



# DR. AMRETASHIS SENGUPTA

## PROFILE

## CONTACT:

## WEBSITE:

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## EMAIL:

[amretashis@gmail.com](mailto:amretashis@gmail.com)

## DATE OF JOINING:

20.12.2023

## DESIGNATION

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ASSISTANT PROFESSOR, DEPARTMENT OF PHYSICS

## QUALIFICATION (IN DESCENDING ORDER)

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2014- DST Post-doc Fellow in Nano Science and Technology, CEDT, Indian Institute of Science, Bangalore.

2012- PhD, Jadavpur University (Thesis Title: Studies on Nanoelectronic Devices, *Date of Award 04.12.2012*)

2010- M.Tech. in Nano Science and Technology, Jadavpur University.

2007- M.Sc. in Physics, University of North Bengal

2005- B.Sc.(Hons.) in Physics , University of North Bengal

## WORK EXPERINCE

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**2023-Continued-** Assistant-Professor in Physics in P. D. Women's College, Jalpaiguri, West Bengal

**2022-2023-** Associate Professor, Department of Physics, School of Applied Sciences, REVA University, Bengaluru.

**2020-2022-** SERB Research Scientist, University of North Bengal, West Bengal.

**2019-2020-** Research Associate (Grade-7) in University of Glasgow, United Kingdom.

**2016-2017\*-** Hanse-Wissenschaftskolleg (HWK) Fellow in Energy Research, Bremen Center for Computational Materials Science

(BCCMS), University of Bremen, Germany. (*\*On study leave from IEST*).

**2014-2019**-Assistant Professor (INSPIRE Faculty) at IEST Shibpur, Howrah, West Bengal.

### **RESEARCH INTEREST**

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Computational Material Science,  
2D Materials  
Density Functional Theory  
Lithium-ion Batteries  
Nanoscale Devices  
Gas Sensors

### **RESEARCH COLLABORATION (NATIONAL/INTERNATIONAL):**

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Professor Thomas Frauenheim, Bremen Center for Computational Materials Science, University of Bremen, GERMANY.

Professor Dr. Thomas Heine, Dept. of Chemistry, TU Dresden, GERMANY.

Professor Thomas Niehaus, Institute Lumiere Matiere, University of Claude Bernard, Lyon 1, FRANCE.

Professor Asen Asenov, James Watt School of Engineering, University of Glasgow, UNITED KINGDOM.

Professor Vihar P. Georgiev, James Watt School of Engineering, University of Glasgow, UNITED KINGDOM.

Professor Somaditya Sen, Dept. of Physics, IIT-Indore.

Professor S. Mahapatra, Dept of ESE, IISc , Bangalore.

### **DETAILS OF RESEARCH PROJECT BEING COMPLETED/ONGOING/SANCTIONED:**

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1. Project title: "Multi-scale modelling of two-dimensional materials and their van der Waals heterostructures and composites for application in next generation metal-ion batteries"

[Grant No. SB/SRS/2019-20/03/ES]

Funding Agency: DST, Govt. of India

Project Type: Major (Amount: 46 Lakhs)

Status: Completed (2020-2022)

2. Project title: "2-Dimensional Channel Materials based Next Generation Nano-scale MOS devices" [Grant No. IFA-13 ENG-62]

Funding Agency: DST, Govt. of India

Project Type: Major (Amount: 35 Lakhs)

Status: Completed (2014-2019)

## LIST OF PUBLICATION

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1. A. Sengupta and C.K. Sarkar (Eds.), "Introduction to Nano: Basics to Nanoscience and Nanotechnology", Springer Verlag (Berlin/Heidelberg), 2015. (ISBN: 978-3-662-47313-9)
2. Indian Patent Published- "1T'-ReSTe: a novel two-dimensional Janus material", Application No: 202241072088, Journal Number- 52/2022, Journal Date: 30/12/2022.
3. P.K. Mishra, A. Dash, R. Dobhal, E.G. Rini, A. Sengupta, S. Sen, 'Defects altered n/p-type Fe/Ga modified ZnO for photo-sensing applications', Materials Today Communications, vol. 36, pp. 106371, (2023). (Impact Factor: 3.662).
4. A. Rezaei, P. Maciazek, A. Sengupta, T. Dutta, C. Medina-Bailon, A. Asenov, V. P. Georgiev, 'Statistical Device Simulations of III-V Nanowire Resonant Tunneling Diodes as Physical Unclonable Functions Source', Solid State Electronics, vol 194, pp. 108339 (2022). (Impact Factor: 1.901).
5. A. Sengupta, 'First principles study of Li adsorption properties of a Borophene based hybrid 2D material B5Se', Applied Surface Science Advances, vol. 8, pp. 100218 (2022).
6. A. Sengupta, 'First principles design of 2 dimensional Nickel dichalcogenide Janus materials NiXY (X,Y=S,Se,Te)', Computational Materials Science, vol. 206, pp. 111278 (2022). (Impact Factor: 3.300).
7. A. Sengupta, 'Electronic and optical properties of 2D metal/ semi-metal - ReS<sub>2</sub> van der Waals heterostructures from first principles calculations', Int. J. of Nanoparticles (Special Issue: DevIC2021 Frontiers of Nano dimensional Devices Materials Physics Modelling and Simulation ) Vol. 14, Nos. 2-4, pp. 213-225 (2022).
8. P.K. Mishra, P. Viji, R. Dobhal, A. Sengupta, E.G. Rini, S. Sen, 'Defects assisted photosensing and dye degradation of Ni/Ga co-doped ZnO: A theory added experimental investigation', Journal of Alloys and Compounds, vol. 893, pp. 162229 (2022). (Impact Factor: 5.316).
9. A. Sengupta, 'Electronic and optical properties of SnX<sub>2</sub>(X=S, Se)-InSe van der Waals heterostructures from first- principle

10. calculations', *Physica Scripta*, vol. 94, no. 12, pp. 125806 (1-7) (2019). (Impact Factor : 2.151).
11. A. Sengupta, A. Dominguez, and T. Frauenheim, 'Photo-absorption properties of van der Waals heterostructure of monolayer InSe with silicene, germanene and antimonene', *Applied Surface Science*, vol. 475, pp. 774-780 (2019). (Impact Factor : 6.182).
12. A. Sengupta , 'Lithium and Sodium adsorption properties of two-dimensional aluminum nitride', *Applied Surface Science*, vol. 451, pp. 141-147 (2018). (Impact Factor : 6.182).
13. B. Sharma, A. Sengupta and C.K. Sarkar, 'Computational study of CNT based Nanoscale Reversible Mass Transport Archival Memory with Fe, Co and Ni nano-Shuttles', *Computational Materials Science*, vol. 146, pp. 112-118 (2018). (Impact Factor : 2.644).
14. L. Banerjee, A. Sengupta, H. Rahaman, 'Carrier transport and thermoelectric properties of differently shaped Germanene (Ge) and Silicene (Si) nanoribbon interconnects,' *IEEE Transactions on Electron Devices*, vol. 66, Iss. 1, pp. 664-669 (2018) (Impact Factor : 2.704).
15. B. Sharma, A. Mukhopadhyay, L. Banerjee, A. Sengupta, H. Rahaman, C. K. Sarkar, 'Ab initio study of mono-layer 2-D insulators (X-(OH)<sub>2</sub> and h-BN) and their use in MTJ Memory device', *Microsystem Technologies*, vol. 25, Iss. 5, pp. 1909-1917 (2019). (Impact Factor : 1.513).
16. A. Sengupta and T. Frauenheim, 'Lithium and Sodium adsorption properties of monolayer antimonene', *Materials Today Energy*, vol. 5, pp. 347-354 (2017). (Impact Factor: 5.604)
17. A. Sengupta, 'Atomistic study of electrostatics and carrier transport properties of CNT@MS<sub>2</sub> (M= Mo,W) and CNT@BN core-shell nanotubes', *Journal of Materials Science*, vol. 52, No. 13, pp. 8119-8131 (2017). (Impact Factor : 2.302).
18. A. Sengupta, 'On the junction physics of Schottky contact of (10, 10) MX<sub>2</sub> (MoS<sub>2</sub>, WS<sub>2</sub>) nanotube and (10, 10) carbon nanotube (CNT): an atomistic study', *Applied Physics A*, vol. 123, pp. 227 (1-9) (2017) (Impact Factor : 1.517).
19. A. Sengupta, M. Audiffred, T. Heine, T.A. Niehaus, 'Stacking dependence of carrier transport properties in multilayered

20. black phosphorous', *Journal of Physics: Condensed Matter*, vol. 28, pp. 075001 (1-10) (2016). (Impact Factor : 2.346)
21. L. Banerjee, A. Mukhopadhyay, A. Sengupta, H. Rahaman, 'Performance analysis of uniaxially strained monolayer black phosphorus- and blue phosphorus-based n-MOSFET and p-MOSFET', *Journal of Computational Electronics*, vol. 15, Iss. 3, pp. 919-930 (2016). (Impact Factor : 1.520)
22. B. Sharma, A. Mukhopadhyay, A. Sengupta, H. Rahaman, C. K. Sarkar, 'Analysis of tunneling currents in Multilayer Black Phosphorous and MoS<sub>2</sub> non-volatile flash memory cells', *Journal of Computational Electronics*, Vol. 15, Issue 1, pp. 129-137 (2016). (Impact Factor : 1.520)
23. A. Mukhopadhyay, L. Banerjee, A. Sengupta, H. Rahaman 'Effect of Stacking Order on Device Performance of Bilayer Black Phosphorene-FET' *Journal of Applied Physics*, vol. 118, pp. 224501 (1-5) (2015). (Impact Factor : 2.276)
24. A. Sengupta, D. Saha, T.A. Niehaus and S. Mahapatra, 'Effect of line defects on the electrical transport properties of monolayer MoS<sub>2</sub> sheet', *IEEE Transactions on Nanotechnology* vol. 14, No. 1, pp. 51-56 (2015). (Impact Factor : 1.825)
25. A. Sengupta, A. Chanana, and S.. Mahapatra, 'Phonon scattering limited performance of monolayer MoS<sub>2</sub> and WSe<sub>2</sub> n-MOSFET', *AIP Advances*, vol. 5, No. 2, pp. 027101 (1-9) (2015). (Impact Factor : 1.591)
26. A. Sengupta and C. K. Sarkar, 'Study on Nanoparticles Embedded Multilayer Gate Dielectric MOS Non Volatile Memory Devices', *International Journal of Nanotechnology (IEEE INEC Special Issue )*, Vol.11, No.12, pp.1073 – 1080 (2014). (Impact Factor : 1.335)
27. D. Saha, A. Sengupta, S. Bhattacharyya and S. Mahapatra, 'Impact of Stone-Wales and lattice vacancy defects on the electro-thermal transport of the free standing structure of metallic ZGNR' *Journal of Computational Electronics* Volume 13, Issue 4, pp 862-871 (2014). (Impact Factor : 1.520)
28. A. Chanana, A. Sengupta, and S. Mahapatra, "Performance Analysis of Boron Nitride Embedded Armchair Graphene Nanoribbon MOSFET with Stone Wales Defects" *Journal of*

29. Applied Physics Vol. 115, Issue 3, pp. 034501 (2014) (Impact Factor : 2.276)
30. A.. Sengupta and S. Mahapatra, 'Negative differential resistance and effect of defects and deformations in MoS<sub>2</sub> armchair nanoribbon MOSFET', Journal of Applied Physics Vol. 114, pp. 194513 (2013). (Impact Factor : 2.276)
31. A. Sengupta Ram Krishna Ghosh and S. Mahapatra, 'Performance Analysis of Strained Monolayer MoS<sub>2</sub> MOSFET', IEEE Transactions on Electron Devices Vol. 60, pp. 2782 (2013). (Impact Factor : 2.472)
32. A. Sengupta and S. Mahapatra, 'Performance limits of transition metal dichalcogenide (MX<sub>2</sub>) nanotube surround gate ballistic field effect transistors', Journal of Applied Physics Vol. 113, pp. 194502 (2013). (Impact Factor : 2.276)
33. A. Sengupta, and C. K. Sarkar, 'Surface Potential Based Analytical Modeling of Double Gate MOSFET Non-Volatile Memory with Si and Au Nano-dots Embedded Gate Dielectric', Journal of Computational & Theoretical Nanoscience, Vol. 10, No. 4, pp. 906-913 (2013) (Impact Factor : 1.343)
34. A. Sengupta, C. K. Sarkar, and Felix G. Requejo, 'Semi-Analytical modeling of Ag and Au nanoparticles and fullerene (C<sub>60</sub>) embedded gate oxide Compound Semiconductor MOSFET memory Devices', Journal of Computational Electronics, Vol. 11, Issue 4, pp. 303-314 (2012) (Impact Factor : 1.520)
35. S. Dash, G. Chakraborty, A. Sengupta, C. K. Sarkar, 'Optimization of tunneling currents through CNT & Si nanocrystals embedded gate oxide MOS Structure using Genetic Algorithm approach for memory device application', Journal of Computational and Theoretical Nanoscience , Vol. 9, No. 3, pp. 434-440 (2012) (Impact Factor : 1.343)
36. Amretashis Sengupta, Pashupati Shah, Chandan Kumar Sarkar, Felix G. Requejo, 'Computational study on semiconducting and metallic nanocrystal embedded gate oxide MOS non-volatile memory devices', Advanced Science Letters, Vol. 10, No. 1, pp. 47-54 (2012) (Impact Factor : 1.253)
37. A. Sengupta, and C. K. Sarkar, 'Analytical Modelling of Si and Au Nanocrystal Embedded Multilayer Gate Dielectric Long

38. Channel Silicon Nanowire Surround Gate MOSFET Non Volatile Memory Devices' *Nanoscience & Nanotechnology Letters*, Vol. 4, No. 7, pp. 667-675 (2012) (Impact Factor : 1.431)
39. A. Sengupta, C. K. Sarkar, F. G. Requejo, 'Comparative study of silicon nanowire, CNT and fullerene embedded multilayer high-k gate dielectric MOS memory devices ', *Journal of Physics D: Applied Physics* Vol. 44, No. 36, pp. 405101 (2011). (Impact Factor : 2.721)
40. G. Chakraborty, A. Sengupta, F.G.Requejo, C.K. Sarkar, 'Study of the relative performance of Silicon and Germanium nanoparticles embedded gate oxide in metal-oxide-semiconductor memory devices' *Journal of Applied Physics*. Vol. 109, pp. 064504 (2011). (Impact Factor : 2.276)
41. A. Sengupta, S. Maji and H. Saha, 'CBD Grown aligned ZnO nanorods based methane sensor and the effect of Pd sensitization', *Advanced Science Letters*, Vol. 3, No. 4, pp. 385-392 (2010). (Impact Factor : 1.253)
42. S. Maji, P. Bhattacharyya, A. Sengupta, and H. Saha, 'Growth and Characterization of Nano-cups, Flowers and Nanorods of ZnO by Chemical Bath Deposition', *Advanced Science Letters*, Vol. 3, No. 2, pp. 154-160 (2010). (Impact Factor : 1.253)
43. G. P. Mishra, A. Sengupta, S. Maji, S. K. Sarkar and P. Bhattacharyya, 'The Effect of Catalytic Metal Contact on Methane Sensing Performance of Nanoporous ZnO -Si Heterojunction', *International Journal on Smart Sensing and Intelligent Systems*, Vol. 3, No. 2, pp. 273-291 (2010).
44. P. Bhattacharyya, S. Maji, S. Biswas, A. Sengupta, T. Maji, H. Saha, 'Palladium Surface Modification of Nanocrystalline Sol-Gel derived Zinc Oxide Thin Films and its Effect on Methane Sensing', *Sensors & Transducers Journal*, Vol. 110, Issue 11, pp.38-46, (2009)

#### **AWARDS/HONORS RECEIVED**

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1. SERB Research Scientist Fellowship, awarded by the Science and Engineering Research Board (SERB), India.
2. Hanse-Wissenschaftskolleg (HWK) Fellowship (Germany) (2016-17).
3. Visiting Researcher under DFG Research Training Group -QM3 at University of Bremen (2017).

4. Visiting Researcher under DFG Aufbau Internationaler Kooperationen program (2015).
5. DST INSPIRE Faculty Award, Session- 2013 (II), Engineering & Technology awarded by the Department of Science & Technology (DST), Govt. of India.
6. Awarded DST Postdoctoral Fellowship in Nano Science & Technology, awarded by the Department of Science & Technology (DST), Govt. of India.
7. Awarded INSPIRE FELLOWSHIP, awarded by the Department of Science & Technology (DST), Govt. of India.
8. University Gold Medal for securing first class first position in M.Tech. (Nano Science & Technology).
9. University Medal for securing first class first position in M.Sc.(Physics)
10. Tarini Prasad Roy Memorial Medal for performance in M.Sc. Examination.
11. Sudhir Chandra Chakrabarty Memorial Gold Medal for performance in M.Sc. Examination.
12. University Medal for securing first class second position in B.Sc.(Hons).

#### **SEMINARS AND CONFERENCE ATTENDED**

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1. A. Sengupta, "Layered CrO<sub>2</sub> as an electrode material candidate for supercapacitor applications", AIP Horizons: Energy Storage and Conversion, August 4-6, 2021, USA.
2. A. Sengupta, "Li adsorption properties of monolayer Cu sheets", ACS Spring meeting 2021, April 5-30, 2021, USA.
3. A. Sengupta, "2 dimensional GaS as a potential electrode material for supercapacitor applications", 23rd IOP Interdisciplinary Surface Science Conference (ISSC-23), 19-21 April, London, UK.
4. A. Sengupta, "Enhancement of Evanescent Bloch Waves in monolayer 1T'-ReS<sub>2</sub> under Compressive Strain" Chemistry of 2-dimensional materials: beyond graphene Faraday Discussion, 23-25 November, 2020, Royal Society of Chemistry, London, UK.
5. A. Sengupta, "Thermoelectric Properties of Patterned Hybrid Zigzag Siligene Nanoribbons" Chemistry of 2-dimensional materials: beyond graphene Faraday Discussion, 23-25 November, 2020, Royal Society of Chemistry, London, UK.
6. A. Sengupta, "Electronic and Optical properties of 1T'-ReS<sub>2</sub> Graphene van der Waals heterostuctures", 2020 IEEE



International Conference Nanomaterials: Applications & Properties (IEEE NAP-2020), 9-13 November, 2020, Sumy, Ukraine.

7. A. Sengupta, "Magnesium Adsorption Properties of Two Dimensional Silicon Germanium Hybrid for Electrode Application in Ion Batteries", 2nd Battery and Energy Storage Conference, 21-23 October, 2020, American Institute of Chemical Engineers, New York, USA.
8. V. P. Georgiev, A. Sengupta, P. Maciazek, O. Badami, C. Medina-Bailon, T. Dutta, F. Adamu-Lema, A. Asenov, "Simulation of gated GaAs-AlGaAs resonant tunneling diodes for tunable terahertz communication applications", 25th IEEE International Conference on Simulation of Semiconductor Processes and Devices (SISPAD 2020), September 23 - October 6, 2020, Japan.
9. A. Sengupta, "On the adatom doping of 2-Dimensional siligene (SiGe) with alkali metals", DPG Spring Meeting-2018, 11-16 March, 2018, Berlin, Germany.
10. A. Sengupta, "Performance limits of monolayer 1T $\bar{E}$ S-ReS $_2$  nanoscale MOSFETs", IEEE Nanotechnology Materials and Devices Conference 2017 (IEEE NMDC 2017), 2-4 October 2017, Singapore.
11. L. Banerjee, A. Mukhopadhyay, B. Sharma, A. Sengupta, H. Rahaman, "Performance analysis of 2D Graphene FET embedded with hexagonal Boron Nitride clusters", IEEE Devices for Integrated Circuit (DevIC 2017), Kolkata, 23-24 March 2017.
12. B. Sharma, A. Mukhopadhyay, L. Banerjee, A. Sengupta, H. Rahaman and C. K. Sarkar, "Effect of Ca(OH) $_2$ , hBN and Mg(OH) $_2$  based insulators as composite oxides in Magnetic Tunnel Junction Memory Device Properties", IEEE Devices for Integrated Circuit (DevIC 2017), Kolkata, 23-24 March 2017.
13. A. Mukhopadhyay, L. Banerjee, B. Sharma, A. Sengupta, H. Rahaman and C. K. Sarkar, "Computational Study of Silicene-CNT Double Junctions", IEEE Devices for Integrated Circuit (DevIC 2017), Kolkata, 23-24 March 2017.
14. A. Sengupta, "Atomistic Simulation of Transport Properties of Non-Graphitic Armchair Nanotubes and Effect of Stone-Wales Defects", 21st International Conference on Simulation of Semiconductor Processes and Devices (SISPAD-2016) held in Nurnberg, Germany, Proc. SISPAD, pp. 97-100 (2016).

15. A. Sengupta, "Influence of size and shape of nano-islands of hexagonal boron nitride (hBN) on optical and transport properties of hBN embedded Graphene nanoribbons", CeCAM Workshop on Computational insight into photo-induced processes at interfaces, October 10 - October 14, 2016, Bremen, Germany.(2016)
16. A. Sengupta and T. Frauenheim, "Tuning of optical properties by layer engineering tin chalcogenide- graphene van der Waals heterostructure", CeCAM Workshop on Computational insight into photo-induced processes at interfaces, October 10 - October 14, 2016, Bremen, Germany. (2016)
17. A. Chanana, A. Sengupta, S. Mahapatra, 'Analysis of vacancy defects in hybrid graphene-boron nitride armchair nanoribbon based n-MOSFET at ballistic limit', 2015 International Workshop on Computational Electronics (IWCE), Sep 2, 2015, Purdue University, West Lafayette, IN, USA.
18. A. Mukhopadhyay, L. Banerjee, Amretashis Sengupta, H. Rahaman, 'Strain Modulated Variations in Monolayer Phosphorene n-MOSFET', 2015 IEEE Conference on Electron Devices and Solid State Circuits (IEEE EDSSC - 2015), June 1-4, 2015, Singapore.
19. A. Sengupta, "Study of next generation 2D and 1D channel material MOSFETs" ,CEFIPRA Indo-French Workshop on Emerging Trends in Electron Device Modeling, 30 March -1 April, 2015, Indian Institute of Science, Bangalore.
20. A. Sengupta, "Study of next generation 2-D channel material MOSFETs with empirical tight binding – NEGF formalism", CeCAM Workshop on High performance models for charge transport in large scale materials systems, 5-10 October, 2014, Bremen, Germany .
21. B. Sharma, G. Chakraborty, A. Sengupta, H. Rahaman, and C.K. Sarkar, 'Study of the Tunneling Characteristics of Metal and Semiconductor Nanoparticles Embedded Gate Dielectric in MOS structures', International Conference on Advanced Materials and Energy Technology (ICAMET) 2014 December 17-19, 2014 , IEST Shibpur, Howrah, West Bengal, India.
22. Amretashis Sengupta, and Chandan Kumar Sarkar, 'Comparative Study on Nanocrystal Embedded Gate Dielectric and Oxide Nitride Oxide Stack Dielectric GAA MOSFET Non-volatile Memory Devices', IEEE-IAPR-OSA International Conference on Informatics

23. Electronics & Vision (ICIEV- 2012) Dhaka, Bangladesh, 18th ~19th May, 2012.
24. Amretashis Sengupta, Kalyan Koley, and Chandan Kumar Sarkar, 'Subthreshold Charge Leakage in Nanoparticle Embedded DG MOSFET Memory Devices an Analytical Study', IEEE International Conference on Devices, Circuits and Systems (IEEE ICDCS' 12) Karunya University, Coimbatore, 15-16th March 2012.
25. A. Sengupta, P. Shah, C.K. Sarkar, 'Use of Nanomaterials for Performance Enhancement of MOS Non Volatile Memory Elements', International Conference on Nanoscience, Engineering & Advanced Computing (ICNEAC-2011), Swarnandhra College of Engg. & Tech., Narsapur, AP, July 8-10, 2011.
26. Amretashis Sengupta, Chandan K. Sarkar, 'Study on Nanoparticles Embedded Multilayer Gate Dielectric MOS Non Volatile Memory Devices', The 4th IEEE International Nano Electronics Conference (4th IEEE INEC-2011), 21-24 June 2011, Chang Gung University, Tao Yuan, Taiwan.
27. A. Sengupta, G.P. Mishra, P. Bhattacharyya, H. Saha, S.K. Sarkar, 'Chemical Bath Deposited ZnO nanorod array p-Si heterojunction methane sensor' International Conference on Fundamental & Application of Nano science & Technology (ICFANT-2010), Jadavpur University, Kolkata, Dec 9-11, 2010.
28. G. Chakraborty, A. Sengupta, F.G.Requejo, C.K. Sarkar, 'On the comparative performance of MOS non-volatile memory devices with Silicon and Germanium nanoparticles embedded gate oxide' International Conference on Fundamental & Application of Nano science & Technology (ICFANT-2010), Jadavpur University, Kolkata, Dec 9-11, 2010.
29. A. Sengupta, S. Maji, P. Bhattacharyya, H. Saha, 'Synthesis, characterization and methane sensing properties of CBD grown aligned zinc oxide nanorods', International Conference on Advanced Nanomaterials & Nanotechnology (ICANN-2009) IIT-Guwahati, Dec 2009.
30. M. Guha, A. Sengupta, M. Sahoo and H. Rahaman, 'Effect of defects on performance and signal integrity of multilayer GNR interconnects', INUP Compact modeling workshop, IISc, Bangalore, 22 - 23 August, 2014.
31. A. Mukhopadhyay, L. Banerjee, A. Sengupta and H. Rahaman, 'ON current variations in AGNR-FET due to intrinsic rippling',

32. INUP Compact modeling workshop, IISc, Bangalore, 22 - 23 August, 2014.
33. A. Sengupta, S. Maji, H. Saha, 'Low temperature CBD grown ZnO nanostructures on Pd catalyst embedded Porous Silicon (PS) and other substrates', Metallix-2010, 26-27 Feb 2010, Jadavpur University Kolkata. (Awarded 2nd prize in Technical Paper Presentation).
34. A. Sengupta, 'Graphene: The Rising Star of Materials Science', Metallix-2009, Jadavpur University, Kolkata, Feb 26-27, 2009.
35. A. Sengupta, C.K. Sarkar, 'Recent Developments in Nanoparticle Embedded Gate Dielectric MOS Non-Volatile Memories', National Conference On Engineering Education in the new Century (E2NC-2011), Sir J.C. Bose School of Engg., SKF Group of Institutions, Hooghly, Jan 20-21, 2011.
36. Resource Person: ATAL-FDP on "Nanodevices and Advanced Nanomaterials" organized by AICTE ATAL Academy and Sikkim Manipal Institute of Technology (SMIT) held at Sikkim Manipal Institute of Technology, Sikkim, 6th - 10th Dec. 2021.
37. Invited Speaker "An ab-initio study of 2 dimensional metal (Cu, Ag) - 1T' ReS<sub>2</sub> van der Waals heterostructure", IEEE DevIC 2021, Kalyani Govt. Engg. College, 19-20th May, 2021.
38. Invited Webinar Talk "An introduction to Nano: the fascinating world of nanotechnology" , Salesian College, Siliguri Campus, 11th Jan 2021.
39. Invited speaker at IEEE International Symposium on Devices, Circuits and Systems (ISDCS 2018), Talk:"Modeling the 2D flatland: new paradigm for nanoelectronics", IEST, Shibpur, 29-31 March, 2018.
40. Invited speaker School on Electronic Transport and Magnetism: From Fundamentals to Applications-2016, Talk: "Atomistic simulation of low dimensional systems for quantum transport", held at Harishchandra Research Institute (HRI), Allahabad, India, 22 February - 2nd March , 2016.
41. Invited speaker at CEFIPRA Indo-French Workshop on Emerging Trends in Electron Device Modeling, Talk: "Study of next generation 2D and 1D channel material MOSFETs" held at Indian Institute of Science, Bangalore,30 March -1 April, 2015.
42. Invited speaker CeCAM Workshop on High performance models for charge transport in large scale materials systems, Talk: "Study of next generation 2-D channel material MOSFETs with

43. empirical tight binding – NEGF formalism", held at Bremen Center for Computational Materials Science (BCCMS), Universität Bremen, Germany, 5-10 October, 2014.
44. Invited speaker at the INUP Compact modeling workshop, held at Indian Institute of Science, Bangalore, 22 - 23 August, 2014.
45. Invited technical talk "2-Dimensional Channel Materials based Next Generation Nano-scale MOS devices", at National Institute of Technology, Sikkim, 05 March, 2014.
46. Resource Person: Faculty Development Program on Micro and Nanoelectronics, sponsored by VTU and VGST, held at Guru Nanak Dev Engg. College(GNDEC), Bidar, Karnataka, 6th -9th August 2013.
47. Invited technical talk "Exploration of Two Dimensional Channel Materials for Next Generation CMOS Technology" and "Current Trends in MOS non-volatile memories: Nanoscale Engineering and Emerging Devices", organized by IEEE Electron Devices Society , Kolkata Chapter, held at Jadavpur University, 23 Nov. 2012.
48. Session chair, Surface science division, session O4, DPG Spring meeting -2018, 11-16 March, 2018, Berlin, Germany.
49. TPC member, IEEE Nanotechnology Materials and Devices Conference (NMDC) – 2018, Portland, USA & IEEE Nanotechnology Materials and Devices Conference (NMDC) – 2020, Nanjing, China.

#### **EXTERNAL RESPONSIBILITY (ADMINISTRATIVE RESPONSIBILITIES, IF ANY)**

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Member, UG and PG Board of Studies, Department of Physics, REVA University.

Co-ordinator (Physics), International Relations and Research Collaborations, REVA University.

Co-ordinator(Physics), IPR cell, REVA University.

Chair , India Chapter, University of Bremen Alumni Association.

Reviewer of over 18 scientific journals including ACS Nano, Appl. Surf. Sci., Adv., JAP, APL etc. Member of German Physical Society (DPG), Institute of Physics (IOP), Royal Society of Chemistry (RSC), Senior Member of IEEE and IEEE Nanotechnology Council, Life member of MRSI and Indian Physical Society.

## **RESEARCH GUIDANCE**

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Ph.D. Supervision: 3 - Completed (Joint Supervision)  
Masters Thesis: 9 - Completed