

Bio-data

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ACADEMIC POSITIONS:

- [7] **16 Mar 2018 – Present: Professor**
Indian Institute of Technology Kharagpur, Department of Physics, Kharagpur, India
- [6] **13 Dec 2013 – 16 Mar 2018: Associate Professor**
Indian Institute of Technology Kharagpur, Department of Physics, Kharagpur, India
- [5] **28 July 2012- 12 Dec 2013: Associate Professor**
Indian Institute of Technology Guwahati (IITG), Department of Physics, Guwahati, India
- [4] **July 2007 – July 2012: Assistant Professor**
Indian Institute of Technology Guwahati (IITG), Department of Physics, Guwahati, India
- [3] **June 2006 – May 2007: Post-Doctoral Research Fellow (with Prof. Helmut Dosch).**
Max Planck Institute for Metals Research, Stuttgart, Germany.
- [2] **May 2004 – March 2006: Post-Doctoral Research Fellow (with Prof. Michael Bedzyk).**
Northwestern University, Materials Science and Engineering Department, USA.
- [1] **10 April – 10 June, 2003: Visiting Scientist (with Prof. Joerg Zegehnagen).**
European Synchrotron Radiation Facility (ESRF) at beamline ID32 and surface characterization laboratory, Grenoble, France.

Ten best publications (as of 2023)

1. Murali Gedda, Nimmakayala V V Subbarao, and **Dipak K. Goswami**, Local Diffusion Induced Roughening in Cobalt Phthalocyanine Thin Film Growth, **Langmuir**, (2014), 30, 8735-8740 (Citation: 19, Impact Factor: 4.33)
2. N. V V Subbarao, M. Gedda, P. K. Iyer and **Dipak K. Goswami**, Enhanced environmental stability induced by effective polarization of a polar dielectric layer in tri-layer dielectric system of organic field-effect transistors: a quantitative study, **ACS Appl. Mater. Interfaces**, (2015), 7, 1915–1924 (Citation: 56, Impact Factor: 10.38)
3. N. V.V. Subbarao, M. Gedda, P. K. Iyer, **Dipak K. Goswami**, Organic field-effect transistors as high-performance humidity sensors with rapid response, recovery time and remarkable ambient stability, **Organic Electronics**, (2016), 32, 169–178 (Citation: 34, Impact Factor: 3.87)
4. Suman Mandal, Madhuchanda Banerjee, Satyajit Roy, Ajoy Mandal, Arnab Ghosh, Biswarup Satpati and **Dipak K. Goswami**, Organic Field-Effect Transistor-Based Ultrafast, Flexible, Physiological-Temperature Sensors with Hexagonal Barium Titanate Nanocrystals in Amorphous Matrix as Sensing Material, **ACS Appl. Mater. Interfaces**, (2019), 11, 4193–4202 (Citation: 22, Impact Factor: 10.38)
5. Suman Mandal, Satyajit Roy, Ajoy Mandal, Tanmay Ghoshal, Gangadhar Das, Arnab Singh, and **Dipak K. Goswami**, Protein-Based Flexible Moisture-Induced Energy-Harvesting Devices as Self-Biased Electronic Sensors, **ACS Appl. Electron. Mater.** (2020), 2, 780–789 (Citation: 46, Impact Factor: 4.49)
6. Suman Mandal, Ajoy Mandal, Gourhari Jana, Samik Mallik, Satyajit Roy, Arnab Ghosh, Pratim Kumar Chattaraj, and **Dipak K. Goswami**, Low Operating Voltage Organic Field-Effect

Transistors with Gelatin as a Moisture-Induced Ionic Dielectric Layer: The Issues of High Carrier Mobility, **ACS Appl. Mater. Interfaces** (2020), 12, 19727–19736
(Citation: 23, Impact Factor: 10.38)

7. Suman Mandal, Ajoy Mandal, Shiv Prakash Verma and **Dipak K. Goswami**, Interface engineering of moisture-induced ionic albumen dielectric layers through self-crosslinking of cysteine amino acids for low voltage, high-performance organic field-effect transistors, **Nanoscale**, (2021), 13, 11913
(Citation: 2, Impact Factor: 8.3)
8. Ajoy Mandal, Samik Mallik, Sovanlal Mondal, Suvani Subhadarshini, Riya Sadhukhan, Tanmay Ghoshal, Suman Mitra, Mousam Manna, Suman Mandal, **Dipak K Goswami**, Diffusion-Induced Ingress of Angiotensin-Converting Enzyme 2 into the Charge Conducting Path of a Pentacene Channel for Efficient Detection of SARS-CoV-2 in Saliva Samples, **ACS Sensors**, (2022), 7, 3006-3013
(Citation: Nil, Impact Factor: 9.62)
9. Ajoy Mandal, Suman Mandal, S P Verma, S. Mallik, S. S. Bag and Dipak K. Goswami, (2023), Diffusion-Induced Thickness Thinning of Spin-Coated Films in Crystalline Grain Boundaries: A Process of Amorphization, **Advanced Materials Interfaces**, (2023), 2202293
(Citation: Nil, Impact Factor: 6.39)
10. MOF-Assimilated High-Sensitive Organic Field-Effect Transistors for Rapid Detection of a Chemical Warfare Agent, Samik Mallik, Shyam Chand Pal, Snehanjan Acharyya, Shiv Prakash Verma, Ajoy Mandal, Prasanta Kumar Guha, Madhab C. Das, and Dipak Kumar Goswami, **ACS Appl. Mater. Interfaces** (2023), DOI: doi.org/10.1021/acsami.3c05185
(Citation: Nil, Impact Factor: 10.38)

List of patents filed:

1. Samik Mallik, Shyam Chand Pal, Madhab C. Das and Dipak K. Goswami, Low operating voltage organic field-effect transistors for detecting trace amounts of sulfur mustard stimulant using CPO-27-Ni MOF as receptor materials.
Application No: 202331008556
2. Ajoy Mandal and Dipak K. Goswami, (2021), Organic field-effect transistors-based sensors for detecting SARS-CoV-2 and testing device thereof,
Application No: 202131031170
3. Suman Mandal, and Dipak K. Goswami, (2019), Protein based flexible energy harvesting devices,
Application no: 201931017348
4. Suman Mandal, and Dipak K. Goswami, (2018), Organic field-effect transistor-based temperature sensor for different temperature sensing applications,
Application No: 201831004408
5. Device and Method of Automatic Unmanned and Auto-correctable Gas concentration management system
Application No: E20233024953

Technology Development:

1. **Smart Spirometer** has been developed for the detection of chronic obstructive pulmonary diseases (COPD) using a flexible OFET based temperature (**T**) sensors (Clinical Validation started). This is an affordable solution of gold standard (Spirometer) of detection of any pulmonary dysfunction related diseases including COPD, Asthma, etc.

Following start-up has been incubated to commercialize the COPD detection and management system.

Startup name: SenFlex Innovation Pvt. Ltd.

<http://www.senfex.in>

Patent no: **201831004408**

2. **Emergency Medical System (EMS):** Development of an automatic oxygen flow meter (OFM) that detects the oxygen flow rate automatically depending on the patient oxygen saturation level. Prototype has been developed. We are waiting for ethical clearance to start validation.
3. **SenFlex.P:** Development of a portable SARS-CoV-2 detection system using OFET based sensors from saliva sample. Prototype has been developed. Validation/testing under progress. (**Application No: 202131031170** – OFET based protein (**P**) sensors using ACE2 as receptor molecule).
4. **Albumin detection system:** Development of blood albumin detection system for point-of-care (POC) application (Patent submission under process – OFET based protein (**P**) sensor with peptide as receptor molecule).
5. **Sleep-i:** A IoT based medical devices for detection of sleep apnea. The prototype module has been developed. Clinical validation is pending

Sponsored research and consultancy projects

1. Development of automatic supplemental oxygen therapy system, 2022 – 2024, Sponsored by ICMR – IIT Kharagpur (Rs. 11.58 lakh) as PI
2. Indian Nanoelectronics users programme – idea to innovation, 2021 – 2024 Sponsored by MeitY, (Rs. 7 Cr) – PI
3. Development of flexible humidity and temperature sensors for healthcare applications, 2018 – 2023, MeitY and DST (Rs. 101 lakh) – PI
4. Nanoelectronics Network for Research and Applications (NNetRA) – Chief Investigator and NNetRA Coordinator, IIT Kharagpur, (Rs. 50 Cr), 2018 – 2023, MeitY, DST and IIT Kharagpur.
5. Controlled growth and studies on semiconductor nanowire heterostructures for solar photovoltaic applications, 2011 - 2013, Sponsored by BRNS, (Rs. 25 Lakhs) - as CoPI
6. Fabrication and characterization of organic thin film transistors, 2010 - 2012, Sponsored by DST (Rs. 44.6 lakhs) - as PI
7. Development of optoelectronic device fabrication facilities based on molecular organic / polymeric and composite materials, 2010 - 2015, Sponsored by: DST, (Rs. 575 lakhs), - as Co-PI.
8. Genotyping Single Nucleoside Polymorphisms with Fluorescently Modified Nucleoside Oligonucleotide Probes, 2012 - 2015, Sponsored by DBT, (Rs. 50 lakhs) - as Co-PI
9. Growth of organic thin film for the fabrication of organic field-effect transistors. 2013 - 2015, Sponsored by SRIC, IIT Kharagpur, (Rs. 27 lakhs) - as PI

Book Chapters:

1. **Dipak K. Goswami** et al., (2002), Growth of self-assembled epitaxial germanium nanoislands on silicon surfaces by molecular beam epitaxy, Physics at Surfaces and Interfaces, World Scientific, 93–98.
2. **Dipak K. Goswami** et al., (2006), Novel Growth of Ag Islands on Si (111) Surfaces by MBE: Plateaus with Atomic Scale Preferred Heights, Nano-Scale Materials: From Science to Technology, Nova Publication, 13–24.
3. **Dipak K. Goswami**, (2008), Room Temperature Growth of Ag Islands on Si(111) Surfaces, Recent Trends in Nanostructured Materials and Their Applications, Excel India Publishers, 34–43.
4. N. V. V. Subbarao and **Dipak K. Goswami** et al., (2017), Fabrication of Exceptional Ambient Stable Organic Field-Effect Transistors by Exploiting the Polarization of Polar Dielectric Layer, High-Performance Materials and Engineered Chemistry, Apple Academic Press, 35–56.
5. S. Mandal and **Dipak K. Goswami**, (2021), Flexible Organic Field-Effect Transistors Using Barium Titanate as Temperature-Sensitive Dielectric Layer, Surfaces and Interfaces of Metal Oxide Thin Films, Multilayers, Nanoparticles and Nano-composites, Springer, 113–136.

6. Monojit Mondal, Avik Sett, **Dipak K. Goswami**, Tarun Kanti Bhattacharyya (2022), Synthesis of Graphene nanocomposites toward the enhancement of energy storage performance for supercapacitors, *Sub-Micron Semiconductor Devices: Design and Applications*, CRC Press, 211-234, DOI:10.1201/978100312393-14

Edited journals/proceedings (as guest editor)

1. P. K. Giri, **Dipak K. Goswami**, A. Perumal, (2013), *Applied Nanoscience*, Springer, Vol. 3(8)
2. P. K. Giri **Dipak K. Goswami**, A. Perumal, (2013), *Journal of Experimental Nanoscience*, Taylor & Francis.
3. P. K. Giri, **Dipak K. Goswami**, A. Perumal, (2013), *Springer Proceedings in Physics*, Springer, Vol. 143
4. P. K. Giri, **Dipak K. Goswami**, and A. Perumal, (2011), *Int. J. Nanoscience*. World Scientific Publishing, Vol. 10, No. 1&2.
5. P. K. Giri, **Dipak K. Goswami**, and A. Chattopadhyay (2010), *Proc. of the International Conference on Advanced Nanomaterials and nanotechnology*, AIP Conf. Proc. Vol. 1276, p. 1-435.

Peer review journals:

1. S. K. Ghose, **Dipak K. Goswami**, B. Rout, B. N. Dev, G. Kuri, and G. Materlik, (2001), Ion irradiation induced mixing, interface broadening and period dilation in Pt/C multilayers. ***Appl. Phys. Lett.*** 79, 467-469.
2. A. P. Pathak, S. V. S Nageswara Rao, A. M. Siddiqui, G. B. V. S. Lakshmi, S. K. Srivastava, D. Bhattacharya, D. K. Avasthi, **Dipak K. Goswami**, P. V. Satyam, and B. N. Dev, (2002) Ion beam studies in strain layer superlattices. ***Nucl. Inst. and Meth.*** B193, 319-323.
3. **Dipak K. Goswami**, and B. N. Dev, (2003) Nanoscale self-affine surface smoothing by ion bombardment. ***Phys. Rev.*** B 68, 033401-4.
4. **Dipak K. Goswami**, B. Satpati, P. V. Satyam, and B. N. Dev, (2003) Growth of self-assembled nanostructures by molecular beam epitaxy. ***Current Science***, 84, 903-910.
5. **Dipak K. Goswami**, and B. N. Dev, (2003) Observation of self-affine fractal roughness in MeV ion irradiated Si surfaces using scanning tunneling microscopy. ***Nucl. Inst. and Meth.*** B212, 253-257.
6. P. V. Satyam, J. Kamila, S. Mahapatra, B. Satpati, **Dipak K. Goswami**, B. N. Dev, R. E. Cook, L. Assoufid, S. Narayanan, J. Wang, and N. C. Mishra, (2003) Crater formation in gold nanoislands due to MeV self-ion irradiation. ***J. Appl. Phys.***, 93, 6399-6401.
7. J. Kamila, B. Satpati, **Dipak K. Goswami**, M. Rundhe, B. N. Dev, and P. V. Satyam, Low current MeV Au ion-induced amorphization in silicon: Rutherford Backscattering Spectrometry and Transmission Electron Microscopy study. ***Nucl. Inst. and Meth.*** B207, (2003) 291-295.
8. B. Satpati, **Dipak K. Goswami**, J. Kamila, T. Som, B. N. Dev, and P. V. Satyam, (2003), Study of sputtered particles under thermal spike confinement effects, ***Nucl. Inst. and Meth.***, B212, 332-338.
9. B. Satpati, **Dipak K. Goswami**, U. D. Vaishnav, T. Som, B. N. Dev, and P. V. Satyam, (2003), Energy spike induced effects in MeV ion-implanted nanoislands., ***Nucl. Inst. and Meth.*** B212, 157-163.
10. S. Bera, **Dipak K. Goswami**, K. Bhattacharjee, B. N. Dev, G. Kuri, K. Nomoto, and Yamashita, (2003), Ion irradiation induced impurity redistribution in Pt/C multilayers. ***Nucl. Inst. and Meth.*** B212, 530-534.
11. **Dipak K. Goswami**, K. Bhattacharjee and, B. N. Dev, (2004), Ge growth on ion-irradiated Si surfaces: Self-affine fractal structure., ***Surf. Sci.*** 564, 149-155.
12. K. Bhattacharjee, S. Bera, **Dipak K. Goswami**, and B. N. Dev, (2005) Nanoscale self-affine surface smoothing by ion bombardment and the morphology of nanostructures grown on ion bombarded surfaces. ***Nucl. Instr. Methd.*** B230, 524-532.
13. X. Liu, Y. Zhang, **Dipak K. Goswami**, J. S. Okasinski, K. Salaita, P. Sun, M. J. Bedzyk, C. A. Mirkin, (2005) The controlled evolution of a polymer single crystal, ***Science***, 307, 1763-1766.
14. S. Bera, B. Satpati, **Dipak K. Goswami**, K. Bhattacharjee, P. V. Satyam, and B. N. Dev, (2006) Ion-beam induced transformations in nanoscale multilayers: Evolution of clusters with preferred length scales, ***J. Appl. Phys.*** 99, 074301-5.
15. B.N. Dev, S. Bera, B. Satpati, **Dipak K. Goswami**, K. Bhattacharjee, P.V. Satyam, K. Yamashita, O. M. Liedke, K. Potzger, J. Fassbender, F. Eichhorn, R. Groetzschel, (2006),

- Nonmagnetic to magnetic nanostructures via ion irradiation. *Microelectronic Engineering*, **83**, 1721-1725.
16. C.-Y. Kim, J. W. Elam, M.J. Pellin, **Dipak K. Goswami**, S. T. Cristensen, M. C. Hersam, P. C. Stair, and M. Bedzyk, (2006) Imaging of atomic layer deposition (ALD) tungsten monolayer on a-TiO₂(110) by X-ray standing wave Fourier inversion. *J. Phys. Chem. B* **110** 12616-12620.
 17. **Dipak K. Goswami**, K. Bhattacharjee, B. Satpati, S. Roy, P. V. Satyam, and B. N. Dev, (2007) Preferential heights on growth of Ag island on Si(111)-(7x7) surfaces. *Surf. Sci.* 601 603-608.
 18. **Dipak K. Goswami**, K. Bhattacharjee, B. Satpati, G. Kuri, P. V. Satyam, B. N. Dev, (2007) Coexistent compressive and tensile strain in Ag islands on Si (111) – (7x7) surfaces. *Appl. Surf. Sci.* 253 9142-9147
 19. M. Sofos, D. Stone, **Dipak K. Goswami**, J. Okasanski, J. Hua, M. J. Bedzyk, and S. Stupp (2008) Nanoscale Structure of Self-Assembling Hybrid Materials of Inorganic and Electronically Active Organic Phases, *J. Phys. Chem. C* **112** 2881-2887.
 20. R. T. Weitz, K. Amsharov, U. Zschieschang, E. V. Barrena, **Dipak K. Goswami**, M. Burghard, H. Dosch, M. Jansen, and H. Klauk, (2008) Film morphology, performance and stability of n-channel organic transistors based on novel perylene carboxylic diimide derivatives. *J. Am. Chem. Soc.* **130** 4637-4645.
 21. P. K. Giri, S. Kumari, **Dipak K. Goswami**, (2009) Low energy oxygen implantation induced improved crystallinity and optical properties of surface modified ZnO single crystals. *Appl. Surf. Sci.* 256 384–388
 22. X. Zhang, E. Barrena, **Dipak K. Goswami**, D. G. de Oteyza, C. Weis, and H. Dosch, (2009), Evidence for layer-dependent Ehrlich-Schwöbel barrier in organic thin film growth, *Phys. Rev. Lett.* **103**, 136101-4
 23. **Dipak K. Goswami** (2010) Effect of interface structures on the growth of Ag on Si(111) surfaces, *Asian. J. Physics*, **19**, 215- 220
 24. **Dipak K. Goswami**, and Arindam Pal, (2011), Growth of percolated Ag nanostructures on Si(111)-(7x7) Surfaces, *Int. J. Nanoscience* **10**, 123-127
 25. M. Gedda, N. V. V Subbarao, Sk. Md. Obaidulla, and **Dipak K. Goswami**, (2013) High carrier mobility of CoPc wires-based field-effect transistors using bilayer gate dielectric, *AIP Advances*, **3**, 112123
 26. A. Pal, J. C. Mahato, B. N. Dev, **Dipak K. Goswami**, (2013), Roughening in Electronic Growth of Ag on Si(111)-(7x7) Surfaces, *ACS Appl. Mater. and Interfaces*, **5**, 9517–9521
 27. Nimmakayala V. V. Subbarao, Murali Gedda, Suresh Vasimalla, Parameswar K. Iyer and **Dipak K. Goswami**, (2014), Effect of thickness of bilayer dielectric on 1,7-dibromo-N,N 0 -dioctadecyl -3,4,9,10- perylenetetracarboxylic diimide based organic field-effect transistors, *Phys. Status Solidi A*, **211**, 2403–2411
 28. Murali Gedda, Nimmakayala V V Subbarao, and **Dipak K. Goswami**, (2014), Local Diffusion Induced Roughening in Cobalt Phthalocyanine Thin Film Growth, *Langmuir*, **30**, 8735-8740
 29. Murali Gedda, Nimmakayala V. V. Subbarao and **Dipak K. Goswami**, (2014) Growth Mechanism of Cobalt(II) Phthalocyanine (CoPc) Thin Films on SiO₂ and Muscovite Substrates AIP Conf. Proc. 1576, 152–154
 30. Nimmakayala V. V. Subbarao, Murali Gedda, V. Suresh, D. Anamika, Parameswar K. Iyer, and **Dipak K. Goswami**, (2014) Growth and Characterization of N, N'-Dioctadecyl -1, 7-Dibromo-3, 4, 9, 10-Perylenetetracarboxylic-Diimide Micron/Nano Wires for Organic Field Effect Transistors. AIP Conf. Proc. 1576, 42–45
 31. SK. Md. Obaidulla, **Dipak K. Goswami**, and P. K. Giri, (2014) Low bias stress and reduced operating voltage in SnCl₂Pc based n-type organic field-effect transistors, *Appl. Phys. Lett.* **104**, 213302
 32. **Dipak K. Goswami**, (2015) Organic Semiconductor Materials for Future Electronics, *Invertis Journal of Renewable Energy* **5** (1), 41-46
 33. Nimmakayala V V Subbarao, Murali Gedda , Parameswar Krishnan Iyer and **Dipak K. Goswami**, (2015), Enhanced environmental stability induced by effective polarization of a polar dielectric layer in tri-layer dielectric system of organic field-effect transistors: a quantitative study, *ACS Appl. Mater. Interfaces*, **7**, 1915–1924
 34. Nimmakayala V.V. Subbarao, Murali Gedda, Parameswar Krishnan Iyer, **Dipak K. Goswami**, (2016), Organic field-effect transistors as high-performance humidity sensors with rapid response, recovery time and remarkable ambient stability, *Organic Electronics*, **32**, 169–178
 35. Suresh Vasimalla, Nimmakayala V. V. Subbarao, Murali Gedda, **Dipak K. Goswami**, and Parameswar Krishnan Iyer, (2017), Effects of Dielectric Material, HMDS Layer, and Channel

- Length on the Performance of the Perylenediimide-Based Organic Field-Effect Transistors, **ACS Omega**, 2, 2552–2560
36. Nimmakayala V.V. Subbarao, Suman Mandal, Murali Gedda, Parameswar Krishnan Iyer, **Dipak K. Goswami**, (2018), Effect of temperature on hysteresis of dipolar dielectric layer based organic field-effect transistors: A temperature sensing mechanism, **Sensor and Actuators A: Physical**, 269, 491–499
 37. Puspendu Guha, Arnab Ghosh, Arijit Sarkar, Suman Mandal, Samit K Ray, Dipak K Goswami and Parlapalli V Satyam, (2019), P-type β -MoO₂ nanostructures on n-Si by hydrogenation process: synthesis and application towards self-biased UV-visible photodetection. **Nanotechnology**, 30, 035204
 38. Suman Mandal, Madhuchanda Banerjee, Satyajit Roy, Ajoy Mandal, Arnab Ghosh, Biswarup Satpati and **Dipak K. Goswami**, (2019) Organic Field-Effect Transistor-Based Ultrafast, Flexible, Physiological-Temperature Sensors with Hexagonal Barium Titanate Nanocrystals in Amorphous Matrix as Sensing Material, **ACS Appl. Mater. Interfaces**, 11, 4193–4202
 39. Parbati Basu, Jayita Chakraborty, Nirmal Ganguli, Khushi Mukherjee, Krishnendu Acharya, Biswarup Satpati, Sudipta Khamrui, Suman Mandal, Debmalaya Banerjee, **Dipak K. Goswami**, Padinharu MG Nambissan, Kuntal Chatterjee, (2019), Defect-Engineered MoS₂ Nanostructures for Reactive Oxygen Species Generation in the Dark: Antipollutant and Antifungal Performances, **ACS Appl. Mater. Interfaces**, 11, 48179–48191
 40. Suvani Subhadarshini, Rashika Singh, **Dipak K. Goswami**, Amit K. Das, and Narayan Ch. Das, (2019), Electrodeposited Cu₂O Nanopetal Architecture as a Superhydrophobic and Antibacterial Surface, **Langmuir** 35, 17166–17176
 41. Sudarshan Singh, Ajit K Katiyar, Arijit Sarkar, P K Shihabudeen, Ayan Roy Chaudhuri, **Dipak K Goswami** and Samit K Ray, (2020), Superior optical ($\lambda \sim 1550$ nm) emission and detection characteristics of Ge microdisks grown on virtual Si_{0.5}Ge_{0.5}/Si substrates using molecular beam epitaxy, **Nanotechnology**, 31, 115206
 42. Priyanka Rani, Arup Ghorai, Saptarsi Roy, **Dipak K Goswami**, Anupam Midya and Samit K Ray, (2019), Mesoporous GO-TiO₂ nanocomposites for flexible solid-state supercapacitor applications, **Mater. Res. Express** 6 125546
 43. Suman Mandal, Satyajit Roy, Ajoy Mandal, Tanmay Ghoshal, Gangadhar Das, Arnab Singh, and **Dipak K. Goswami**, (2020), Protein-Based Flexible Moisture-Induced Energy-Harvesting Devices as Self-Biased Electronic Sensors, **ACS Appl. Electron. Mater.** 2, 780–789
 44. S. Majumder, A. Sett, M. Mondal, **Dipak K. Goswami**, and T. Kanti Bhattacharyya, (2020), Thioglycolic Acid functionalized MoS₂ based Hg²⁺ and Cd²⁺-ion detection: A low cost, low power sensitive device, **IEEE Sensors**, 2020, pp. 1-4, doi: 10.1109/SENSORS47125.2020.9278746.
 45. Suman Mandal, Ajoy Mandal, Gourhari Jana, Samik Mallik, Satyajit Roy, Arnab Ghosh, Pratim Kumar Chattaraj, and **Dipak K. Goswami**, (2020), Low Operating Voltage Organic Field-Effect Transistors with Gelatin as a Moisture-Induced Ionic Dielectric Layer: The Issues of High Carrier Mobility, **ACS Appl. Mater. Interfaces** 12, 19727–19736
 46. Sourabh Pal, Sayan Bayan, **Dipak K. Goswami**, and Samit K. Ray, (2020), Superior Performance Self-Powered Photodetectors Utilizing the Piezo-Phototronic Effect in SnO Nanosheet/ZnO Nanorod Hybrid Heterojunctions, **ACS Appl. Electron. Mater.** 2, 1716–1723
 47. Suvani Subhadarshini, E. Pavitra, G. Seeta Rama Raju, Nilesh R. Chodankar, **Dipak K. Goswami**, Young-Kyu Han, Yun Suk Huh, and Narayan Ch. Das, (2020), One-Dimensional NiSe–Se Hollow Nanotubular Architecture as a Binder-Free Cathode with Enhanced Redox Reactions for High-Performance Hybrid Supercapacitors, **ACS Appl. Mater. Interfaces** 12, 29302–29315
 48. Suman Mandal, Ajoy Mandal, Shiv Prakash Verma and **Dipak K. Goswami**, (2021), Interface engineering of moisture-induced ionic albumen dielectric layers through self-crosslinking of cysteine amino acids for low voltage, highperformance organic field-effect transistors, **Nanoscale**, 13, 11913
 49. Monojit Mondal, **Dipak K. Goswami**, Tarun Kanti Bhattacharyya, (2021), Lignocellulose based Bio-waste Materials derived Activated Porous Carbon as Superior Electrode Materials for High-Performance Supercapacitor, **Journal of Energy Storage** 34, 102229
 50. Sudarshan Singh, Arijit Sarkar, **Dipak K. Goswami**, and Samit K. Ray, (2021), Solution-Processed Black-Si/Cu₂ZnSnS₄ Nanocrystal Heterojunctions for Self-Powered Broadband Photodetectors and Photovoltaic Devices, **ACS Appl. Energy Mater.** 4, 4090–4098
 51. Suvani Subhadarshini, Eluri Pavitra, Ganji Seeta Rama Raju, Nilesh R. Chodankar, Ajoy Mandal, Satyajit Roy, Suman Mandal, M.V. Basaveswara Rao, **Dipak K. Goswami**, Yun Suk Huh, Narayan C. Das, (2021), One-pot facile synthesis and electrochemical evaluation of

- selenium enriched cobalt selenide nanotube for supercapacitor application, **Ceramics International**, 47, 15293–15306
52. Suvani Subhadarshini, Rashika Singh, Ajoy Mandal, Satyajit Roy, Suman Mandal, Samik Mallik, **Dipak K. Goswami**, Amit K. Das, and Narayan C. Das, (2021), Silver Nanodot Decorated Dendritic Copper Foam as a Hydrophobic and Mechano-Chemo Bactericidal Surface, **Langmuir** 37, 9356–9370
 53. Arnab Ghosh, Himanshu Saini, Arijit Sarkar, Puspendu Guha, Aneeya K. Samantara, Ranjit Thapa, Suman Mandal, Ajoy Mandal, J.N. Behera, Samit K. Ray, **Dipak K. Goswami**, (2021), Nitrogen vacancy and hydrogen substitution mediated tunable optoelectronic properties of g-C₃N₄ 2D layered structures: Applications towards blue LED to broad-band photodetection, **Applied Surface Science**, 556, 149773
 54. Sourabh Pal, Sayan Bayan, **Dipak K. Goswami**, and Samit K. Ray, (2021), Boron Carbonitride Nanosheet/ZnO Nanorod Heterojunctions for White-Light Emission, **ACS Appl. Nano Mater.** 4, 8572–8585
 55. Santanab Majumder, Avik Sett, **Dipak K. Goswami**, and Tarun Kanti Bhattacharyya, (2021), Pseudo Electron Injection in Amine-Modified MoS₂-Based Sensor for Humidity Monitoring, **IEEE Transactions on Electron Devices**, 68, 5173 – 5178
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- Prakash Verma, Ajoy Mandal, Prasanta Kumar Guha, Madhab C. Das, and Dipak Kumar Goswami, **ACS Appl. Mater. Interfaces** (2023), DOI: doi.org/10.1021/acsami.3c05185
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Conference Proceedings:

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81. Murali Gedda, Nimmakayala V. V. Subbarao and **Dipak K. Goswami**, (2014), Growth Mechanism of Cobalt (II) Phthalocyanine (CoPc) Thin Films on SiO₂ and Muscovite Substrates, **AIP Conf. Proc.** 1576, 152-154
82. Nimmakayala V. V. Subbarao, Murali Gedda, V. Suresh, D. Anamika, Parameswar K. Iyer, and **Dipak K. Goswami**, (2014), Growth and Characterization of N, N'-Dioctadecyl -1, 7-Dibromo-3, 4, 9, 10-Perylenetetracarboxylic-Diimide Micron/Nano Wires for Organic Field Effect Transistors, **AIP Conf. Proc.** 1576, 42-45
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List of Ph.D scholar supervised:

| Degree awarded | Thesis Submitted | Scholar on roll |
|--|---|---|
| 1. Dr. Arindam Pal | 1. Satyajit Roy | 1. Samik Mallik |
| 2. Dr. Nimmakayala V. V. Subbarao | 2. Priyanka Rani | 2. Shiv Prakash Verma |
| 3. Dr. Gedda Murali | 3. Monojit Mondal (Joint Supervisor) | 3. Riya Sadhukhan |
| 4. Dr. Suman Mandal | 4. Santanab Majumder (Joint Supervisor) | 4. Abhirup Das |
| 5. Dr. Ajoy Mandal | | 5. Rajdeep Banerjee |
| 6. Dr. Sourabh Pal (Joint Supervisor) | | 6. Sovanlal Mondal |
| 7. Dr. Suvani Subhadarshini (Joint Supervisor) | | 7. Anshika Bansal |
| | | 8. Richeek Nayak |
| | | 9. Subherthi Saha |
| | | 10. Abhijit Narayan Eshore (Joint Supervisor) |

List of UG/PG Students Supervised:

| B.Tech Project | M.Tech Project | M.Sc (2 years & Integrated) Project | |
|----------------------|-----------------------|-------------------------------------|-----------------------|
| 1. P Ananda Kumar | 1. Pallavi Kumari | 1. Sudipta Gupta | 15. Sk Md Adil Imam |
| 2. Arjun Agarwaal | 2. Anuprava Mandal | 2. Supriya Roy | 16. Sk Samim Ahammad |
| 3. Rishabh Mishra | 3. Satyabrat Behera | 3. Subhankar Das | 17. Shubhadeep Mondal |
| 4. Vijoy Utkam | 4. Arpan Manna | 4. Jit Sarkar | 18. Parmesh Kumar |
| 5. Tatipamual Samuel | 5. Nishant Kumar Sony | 5. Samiran Pramanik | 19. Bikram Mondal |
| | 6. S S T Panchadhara | 6. Soumya Bhattacharyay | 20. Soumitree Mishra |
| | 7. Salman Haider | 7. Suman Das | 21. Richeek Nayak |
| | 8. Nitish Goyal | 8. Amit Kumar Basu | 22. Subharthi Saha |
| | | 9. Santanu Gayen | 23. Aritra Raj |
| | | 10. Satyabrata Giri | 24. Rajan Bharti |
| | | 11. Jyotirmoy Sau | 25. Raktim Maity |
| | | 12. Nikesh Sharma | 26. Shubhankar Roy |
| | | 13. Shiv Prakash Verma | |
| | | 14. Sourabh Manna | |

Internship Training to UG students:

| Name, Branch and Name of the Institution |
|--|
| 1. Ketan Anil Muddalkar, Computer Science, A.P.Shah Institute of Technology |
| 2. Varun Gaikwad, Computer Science, International School of Business and Media |
| 3. Arthita Senapati, Electronics & Communication Eng., MCKV Institute of Engineering |
| 4. Ashmita Senapati, Electronics & Communication Eng., MAKAUT |
| 5. Rayita Saha, Computer Science, Kalinga Institute of Industrial Technology |
| 6. Ayan De, Electronics & Communication Eng., Jadavpur University |
| 7. Bibek Bhattacharyya, Mechanical Engineering, Future Institute of Technology |
| 8. Prithwish Chakravarty, Computer Science, Hijli College |
| 9. Snigdha Mahato, Computer Science, Hijli College |
| 10. Kavita Bharti, Computer Science, Hijli College |
| 11. Rohan Thapa, Computer Science, Hijli College |
| 12. Biplab Pati, Computer Science, Hijli College |
| 13. Ritayudh Laha, Computer Science, RKMVCC |
| 14. Tathagata Patra, Computer Science, RKMVCC |
| 15. Sayak Banerjee, Electronics & Communication Eng., Bengal Institute of Technology |
| 16. Sushovan Haldar, Integrated Msc, Mathemaics and Computing, IIT kharagpur. |

17. Raghavendra Kaushik, Mechanical Engineering, IIT kharagpur

List of Major Conferences Organized:

| Sl no. | Name of the Conference | Date | Organized as | National/ International |
|--------|---|------------------|---|-------------------------|
| | DAE-BRNS National Laser Symposium (NLS-31), IIT Kharagpur | Dec 3-6, 2022, | Local Organizer | National |
| 1 | XXth International Workshop on Physics of Semiconductor Devices: IWPSD 2019. SNBCBS and IIT Kharagpur | Dec 17-20, 2019. | Joint Secretary & Convener: Organic Electronics & Photovoltaics | International |
| 2 | Emerging Trends on Physics on Surfaces, Interfaces and Nanostructures, IACS, Kolkata – no. of participants: 50 | Nov 24-25, 2017 | Convener | National |
| 3 | Photonics – 2014, IIT Kharagpur, – no. of participants: 350 | Dec 13-16, 2014 | Local Organizer | International |
| 4 | 3 rd International Conference on Advanced Nanomaterials and Nanotechnology (ICANN – 2013), IIT Guwahati, Guwahati – no. of participants: 550 | Dec 1-3, 2013 | Convener | International |
| 5 | 2 nd International Conference on Advanced Nanomaterials and Nanotechnology (ICANN – 2013), IIT Guwahati, Guwahati – no. of participants: 550 | Dec 8-10, 2011 | Chairman | International |
| 6 | 1 st International Conference on Advanced Nanomaterials and Nanotechnology (ICANN – 2013), IIT Guwahati, Guwahati – no. of participants: 550 | Dec 9-11, 2009 | Convener | International |

Course taught (UG and PG Levels): (2007 – 2023)

| Under Graduate Level: | Post Graduate Level: |
|--|---|
| <ol style="list-style-type: none"> 1. General Physics -I (01 times) 2. General Physics -II (01 times) 3. Physics of Waves (01 times) 4. Condensed Mater Physics (03 times) 5. Microprocessor Architecture and Programming (04 times) 6. Analog and Digital Electronics (04) 7. Electronics for Physicists (04 times) 8. Physics of Surfaces and Interfaces (0 times 2) 9. Physics Semiconductor Devices (02 times) 10. Thin Film Technology (0 times 2) 11. Science and Technology of Nanomaterials (0 times 1) 12. Nanoelectronics and Nanophononics (02 times) 13. Electronics Laboratory (04 times) 14. General Physics Laboratory (03 times) 15. Condensed Matter Physics Laboratory (05 times) | <ol style="list-style-type: none"> 1. Measurement and Techniques (02 times) 2. Analog and Digital Electronics (04 times) 3. Condensed Matter Physics (03 times) 4. Physics of Surfaces and Interfaces (02 times) 5. Physics of Semiconductor Devices (02 times) 6. Thin Film Technology (02 times) 7. Science and Technology of Nanomaterials (01 times) 8. Electronics for Physicists (04 times) 9. Electronics Laboratory (06 times) 10. General Physics Laboratory (03 times) 11. Condensed Matter Physics (03 times) 12. Physics Semiconductor Devices (02 times) 13. Science and Technology of Nanomaterials (01 times) 14. Condensed Matter Physics Laboratory (05 times) |

Lecture delivered:

| Sl no | Name of Seminar / Conference | Venue | Date |
|-------|--|---|--------------------|
| 68 | International Union of Materials Research Society, Materials Research Society - International Conference in Asia - 2022 (IUMRS-ICA 2022) | Indian Institute of Technology, Jodhpur | Dec 20, 2022 |
| 67 | International Conference on Science and Technology of Synthetic Metals (ICSM 2022) | University of Glasgow, UK | July 17 - 22, 2022 |
| 66 | Modern Trends in Molecular Magnetism (MTMM3) | Indian Institute of Technology Kharagpur | Dec 14-18, 2022 |
| 65 | 6th IEEE International Conference on Emerging Electronics | Indian Institute of Science, Bangalore | Dec 11-14, 2022 |
| 64 | Refresher Course in Physics (for Physics Teachers) | Hyderabad University, Hyderabad | Dec 5-7, 2022 |
| 63 | Workshop on Advanced Materials and Applications | Presidency University, Kolkata | Aug 26, 2022 |
| 62 | DST-SERB Karyashala (Workshop for research scholars and teachers) | Indian Institute of Technology Bhubaneswar, Bhubaneswar | Jun 13 - 20, 2022 |
| 62 | AICTE-ATAL Faculty Development Programme | Indian Institute of Information Technology (IIIT) Kalyani | Dec 13-17, 2021 |
| 61 | Uluberia College, Department of Physics | Uluberia, West Bengal | May 26, 2022 |
| 60 | Workshop on Materials Science | BITS Pilani, Rajasthan | Feb 19, 2022 |
| 59 | Faculty Development Seminar (e-FDP) | Amity University, Delhi | Jan 21, 2022 |
| 58 | SCDT-FlexE Centre Webinar Series | IIT Kanpur | Jan 11, 2022 |
| 57 | Egra Sarada Sashi Bhusan College (Faculty and students) | West Bengal | Oct 25, 2021 |
| 56 | Third Indian Materials Conclave and 32th MRSI AGM | IIT Madras | Dec 20-23, 2021 |
| 55 | C. K. Majumdar Memorial Workshop in Physics 2022 | SNBCBS, Kolkata | July 12, 2022 |
| 54 | Centurion University of Technology and Management | Bhubaneswar | Oct 29, 2021 |
| 53 | Faculty Development Programme, | BML Manjula University, Haryana | Jun 25, 2021 |
| 52 | Innovation Day, Amity Institute of Nanotechnology, Delhi | Amity University, Delhi | Oct 15, 2020 |
| 51 | Special Seminar for Faculties and Students. | B V Raju Institute of Technology, Telangana | Dec 7, 2020 |
| 50 | Third phase of Technical Education Quality Improvement Programme TPIQIII | National Institute of Technology, Mizoram | Feb 18, 2020 |
| 49 | Flexible Electronics for Electrical Vehicle | Manipal University, Jaipur | Mar 6, 2020 |
| 48 | Frontiers in Solid State Physics | IACS, Kolkata | Feb 22, 2019 |
| 47 | Indian Institute for Science Education and Research (IISER) | Berhampur, Orissa | Oct 25, 2019 |
| 46 | Workshop on Flexible Electronics Technology (WFET 2019) | CEERI, Pilani, Rajasthan | Mar 25, 2019 |
| 45 | International Union of Materials Research Societies - International Conference on Electronic Materials (IUMRS-ICEM) - Seminar 01 | DAEJEON, Korea | Aug 20-24, 2018 |

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| 44 | International Union of Materials Research Societies – International Conference on Electronic Materials (IUMRS-ICEM) – Seminar 02 | DAEJEON, Korea | Aug 20-24, 2018 |
| 43 | International Conference on Complex and Functional Materials (ICCFM 2018) | S N Bose Centre for Basic Sciences (SNBCBS), Kolkata | Dec 16, 2018 |
| 42 | Indo-Israel Workshop (2018) | Tel Aviv University, Israel | Jun 27-28, 2018 |
| 41 | IEEE International Conference on Emerging Electronics (ICEE) | Indian Institute of Science, Bangalore | Dec 17-19, 2018 |
| 40 | Invited Seminar, Department of Chemistry | National University of Singapore (NUS) | Feb 20, 2018 |
| 39 | Electron Microscopy Society of India (EMSI-2018) | Institute of Physics, Bhubaneswar | July 16 17, 2018 |
| 38 | Workshop in Synchrotron Based Research on Surfaces, Interfaces and Nanostructures, | School of Nanoscience and Technology, IIT Kharagpur | Jan 5, 2018 |
| 37 | Emerging Trends on Physics on Surfaces, Interfaces and Nanostructures | Indian Association for the Cultivation of Science (IACS), Kolkata | Nov 24-25, 2017 |
| 36 | Winter School in Frontier in Material Science (2017) | JNCASR, Bangalore | Dec 4-8, 2017 |
| 35 | Discussion meeting on Synchrotron Science | Saha Institute for Nuclear Physics, Kolkata | Dec 13-15, 2017 |
| 34 | Cambridge-JNCASR winter school on Frontiers in Materials Sciences | Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR), Bangaluru | Dec 4-8, 2017 |
| 33 | UGC Special Assistance Programme (UGC-SAP) | University of Vidyasagar, Mindapore | Feb 18 - 19, 2016 |
| 32 | Frontiers in Physics | Hyderabad University, Hyderabad | Mar 28-29, 2016 |
| 31 | 2nd International Conference on nanotechnology | Haldia Institute of Technology (HIT), Haldia | Feb 19-22, 2015 |
| 30 | 18th International Workshop on Physics of Semiconductor Devices (IWPSD - 2015), | Indian Institute of Science, Bengaluru | Dec 7-10, 2015 |
| 29 | Alumni Day, Institute of Physics | Institute of Physics, Bhubaneswar | Sept 3, 2014 |
| 28 | 3rd International Conference on Physics at Surfaces and Interfaces | Puri, Odisha | Feb 24-28, 2014 |
| 27 | International Conference on Transport Properties in Low Dimensional System: Experiments and Simulations (TransLES 2014), | Institute of Advanced Study in Science and Technology (IASST), Guwahati | Dec 11-13, 2014 |
| 26 | 1st International Conference on Advanced Materials for Power Engineering (ICAMPE - 2015) | M. G. University, Kottayam | Dec 11-13, 2013 |
| 25 | 3rd International Conference on Advanced Nanomaterials and Nanotechnology (ICANN-2013) | Indian Institute of Technology Guwahati, Guwahati | Dec 1-3, 2013 |
| 24 | International Conference on Fundamentals and Applications of Nanoscience an Nanotechnology | Jadavpur University, Kolkata | Dec 11, 2010 |
| 23 | “Correlated Electronic Systems” – Short term course. | Indian Institute of Technology Guwahati (IITG) | July 15, 2010 |
| 22 | International Conference on Physics at Surfaces and Interface (PSI-2009) | Puri, Odissa | Feb 24, 2009 |

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| 21 | The 2nd Discussion Meeting on Indian Beamline at the PETRA III Synchrotron | Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore | January 13-14, 2009 |
| 20 | International Conference on Recent Trends on Nanostructured Materials and Their Applications | Department of Physics, Osmania University, Hyderabad, India | Dec 19, 2008 |
| 19 | Institute of Physics (IOP), Bhubaneswar | Bhubaneswar, Odissa | Dec 17, 2008 |
| 18 | "Nanomaterials for nanoengineering" - Short term course | Indian Institute of Technology Guwahati (IITG) | June 27, 2008 |
| 17 | Indian Institute of Technology (IIT). Kanpur | Kanpur, India | Feb 14, 2007 |
| 16 | Seminar zur Physik der kondensierten Materie (SKPM) | Stuttgart University, Stuttgart, Germany | Nov 21, 2006 |
| 15 | Diffraction Club: Max Planck Institute for Metals Research (MPI-MF) | Stuttgart, Germany | June 23, 2006 |
| 14 | Institute of Physics (IOP) | Bhubaneswar, India | May 31, 2006 |
| 13 | Indian Association of Cultivation of Science (IACS) | Kolkata, India | May 24, 2006 |
| 12 | S. N. Bose National Center for Basic Sciences (SNBNCBS). | Kolkata, India | April 18, 2006 |
| 11 | Center for Catalysis and Surface Science (CCSS) | Northwestern University, Evanston, Illinois, USA | Mar 13, 2006 |
| 10 | Mini Symposium on Synchrotron Radiation at DND-CAT in APS | Northwestern University, Evanston, Illinois, USA | Jan 24, 2006 |
| 9 | Utkal University, Physics Department | Vanivihar, Bhubaneswar, India | Jan 18, 2005 |
| 8 | Northwestern University, Materials Science and Engineering Department, | 2220 Campus Drive, Evanston, Illinois, USA | May 19, 2004 |
| 7 | Young Physicists' Colloquium (YPC 2003) | Saha Institute of Nuclear Physics (SINP), Kolkata organized by Indian Physical Society (IPS), | Aug 22, 2003 |
| 6 | Institut de Recherches sur la Catalyse (UPR 5401 - CNRS), | Lyon, France | Jun 26, 2003 |
| 5 | Paul Drude Institute (PDI), | Berlin, Germany | Jun 19, 2003 |
| 4 | Forschungszentrum, | Juelich / ISG 3, Germany | Jun 12, 2003 |
| 3 | European Synchrotron Radiation Facility (ESRF), | Grenoble, France | May 21, 2003 |
| 2 | International Conference on Atomic Collisions in Solids (ICACS 20), | Puri, India | Jan 20, 2003 |
| 1 | International Conference on Physics at Surfaces and Interfaces (PSI 2002), | Puri, India | Mar 5, 2002 |