



## **BIODATA**

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**Residence:**

Flat: 2H, Block-B  
Mission Compound  
Bolpur, W.B. 731204

**Personal Data:**

Date of Birth	Country of Birth	Nationality	Sex	Marital Status	Languages Known
06.01.1967	India	Indian	Male	Married	Bengali, English, Hindi

**Teaching Experience:**

Institution Name and Period of teaching	Courses taught
Visva-Bharati University (2005 – Present)	Quantum Mechanics, Mathematical Physics, Statistical Mechanics, Solid State Physics, Electricity and magnetism and Computer Applications
University of Illinois, Chicago, USA (2007-2010)	Phys 142 (Electricity & magnetism)

**PhD students (awarded / working) under my supervision:**

Sl. No.	Name of the student	Thesis title	Year of Award
1.	Dr. Shyamal Konar	“Atomic wires, nanotubes and their interaction with the semiconducting substrates: A density functional study”	2013
2.	Dr. Monoj Das	“Structural and electrical properties of a few nanotubes and nanoribbons: A density functional study”	2016
3.	Dr. Prajna Mukherjee	“Atomic wires, nanotubes and their interaction with the semiconducting substrates: A density functional study”	2016
4.	Mr. Somnath Chowdhury	“Investigation of Various Properties of Composite and Functionalized Nano Scale Systems: A Density Functional Study”	Submitted in 2022

**Positions:**

Sep. 2005 – Apr. 2010: Lecturer, Dept. of Physics, Visva-Bharati, Santiniketan, WB, India  
Apr. 2010 – Apr. 2013: Reader, Dept. of Physics, Visva-Bharati, Santiniketan, WB, India  
Apr. 2013 – Apr. 2016: Associate Professor, Dept. of Physics, Visva-Bharati, WB, India  
Apr. 2016 – Present: Professor, Dept. of Physics, Visva-Bharati, Santiniketan, WB, India

**Post-Doctoral Research:**

Jul. 1998 – Aug. 1999: Research Associate, IIT-Madras, India  
Sep. 1999 – Jul. 2001: Post-Doctoral fellow, KNU, Taegu, South Korea  
Aug. 2001- Mar. 2003: Post-Doctoral fellow, NCU, Chung-Li, Taiwan  
Apr. 2003 - Sep. 2005: Visiting Research Asst. Professor, University of Illinois, Chicago, USA.

**Visiting Positions:**

May 2007-Jul. 2007: Visiting (Teaching and Research), Univ. of Illinois at Chicago, USA  
May 2008-Aug. 2008: Visiting (Teaching and Research), Univ. of Illinois at Chicago, USA  
Jun. 2009-Aug. 2009: Visiting (Teaching and Research), Univ. of Illinois at Chicago, USA  
Jun. 2010-Aug. 2010: Visiting (Teaching and Research), Univ. of Illinois at Chicago, USA  
May 2011-May 2012: Visiting (Research), Virginia Commonwealth University, USA

**Education:**

1999: Ph. D in Theoretical Condensed Matter Physics, Institute of Physics, Bhubaneswar, 751005, India.  
Thesis Title: “A study of nonlinear systems using discrete nonlinear Schrodinger equation”  
1993: Post M. Sc., Institute of Physics, India.  
1992: M. Sc. Visva-Bharati University, India.  
Subject: Physics.

**Awards / Honors / Membership:**

- Awarded Adjunct Position, Univ. of Illinois at Chicago, USA (2009)
- Member: Governing Body of “Akui Kamalabala Women’s College”, WB (2018-present)
- Member of National Organizing Committee of CMDAYS (2015-present)
- Member of BOS, Burwdan University (2022-

**Field of Research:** Condensed Matter Physics & Nano-materials

**Research Interests:** Modeling & understanding geometrical, electrical and magnetic properties of nano-structured materials.

**Numerical Ability:**

- Programming in FORTRAN, C, C++ and Scilab.
- Working knowledge in both Linux and Windows.
- Working knowledge in Mathematica and Matlab.

## **Research Grant:**

Project Title: “ELECTRONIC STRUCTURE CALCULATIONS IN SEARCH OF METALLIC NANOWIRES ON SEMICONDUCTING SUBSTRATES”

Grant No: 03(1081)/06/EMR-II, Dated 02-11-2006, Rs. 9.35 L (2007-2010)

## **Scientific Publications:**

1. H. K. Chandra, S. Mondal and B. C. Gupta, “Spin Hall Conductivity of Germanene Supported by Monolayer of Different Monochalcogenides and Emergence of Topologically Insulating States”, Solid State Communications, 352 114830 (2022). <https://doi.org/10.1016/j.ssc.2022.114830> I.F. 1.9
2. M Das, S. Chowdhury and **B C Gupta**, “Atomic-Ordering-Induced Modulated Properties of Zigzag ZnTe Nanotubes”, phys. status solidi (b) (2021), <https://doi.org/10.1002/pssb.202100115> I.F. 1.6
3. S Choudhury, P Mukherjee, M Das and **B. C. Gupta**, “Diameter-dependent structural and electronic property of fused porphyrin nanotubes: A density functional study”, Journal of Porphyrins and Phthalocyanines, 24, 1021-1029 (2020), <https://doi.org/10.1142/S1088424620500121>
4. S Choudhury, P Mukherjee, M Das and **B C Gupta**, “Formation of charge transfer complex between metalloporphyrin and aromatic solvents in tetrahydrofuran media: A density functional study”, Journal of Porphyrins and Phthalocyanines, 23, 1149-1157 (2019), <https://doi.org/10.1142/S1088424619501529>
5. M. Das and **B. C. Gupta**, “Width dependent structural and electrical properties of zigzag ZnTe nanoribbons” Phys. Lett. A, 383, 748-753 (2018), <https://doi.org/10.1016/j.physleta.2018.11.045>
6. B Roy, M Ghosh, P Mukherjee, S Chowdhury, **B C Gupta**, K. Majhi and S Sinha, “Ground state charge transfer complex formation of some metalloporphyrins with aromatic solvents: Further theoretical and experimental investigations”, Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy, 188, Page: 311-317, (2018), <https://doi.org/10.1016/j.saa.2017.07.025>
7. M Das, P Mukherjee, S Chowdhury and **B C Gupta**, “Tunable structural and electrical properties of zigzag CdS nanotubes: A density functional study”, Phys. Status Solidi B, 254, 1700038 (2017), <https://doi.org/10.1002/pssb.201700038>
8. P Mukherjee, **B C Gupta** and P Jena, “Magnetic properties of bimetallic clusters composed of Gd and transition metals” J. Applied Phys, 119, 074301 (2016), <https://doi.org/10.1063/1.4941826>
9. M Das and **B C Gupta**, “Properties of armchair ZnTe nanotubes: A density functional study” Computational Material Science, 112, 1, (2016), <https://doi.org/10.1016/j.commatsci.2015.10.004>
10. P Mukherjee, S Konar and **B C Gupta**, “Structural and electrical properties of selenium nanotubes” Phys. Letters A 380, 238 (2016), <https://doi.org/10.1016/j.physleta.2015.09.005>
11. S Mondal, **B C Gupta** and B C Bag, “Kramer’s turnover phenomenon in the spatial diffusion region” by J. Stat. Mech.: Theory and Experiment), 2016, 013204 (2016), <https://iopscience.iop.org/article/10.1088/1742-5468/2016/01/013204>

12. M Das and **B C Gupta**, “Properties of armchair and zigzag CdS nanoribbons: A density functional study” Phys. Status Solidi B 252, 2280 (2015), <https://doi.org/10.1002/pssb.201552182>
13. P Mukherjee, **B C Gupta** and P Jena, “Catalytic activities of platinum nanotubes: A density functional study” The Eur. Phys. Journal B 88, 247 (2015), <https://doi.org/10.1140/epjb/e2015-60149-7>
14. P Mukherjee, **B C Gupta** and P Jena, “Chain-like structures of gold supported by silicon substrate” Phys. Status Solidi B 251, 924–932 (2014), <https://doi.org/10.1002/pssb.201350372>
15. M Das and **B C Gupta**, “Structural and electrical properties of armchair CdS nanotubes”; J. Appl. Phys. 115, 214307 (2014), <https://doi.org/10.1063/1.4881795>
16. M Das, P Mukherjee, S Konar and **B C Gupta**, “Work function and Young's modulus of Platinum Nanotubes: Density functional study”, Phys. Status Solidi (b) **250**, 1519 (2013), <https://doi.org/10.1002/pssb.201248594>
17. P Mukherjee, **B C Gupta** and P Jena, “Electronic and magnetic properties of pristine and transition metal doped ZnTe nanowires” J. Phys.: Condens. Matter **25**, 266003 (2013), <https://doi.org/10.1088/0953-8984/25/26/266003>
18. “Electrical transition of (3, 3) carbon nanotube on patterned hydrogen terminated Si (001)-2 × 1 driven by electric field” by **Bikash C. Gupta**, S. Konar and P. Jena; J. Applied Physics 111, 123717 (2012), <https://doi.org/10.1063/1.4729565>
19. **B C Gupta**, S. Konar and P. Jena “Electric field-induced metallic transition of (3,3) carbon nanotube supported on patterned hydrogen-terminated Si (001):1 × 1 surface”, J. Nanoparticle Research, **14**, 909 (2012), <https://doi.org/10.1007/s11051-012-0909-2>
20. S. Konar and **B C Gupta**, “Electrical and structural properties of 4 Å carbon nanotube supported by patterned hydrogen terminated Si (001):3×1 surface: A density functional study”, Phys. Rev. B **83**, 245412 (2011), <https://doi.org/10.1103/PhysRevB.83.245412>
21. S Konar, **B C Gupta**, “Interaction of gold nanotubes with the Si (211) surface: A density functional study”, Phys. Rev. B, **82** 125458 (2010), <https://doi.org/10.1103/PhysRevB.82.125458>
22. S Konar, **B C Gupta**, “Formation of Gold atomic wires on hydrogenated Si (001):3×1 surface” Journal of Applied Physics, **106**, 093712 (2009), <https://doi.org/10.1063/1.3248371>
23. **B C Gupta**, S Konar, C H Grein and S. Sivananthan, “Structural evolution due to Zn and Te adsorption on As-exposed Si (211): Density functional calculations”, Journal of Phys.: Condensed Matter 21, 375502 (2009), <https://doi.org/10.1088/0953-8984/21/37/375502>
24. B C Gupta, S Konar and R Bose, “Adsorption of gold on hydrogen terminated Si (001): Formation of chain structure” Applied Surface Science, 256, 495, (2009), <https://doi.org/10.1016/j.apsusc.2009.07.064>
25. A Ciani, **B C Gupta** and I Batra; “Interaction of cholesterol with carbon nanotube” Solid State Comm. 147, 146 (2008), <https://doi.org/10.1016/j.ssc.2008.04.037>
26. S Konar and **B C Gupta**, “Density functional study of single wall-wall and double-wall platinum nanotubes”, Phys. Rev. B 78, 235414, (2008), <https://doi.org/10.1103/PhysRevB.78.235414>

27. S Konar, **B C Gupta** and I Batra, "Atomic Gold chain on hydrogen terminated Si (001):1×1 surface: A density functional study", Phys. Rev. B 77, 245411 (2008), <https://doi.org/10.1103/PhysRevB.77.245411>
28. P Sen, **B C Gupta** and I Batra, "Structural studies of Phosphorus induced dimers" Phys. Rev. B 73, 085319 (2006), <https://doi.org/10.1103/PhysRevB.73.085319>
29. **B C Gupta**, U Chatterjee and Tanushri Som, "Microwave localization due to defects in arrays of dielectric cylinders: Multiple scattering approach", Phys. Lett. A 353, 76 (2006), <https://doi.org/10.1016/j.physleta.2005.11.049>
30. C Fulk, R Sporken, J Dumont, **B C Gupta**, G Brill, N Dhar, J Dinan and S Sivananthan "Arsenic Deposition as a Precursor Layer on Silicon (211) and (311) Surfaces", J. Electronic Material 34 846 (2005), <https://doi.org/10.1007/s11664-005-0030-8>
31. **B C Gupta** and I Batra; "Interrupted chain assisted Al nanowire on Si (211)" Phys. Rev. B, 72, 165352 (2005), <https://doi.org/10.1103/PhysRevB.72.165352>
32. **B C Gupta** and I Batra, "Metallic atomic wires on patterned di-hydrogenated Si (001)" Phys. Rev. B 71, 165429 (2005), <https://doi.org/10.1103/PhysRevB.71.165429>
33. **B C Gupta**, I Batra and S Savananthan, "Growth of Te on As-exposed Si (211): Electronic Structure Calculations" Phys. Rev. B 71, 075328 (2005), <https://doi.org/10.1103/PhysRevB.71.075328>
34. **B C Gupta** and I Batra, "Para to Ortho transition of metal dimers on Si (001)", Phys. Rev B 69, 165322, (2004), <https://doi.org/10.1103/PhysRevB.69.165322>
35. **B C Gupta** and Z Ye, "Propagation inhibition and localization of electromagnetic waves in two-dimensional random dielectric systems" Phys. Rev. E 69, 066615 (2004), <https://doi.org/10.1103/PhysRevE.69.066615>
36. **B C Gupta** and Z Ye, "Erratum: Theoretical analysis of the focusing of acoustic waves by two-dimensional sonic crystals (Phys. Rev. E 67, 036603 (2003))" Phys. Rev. E Phys. Rev. E 69, 029906 (2004), <https://doi.org/10.1103/PhysRevE.69.029906>
37. **Z Ye** and **B C Gupta**, "About wave localization in two-dimensional random media" Phys. Lett. A 313, 485 (2003), [https://doi.org/10.1016/S0375-9601\(03\)00854-5](https://doi.org/10.1016/S0375-9601(03)00854-5)
38. **B C Gupta** and Z Ye, "Disorder effects on the imaging of negative refractive lens made by arrays of dielectric cylinders" J. Appl. Phys. 94, 053316 (2003), <https://doi.org/10.1063/1.1591071>
39. **B C Gupta** and Z Ye, "Focusing of electromagnetic waves by periodic arrays of dielectric cylinders", Phys. Rev. B 67, 153109 (2003), <https://doi.org/10.1103/PhysRevB.67.153109>
40. **B C Gupta** and Z Ye, "Localization of classical waves in two-dimensional media: A comparison between theory and numerical simulation" Phys. Rev. E 67, 036606. (2003), <https://doi.org/10.1103/PhysRevE.67.036606>
41. **B C Gupta** and Z Ye, "Theoretical analysis of the focusing of acoustic waves by two-dimensional sonic crystals", Phys. Rev. E 67, 036603 (2003), <https://doi.org/10.1103/PhysRevE.67.036603>
42. **B C Gupta**, and S B Lee, "Interplay of linear and nonlinear impurities in the formation of stationary localized states", J. Korean Phys. Soc. 42, 371 (2003), <https://arxiv.org/abs/cond-mat/0103243>

43. **B C Gupta** and S. B. Lee, "Interplay of linear and modified nonlinear impurities in the formation of stationary localized states", J. Korean Phys. Soc. 40, 314 (2002), <https://arxiv.org/abs/cond-mat/0105489>
44. **B C Gupta**, P A Sreeram and S B Lee, "New way to achieve synchronization in spatially extended systems", Mod. Phys. Lett. B vol: 15 p:535 (2001), <https://doi.org/10.1142/S0217984901001987>
45. **B C Gupta** and S B Lee, "Self-trapping transition for nonlinear impurities embedded in the Cayley tree" Phys. Rev. B vol: 63 p: 144302 (2001), <https://doi.org/10.1103/PhysRevB.63.144302>
46. S B Lee and **B C Gupta**, "Influence of small cluster mobility on the island formation in molecular beam epitaxy" Phys. Rev. B vol:62 p:7545 (2000), <https://doi.org/10.1103/PhysRevB.62.7545>
47. B C Bag, **B C Gupta** and D S Ray, "Dissipative tunneling in presence of classical chaos in a mixed quantum-classical system", Phys. Lett. A 255, 65 (1999), [https://doi.org/10.1016/S0375-9601\(99\)00174-7](https://doi.org/10.1016/S0375-9601(99)00174-7)
48. by **Bikash C. Gupta** and S. B. Lee, "Stationary localized states due to nonlinear impurities, described by the modified discrete nonlinear Schrödinger equation" Phys. Lett. A 269, 130 (2000), [https://doi.org/10.1016/S0375-9601\(00\)00244-9](https://doi.org/10.1016/S0375-9601(00)00244-9)
49. **B C Gupta**, "Stationary localized states in one dimensional system due to modified nonlinear impurities Phys. Rev. B 60, 6194 (1999), <https://doi.org/10.1103/PhysRevB.60.6194>
50. P S Deo, **B C Gupta**, A M Jayannavar and F M Peeters, "Conductance quantization in a periodically modulated quantum Channel: Backscattering and mode mixing" Phys. Rev. B 58, 10784 (1998), <https://doi.org/10.1103/PhysRevB.58.10784>
51. A Ghosh, **B C Gupta** and K Kundu; "Stationary localized states due to quadratic nonlinearity in one dimensional system" J. Physics: Condensed Matter 10, 2701 (1998), <https://doi.org/10.1088/0953-8984/10/12/010>
52. K Kundu and **B C Gupta**, "The role of power law nonlinearity in the discrete nonlinear Schrödinger equation on the formation of stationary localized states in the Cayley tree" Euro. Phys. J. B. 3, 23 (1998), <https://doi.org/10.1007/s100510050280>
53. **B C Gupta** and P A Sreeram, "Dynamics of an electron in finite and infinite one-dimensional systems in presence of electric field", Phys. Rev. B 57, 4358 (1998), <https://doi.org/10.1103/PhysRevB.57.4358>
54. **B C Gupta** and K Kundu, "Localized states in 1-D nonlinear chain" Phys. Lett. A 235, 176 (1997), [https://doi.org/10.1016/S0375-9601\(97\)00587-2](https://doi.org/10.1016/S0375-9601(97)00587-2)
55. **B C Gupta** and K Kundu, "Stationary Localized states due to a Nonlinear Dimeric Impurity embedded in a perfect one-dimensional Chain", Phys. Rev. B 55, 11033 (1997), <https://doi.org/10.1103/PhysRevB.55.11033>
56. **B C Gupta**, P K Datta, T P Pareek and A M Jayannavar, "Dynamical localization-delocalization transition in two-level nonlinear systems driven by laser field" Physica B 240, 13 (1997), [https://doi.org/10.1016/S0921-4526\(97\)00357-8](https://doi.org/10.1016/S0921-4526(97)00357-8)
57. **B C Gupta** and K Kundu, "Formation of stationary localized states due to nonlinear impurities using the discrete nonlinear Schrödinger equation", Phys. Rev. B 55, 894 (1997), <https://doi.org/10.1103/PhysRevB.55.894>

58. **B C Gupta** and K Kundu, "Conference Paper: The self-trapping transition in the two-dimensional system with nonlinear impurity" Indian J. Phys. vol: 70 A, 747 (1996).
59. **B C Gupta**, P S Deo and A M Jayannavar, "Aharonov-Bohm effect in the presence of evanescent modes" Int. J. Mod. Phys. B 10, 3595 (1996), <https://doi.org/10.1142/S021797929600194X>
60. **B C Gupta** and K Nanda, "Specific heat of high-temperature superconductors: Role of  $|\psi|^4$  term in the Ginzburg-Landau free energy", Physica C 265, 228 (1996), [https://doi.org/10.1016/0921-4534\(96\)00300-0](https://doi.org/10.1016/0921-4534(96)00300-0)

#### **Conferences Attended and Presented Research Work (Selective)**

1. "Gold wire Structures on Decorated Si (001):2×1" presented in national conference: Condensed Matter Days 2013, August 29-31, 2013, Department of Physics, NIT, Rourkela.
2. "Structural, Electrical and Catalytic Properties of Platinum Nanotubes" in International Conference: International Symposium on Nanostructures and their applications in renewable energy, October 24-28, 2013, Peking University, Beijing, China.
3. "Free and supported nano-structures: structural, electrical, Catalytic and magnetic properties" in DAE-BRNS National Conference on Current Trends in Advanced Materials, November 19-21, 2014.
4. "Pressure induced magnetic phase transition of  $M(\text{HF}_2)(\text{pyz})_2(\text{SbF}_6)$  ( $M=\text{Cu, Ag, Au}$ )" in national conference, Condensed Matter Days 2014, August 27-29, 2014, Department of Physics, Calcutta University.
5. "Platinum nanotubes: Structural, Electrical and Catalytic Properties" in National Conference on Condensed Matter Physics and Applications, March 27-28, 2015, Department of Physics, Manipal Institute of Technology, Manipal.

#### **Invited Talks Delivered: (Selective)**

1. "Emergence of Quantum Physics" in State level Seminar, Quantum Mechanics: Theoretical Concepts and Applications, November 22-23, 2013 at Department of Physics, Domkal College, Murshibadabad.
2. "Free and supported nano-structures: structural, electrical and magnetic properties" on September 03, 2015 at the national Institute, Institute of Physics, Bhubaneswar (seminar organized during Alumni Day celebration).
3. "Structural, Electrical, catalytic and magnetic Properties of nano-structures" on National level programme, "Recent Trends in Chemistry with reference to teaching and research", March 13-14, 2015 at Department of Chemistry, Visva-Bharati.
4. "Properties of Nanostructured Materials: DFT Study" on 18.09.2018 at the "3rd Refresher Course in Nano-Science & Nano-Technology" organized by Academic Staff College, University of Burdwan.

#### **Seminar & Symposium Organized:**

1. “Condensed Matter Days 2008” a National Conference, August 27-29, 2008, Department of Physics, Visva-Bharati.
2. “Condensed Matter Days 2015” a National Conference, August 27-29, 2015, Department of Physics, Visva-Bharati.

Signature

(Bikash Chandra Gupta)