Development of Solar PV Based Grid Tied Multilevel Inverters” in 2017.
- **Mr. Mohd. Asim** was awarded Ph.D on the thesis titled “Design and Comparative Study of Maximum Power Point Tracking PV Systems Operating under Changing Atmospheric Conditions”, in 2017.
- **Mr. A F Minai** was awarded Ph.D on the thesis titled “Development and Integration of Multilevel Inverter for SPV Applications” in 2017.
- **Mrs.Fatima Yasmin** was awarded Ph.D on the thesis titled “ECG Signal Analysis using Wavelet Transform for the detection of Cardiac Arrhythmia ” in 2018.
- **Mr. Ibraheem** was awarded Ph.D on the thesis titled “Design and Development of Advanced Control Algorithm for Grid Connected PV System” in 2020.
- **Mr. Mohd. Khursheed** was awarded Ph.D on the thesis titled “Performance Evaluation of Hybrid Solar PV/Diesel Engine Systems for Telecommunication base Station Power Supply ” in 2020.
- **Mrs. Tarana Afrin Chandel** was awarded PhD on the thesis titled “Performance evaluation of Solar Photovoltaic Module using Photoluminescence Image Analysis under my guidance in 2022.

**Project :** 02

- Guided one project titled “Performance analysis of 1 MW solar power plant using image analysis”, by Institution of Engineers ,Kolkata,India from 2017-19.
- Successfully completed a project with **Ion** (Small &Medium Business Unit) in collaboration with TCS Lucknow. which was held from 6<sup>th</sup>-10<sup>th</sup> Oct.2015.

**PROFESSIONAL MEMBERSHIP:**

Working as Reviewer and Editorial board member of peer reviewed international Journals

- IJRET(Reviewer ID:20130404)
- RSER(Elsevier, U.K.)
- IE-Springer
- IJSER
- Libertas Academia,Netherland
- IJRASET
- JOBARI(International Knowledge Press)
- BJAIST(Science Domain International)
- MAT Journals
- TJPRC
- Journal of Global Challenges

**International:**

- MIEEE,USA (Membership no.:94055895)
- IAENG, Hong Kong(Membership no.:117017)

**National:**

- FIE (F-13102515),Life Member
- AMIETE, Associate Member
- LM-SESI (From 2021),Life Member

**COURSE TAUGHT:**

---

- Basic Electronics
- Basic Electrical Engineering
- Electrical Machines
- Electromechanical Energy Conversion I
- Electromechanical Energy Conversion II
- Electrical Machines I
- Electrical Measurement and Measuring Instruments
- Electrical Machines II
- Power Electronics
- Electronic Measurement and Instrumentation
- Measurement and Instrumentation
- Sensor and Instrumentation
- Switchgear and Protection
- Static Electric Drives
- Electric Drives

- Non Conventional Energy Resources
- Renewable Energy for Smart Grid
- Electric Vehicles
- Illumination Engineering  
(In Bullets)

#### **ADMINISTRATIVE/DEPARTMENTAL RESPONSIBILITY**

---

- Worked as Head (Deptt. of Electrical Engg & Deptt.of Electrical & Electronics Engg.)
- As Convener of Departmental RDC
- As Member of University IPR Cell.
- As Member of Academic council.
- As Member of Faculty Board.
- As Member of Board of Studies.
- As Placement Coordinator of UG and PG students.
- As Member of University IQAC committee.
- As Chairman of DQAC Committee
- As Chairman of Project Evaluation Committee
- As Chairman of Enquiry Committee
- As Chairman of Departmental Placement Committee
- As Mentor and Counselor
- As Member of Robotics Society
- As Member of Proctorial Board
- As Flying Squad Committee Member
- As Techfest (FIESTA) committee member
- As Asstt. Exam Superintendent
- Represented Department to NAAC expert committee
- Represented Department to NBA expert committee
- Represented Department to 12B expert committee
- Acted as Judge in different Technical Activities
- As Chairman of DPC Committee
- As Exam Assistant Centre Superintendent
- As member of Faculty Academic Committee

#### **Departmental Responsibilities:**

- Curriculum development of UG, PG and PhD scholars of Electrical Engineering.
- As Head Examiner
- As Paper Setter
- As Moderator
- As Examiner
- As Scrutinizer

- Establishment of Labs of EE and EN department.
- Organizing Workshops/Seminars/Expert Lectures/International and National Conferences /Seminars/STC/FDP/PDP etc.
- Organized In campus student Industrial Training
- As Mentor
- As Counselor

## STUDENTS SUPERVISION

---

### M.Tech Thesis Awarded: 11

- **Mr. Mohsin Aziz** was awarded **M.Tech** for his thesis titled “Reduction in Power Demand for the Commercial Buildings using Hybrid Design Topologies through Energy Management and Solar Photovoltaic System ” in 2014.
- **Mr. Faizan A Khan** was awarded **M.Tech** for his thesis in 2014.
- **Mr. Mohd. Imran** was awarded **M.Tech** for his thesis titled “PID Controller Tuning of Load Frequency Control using IMC method ” in 2015.
- **Mr. Shaheer Ansari** was awarded **M.Tech** for his thesis titled “Performance Analysis of Multilevel Inverter Using SPWM Type modulation ” in 2015.
- **Mr. Ankur Paul** was awarded **M.Tech** for his thesis titled “IMC Based Tuning Of PID Controller Of Automatic Voltage Regulator ” in 2015.
- **Ms. Heena Parveen** was awarded **M.Tech** for her thesis titled “Modelling and Simulation of Bridgeless Power Factor Correction using Boost Converter ” in 2016.
- **Mr. Mohd. Shahabuddin** was awarded **M.Tech** for his thesis titled “Effect of Shading on the Output Power of Photovoltaic Array ” in 2017.
- **Ms. Supriya Kumari** was awarded **M.Tech** in **2018**.
- **Ms. Archana Yadav** was awarded **M.Tech** in **2018**.
- **Mr. Saurav Tiwari** was awarded **M.Tech** in **2019**.

## PUBLISHED/GRANT PATENTS

---

### Patents Granted: 02

- A low cost ,more efficient ,more flexible and less complex fractional voltage based digital MPPT system,Patent file no.3473/DEL/2015,Patent Details:011121737,Patent No. 334075.Patent was granted In **2020** for 20 years .
- Patent on the topic “Low cost solar viscometer”, file vide 3474/ DEL/2015, was granted on 29/11/2023 for a period of 20years from 27.10.2015.

### Patents Published: 06

- Patent on the topic “Low cost solar viscometer”, file vide 3474/ DEL/2015 , published in Indian Patent Journal in **15.11.2015**.
- A low cost, more efficient, more flexible and less complex fractional voltage based digital MPPT system, Patent file no.3473/DEL/2015 in **15.11.2015**.
- Low cost micro crack measuring instrument for detection of faults on site in solar panels ,Application no:202111035684 published on **02/06/2022**.
- Low cost instrument to detect the degradation of pharmaceutical formulations based medicines ,Application no:202111059361 published on **24/06/2022**.
- Low cost IOT based smart battery monitoring system, Filing date: 28/03/2022 Application Number:202211017954 published on **26/01/2024**.
- SPV Based Salinity Measuring Instrument For Water Analysis, Filing date:29.02.2024,Application Number:202411014879 published on **08/03/2024**.

## PUBLISHED/ACCEPTED SCI/SCOPUS RESEARCH PAPERS

---

### International Journals:

- Imran Khan, **M A Mallick**,Mirza Md Shadab, “Optimal Placement of FACTs Controller Scheme for Enhancement of Power System Security in Indian Scenario”, published in Journal of Electrical Systems and Information Technology,Volume 2, Issue 2, September 2015, Pages 161-171, <https://doi.org/10.1016/j.jesit.2015.03.013>(**Scopus Indexed**)
- **M A Mallick**,Md Asim “Performance Evaluation of PFC Boost Converters”, published in IJIREICE ,Vol.3,Issue 11,**Nov.2015** , DOI: 10.17148/IJIREICE.2015.31122.(**Scopus Indexed**)
- Mohammad Asim, Mohd Tariq, **M.A.Mallick**, Imtiaz Ashraf, “An Improved Constant Voltage Based MPPT Technique for PMDC Motor”, International Journal of Power Electronics and Drive System (IJPEDS) , Vol.4 No.4, December 2016, DOI: 10.11591/ijpeds.v7i4.pp1330-1336. (**Scopus Indexed**)
- Mirza Mohammad Shadab , **Mohammad Arifuddin Mallick** , Mohammad Tufail , M.S. Jamil Asghar. “Development of a Novel Three Phase Grid-Tied Multilevel Inverter Topology”,International Journal of Power Electronics and Drive System (IJPEDS) Vol. 7, No. 3, September 2016, pp. 826-83, ISSN: 2088-8694, DOI: 10.11591/ijpeds.v7.i3 . (**Scopus Indexed**)
- Fatima Yasmeen, **Mohammad Arifuddin Mallick**,Yussufuzzaman, “Detection of Real time QRS complex using wavelet transform,”International Journal of Electrical and Computer Engineering,Vol.8,Aug.2018,pp.2857-2863,ISSN:2088-8708,DOI:10.11591.(**Scopus Indexed**)
- Tarana Afrin Chandel, **Mohammad Arifuddin Mallick**, Mohd.Yusuf Yaseen, “Effect of Bypass Diode under Partial Shading in SPV Module”, International Journal of Engineering and Advanced Technology, Vol.8,Jun.2019,pp.2215-2219,ISSN:2249-8958,RetrievalNumber E7483068519/19©BEIESP.(**Scopus Indexed**)
- Tarana Afrin Chandel, **Mohammad Arifuddin Mallick**, Mohd.Yusuf Yaseen, “Modelling and Simulation of Photovoltaic Cell using Single Diode Solar Cell and Double Solar Cell”,International Journal of Recent Technology and Engineering, Vol.8,Jun.2019,pp.558-565,ISSN:2277-3878, DOI:10.35940. (**Scopus Indexed**)
- Tarana Afrin Chandel, **Mohammad Arifuddin Mallick**, Mohd.Yusuf Yaseen, “Performance of Partially Shaded Solar Photovoltaic System”, International Journal of Recent Technology and Engineering,

Vol.7, Aug. 2019, pp.1444-1449, ISSN:2277-3878, DOI:10.35940. (Scopus Indexed)

- Ibraheem, **Mohammad Arifuddin Mallick**, “Variable parameter resized zero attracting least mean fourth control for grid tied pv system,” International Journal of Innovative Technology and Exploring Engineering, Vol.8, Sept 2019, pp.2489-2493, ISSN:2278-3075, DOI:10.35940. (Scopus Indexed)
- Tarana Afrin Chandel, **Mohammad Arifuddin Mallick**, Mohd.Yusuf Yaseen, “Oxidation: A dominant source for reduced efficiency of silicon solar photovoltaic modules”, Materials Today: Proceedings, Vol.27, Feb. 2020, pp.1092-1098, ISSN:2214-7853, DOI:10.1016/j.matpr.2020.01.473. (Web of Science, Scopus Indexed)
- Tarana Afrin Chandel, Mohd Yusuf Yasin, **Md Arifuddin Mallick**, “Performance of Rooftop Grid Connected Solar Photovoltaic System,” International Journal of Recent Technology and Engineering (IJRTE) ISSN: 2277-3878, Volume-9 Issue-1, May 2020. DOI:10.35940/ijrte.F9367.059120 (Scopus Indexed)
- Amrita Kuswaha, Arif Iqbal, **Mohammed Arifuddin Mallick**, “Modified boost converter for renewable energy powered battery charger”, International Journal of Automotive Science and Technology (IJAST) eISSN:2587-0963, 1-13, Vol.7, Issue-1, 2023, doi.org/10.30939/ (Scopus Indexed)
- Mohd Shariq Ansari, **M A Mallick**, Rishi Asthana, “A Review on Optimization of Microgrid for Rural Electrification”, International Journal on Recent and Innovation Trends in Computing and Communication (IJRITCC), Vol.11, No.9 (2024), doi:https://doi.org/10.17762/ijritcc.v11i9.9580 (Scopus Indexed)
- Mohd Shariq Ansari, **M A Mallick**, Rishi Asthana, “A Design and Optimization of a Renewable Energy Based Microgrid for Rural Electrification Analysis of the Simulink Model for different Loads”, Journal of Electrical Systems (JES), Vol.20, No.3 (2024), ISSN: 1112-5209, doi.org/10.52783/jes.4084 (Scopus Indexed, eSCI)(Published)
- Dharmesh Kr, Vijay P Singh, **M A Mallick**, “Frequency Control of Interlinked Microgrid System Using Fractional Order Controller”, Electrica, Vol.24, No, DOI:10.5152/electrica.2024.23199 (2024), ISSN: 2619-9831 (Scopus Indexed, eSCI)(Published).

## PAPER PUBLISHED IN INTERNATIONAL CONFERENCES

---

### International Conferences: 07

- Imtiaz. A, **Mallick. M. A**, Ansari .M. S, Chandra. A “Renewable Energy for Power Generation in Androth Island: Projected level Dissemination using diffusion models”, in the Proceedings of International Congress on Renewable Energy (ICORE) held in New Delhi, Nov 27-28, 2007, pp.188-192.
- **Mallick, M. A.**, Ashraf, I., “Estimation of Wind Potential of Saudi Arabia Using Technology Diffusion Models,” paper accepted in 3<sup>rd</sup> International Conference (GCREEDER 11), Amman, Jordan, 26-28 April, 2011.
- 01 paper presented by author in the International Conference on the topic 'Energy Generation and conservation for meeting India's Futuristic needs' organized by BBDITM, Lucknow on 22nd March 2014.
- 01 paper presented by author in the IEEE International Conference on the topic Variable Parameter Resized Zero Attracting Least Mean Fourth Control for Grid-Tied PV System,' in **UPCON-2019** .

- 01 paper presented in the IEEE International Conference on Advances in Computing, Communication & Materials (ICACCM), Dehradun, India, **2020**, pp.187-193. <https://doi.org/10.1109/ICACCM50413.2020.921306>
- 01 paper presented by author in the 9<sup>th</sup> IEEE International Conference on Power Electronics organized by DCRUST, Murthal, Haryana, from 28<sup>th</sup> Nov. -30<sup>th</sup> Nov. **2023**.
- 01 paper presented by author in the IEEE International Conference on the topic 'Advances and Key Challenges in Green Energy and Computing (AKGEC 2023)' organized by AKGEC, Ghaziabad from 24<sup>th</sup> Feb -25<sup>th</sup> Feb **2023**.

#### National Conferences: 06

- Rehman.M, **Mallick, M.A.**, "A Novel Technique for the Measurement of Viscosity of Liquids", presented at National Seminar on Recent Trends in the Design of Electronics and other Engineering Systems held at AMU, Aligarh, Nov. 29-30, 1997, (Souvenir) pp.15.
- **Mallick, M.A.**, Ashraf, I., "Estimation of appropriate technology using Diffusion Models," presented paper in National Seminar on "Energy Management and Energy Audit", organized by Institution of Engineers (Lucknow) at Engineers Bhawan on 17-18 January 2010.
- **Mallick, M.A.**, Khan.M.I, Ashraf. I, Pandey.S, "Energy management using Solar and Fuel Cell Based Appliances in Rural Areas of India", paper presented in National Conference (RAEPESM-2011) at MMMEC, Gorakhpur, India held on March 25-26, 2011.
- Mallick.M.A, Khan.M.I, Ashraf. I, "Estimation of environmental friendly sources for power generation in India using technology diffusion models," paper accepted in national conference at GGITS, Jabalpur on 18<sup>th</sup> February, 2011.
- Khan,F.A., **Mallick.M.A** ,Minai,F.A,"Multi source renewable distributed energy generation," paper published in national conference (NCETMEE12) proceedings at Integral University, Lucknow on 12-13 June 2012.
- Pappu Kumar, Dhananjay Kumar, **Mallick.M.A** ,"PLC control traffic signaling system using solar panel," paper published in national conference (NCETMEE12) proceedings at Integral University, Lucknow on 12-13 June 2012

#### PUBLISHED NON-SCI-SCOPUS BUT PEER REVIEWED RESEARCH PAPERS

- **Mallick.M.A**, Khan.M.I, Ashraf. I, Pandey.S, "Energy management using Solar and Fuel Cell based appliances in rural areas of India", published in the International Journal of Engineering, Science and Technology (IJEST) in June **2011**.
- Mirza M Shadab, Abu Tariq, **M A Mallick** , "Simulation and control of 20 kW grid connected wind system", published in International Journal of Electrical and Electronics Engineering Research (IJEEER), ISSN 2250-155X, Vol.3, Issue 3, Aug **2013**, pp. 275-284 Impact Factor:5.6397.
- Athar Hussain, M I Khan, S M Iqbal, **M A Mallick**, "Rain Water Harvesting and Impact of Microbial Pollutants on Ground Water Reserves," published in International Journal of Water Research (IJWR), Photon 135(2013), 211-216, Impact Index:3.15 (**Paper awarded Thomas Edison Award 2013**).



- Akhlaque Ahmad Khan, Ahmad Faiz Minai, Qamar Alam, **M.A. Mallick** “Performance Analysis of Various Switching Scheme in Multilevel Inverters using MATLAB/ SIMULINK” in International Journal of Current Engineering and Technology, Vol.4, No.2 (April **2014**) Page No. 718-724 ( E-ISSN 2277 – 4106, P-ISSN 2347 – 5161) INSPRESSCO (International Press Corporation) Association of American Publisher U.S.A Global Impact Factor: 2.552
- Akhlaque Ahmad Khan, Ahmad Faiz Minai, Qamar Alam and **M.A. Mallick** “Performance Analysis of Various Switching Scheme in Inverters using MATLAB/SIMULINK” in IOSR Journal of Electrical and Electronics Engineering, Egypt, IF 1.452 (Accepted).
- Ather Hussain ,M.I.Khan ,S.M.Iqbal , Mohd. Imran, **M.A.Mallick** published paper titled 'The microbial pollution of shallow ground water strata due to seepage of sewage and waste water discharge in the International Journal AJPTR in June **2014**(IF: 0.9832 in 2012).
- Mirza Md Shadab, **M A Mallick**“Simulation and Analysis of a Grid Connected Multi Level Converter Topologies and their comparison”, Journal of Electrical Systems and Information Technology, Vol.1 (**2014**) 166–174.
- Fatima Yasmeen, **M A Mallick**, Y U Khan, “Data driven approach for R Peak detection in ECG”, accepted for publication in the journal IJAEEE in Aug. **2015**.
- Athar Hussain , **M A Mallick**, M I Khan, Imran Khan “Rain Water Harvesting and Impact of Microbial Pollutants on Ground Water Reserves”, accepted for publication in the journal IJERA in Aug. **2015**.
- A F Minai, **M A Mallick** “Optimal Sizing and Estimation of a 30 kWp SPV system with multilevel inverter”, accepted for publication in the journal IJRSI in Jul.**2015**.
- Mr. Mohd. Sami, **Prof. M. A. Mallick**, “Cascaded H-Bridge 11-level Multilevel Inverter,” International Journal of Engineering Research & Technology, ISSN: 2278-0181 IJERTV10IS060099, www.ijert.org Vol. 10 Issue 6, pp.1-13,June-**2021**.

## BOOK EDITED/ AUTHORED

---

### Books Published: 03

- Basic Electrical Engineering, 1<sup>st</sup> Edition, published in 2009 with ISBN-10:8190750542 and with ISBN-13:9788190750547 by Word Press,Lucknow(Now transferred to CBS Publishers Chennai) .,
- Fundamentals of Electrical Engineering,1<sup>st</sup> Edition with ISBN-10:9380026099 with ISBN-13:9789380257174 published in 2010 by Word Press Lucknow(Now transferred to CBS Publishers Chennai).
- Electric Machines, 1<sup>st</sup> Edition with ISBN-10:9380026099 and with ISBN-13:978-9380026091 published in 2009 by IK International Pvt.Ltd,New Delhi (presently with Wiley India Pvt. Ltd.)

### Book Edited: 01

- Electronic Instrumentation, 2<sup>nd</sup> Edition, Tata McGraw Hill Publication, New Delhi by H.Kalsi in 2008.

### Book Chapter:08

- Lecture Notes in Electrical Engineering in the book “Advances in Smart Grid, **2017** Issue, Springer,ISBN :1876-1100,pp.13-21.
  - Lecture Notes in Electrical Engineering in the book “Advances in Smart Grid and Renewable Energy,**2018** Issue, Springer Nature Singapore Pvt. Ltd.,435, [https://doi.org/10.1007/978-981-10-4286-7\\_2](https://doi.org/10.1007/978-981-10-4286-7_2)
  - Chapter topic titled “Variable Parameter Resized Zero Attracting Least Mean Fourth Control for Grid Tied PV System”,in the book “Advance Aspects of Engineering Research, B P International UK,ISBN 97890206872,pp.51-57,year **2020**.
  - Chapter topic titled “Energy Management using Solar Photovoltaic based Appliances in Rural Areas of India”, in the book “Emerging Trends in Engineering Research and Technology, B P International UK,ISBN 9789390431717,pp.56-62,,year **2020**.
  - Chapter topic titled “Performance Analysis of Rooftop Grid Connected Solar Photovoltaic System”, in the book “Recent Developments in Engineering Research, B P International UK, ISBN 9769391215484,pp156-181, **2021**.
  - Chapter topic titled “VP-ZA-LMS Control Algorithm for Double-Stage Grid Integration of Solar PV System,” [Renewable Power for Sustainable Growth](#), pp 519–529, Springer, LNEE, Vol.723, **2019**.
  - Chapter topic titled, “Tuning of Controllers for a Boost Converter Used to Interface Battery Source to BTS Load of a Telecommunication Site,” [Renewable Power for Sustainable Growth](#), pp 415–426, Springer, LNEE, Vol.723,**2020**.
  - Chapter titled “Green and Clean Energy: Current Global Scenario”.,pp.1-30,Renewable Enrgy and AI for Sustainable Development”, CRC Press(Taylor and Francis Group),London, ISBN 9781032439495(hbk), 1st Edition, **2024**.
-