Dr. Pijus Kanti Samanta

Assistant Professor (III) & Head

Department of Physics (UG & PG)
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- **Web (official):** https://pkcollegecontai.ac.in/physics/faculty-profile.aspx?trnId=235
- **Google Scholar**: https://scholar.google.co.in/citations?hl=en&user=IYN7gqEAAAAJ

Employment Details

- 05-11-2020- - Associate Professor, P. K. College, Contai
- 20.-04-2017 (Present) - Assistant Professor (stage-III), P. K. College, Contai
- 05-11-2008 - Assistant Professor (I & II), Ghatal R. S. Mahavidyalaya
- 05-11-2008-30-04-2011 - Research Fellow (part-time), IIT Kharagpur
- 26. 07. 2006-04. 11. 22008 - Research Fellow (Full-time), IIT Kharagpur.

Research Experiences: 11 years (Excluding PhD period)
Teaching Experiences: PG: 09 years UG: 13 years

Academic Qualifications

Degree	Year	University/Board	% of marks
Secondary (10^{th})	1999	WBBSE	79.75
Higher secondary (12^{th})	2001	WBCHSE	81.80
B. Sc. (Physics Hons)	2004	Vidyasagar University	70.87 #
M. Sc. (Physics)	2006	IIT Kharagpur	8.17 / 10
Ph. D.	2011	IIT Kharagpur	-

University First class first.

*** Specializations in M.Sc.:** 1. Science and Technology of Nanomaterials
2. Crystal Physics
3. Principle of Radiation Detection and Measurements.

National Level examinations qualified

- CSIR-UGC NET (JRF & LS) -2006
- GATE (AIR-534, Score-359)- 2006
- JAM-2004 (AIR-69)
- JEST-2004 (AIR-72)

Scholarships

1. UGC-PTAC conference presentation grant-2012
2. Selected for INSA Summer Research Fellow (faculty)-2012, NPL-Delhi
3. Selected for INSA Summer Research Fellow (faculty)-2011, NCL-Pune
4. ICTP-Visiting grant-2011
5. UGC Junior Research Fellowship (2007-2008)
6. IIT Junior Research Fellowship (2006-2007)
7. Merit-cum-Means Scholarship in M. Sc. (2004-2006)
8. Selected for National Scholarship-2004

Awards

1. Vidyasagar University Gold Medal for 1st class 1st in B. Sc. Examination-2004
2. Dr. N. C. Rana Memorial Gold Medal for 1st class 1st in B. Sc. Examination-2004
3. Certificate for Outstanding Contribution in Review- Elsevier, Netherlands-2017
4. Supervised technical model in District Science Congress (3rd Position) -2017
5. 3rd position Oral presentation in SERB sponsored national seminar-2019.
6. Brand Ambassador, Bentham Science Publisher, Sharjah, UAE-2019.

Membership

1. Affiliate Member, IUPAC-USA (2012-2013)
2. Member, National Entrepreneurship Network (December, 2017-)
3. Life Member, International Association of Advanced Materials, Sweden (2016-)
4. Life Member, Indian Association for Physics Teachers (IAPT)

ACADEMIC & RESEARCH ACTIVITIES

International Journals: Published-69
Total citation: 1000 h-index: 16 i_{10} index:
https://scholar.google.co.in/citations?hl=en&user=IYN7gqEAAAAJ

Research Areas

- Materials Chemistry
- Semiconductor Optoelectronics
- Physics Education
- Remote sensing and GIS

Sponsored Projects

Project-1 (COMPLETED)-Principal Investigator

Title: Effect of Gamma (Co-60) Irradiation on Microstructure and Optical Properties of Zinc Oxide Nanostructures.
Funding Agency: UGC-DAE-CSR
Amount: Rs-0.70 Lakh

Project-2 (ONGOING)-Project Implementation Group Member

Title: Next Generation Flexible Perovskite Solar Cells based on Inorganic Hole and Electron Transport Materials.
Funding Agency: DST-FIST (College Level)
Amount: 110.00 Lakh

Ph. D. Guidance: Registered = 03

Editorial Board Membership

- Review Editor: Frontiers in Materials (IF-3.98, Scopus).
- Associate Editorial Board Member: Current Nanomaterials, ISSN: 2405-4623 (Scopus)

Regular Reviewer

Scientific Reports (Nature Publishing Group), ***Journal of Applied Physics (APS)*** • Physica-E (Elsevier) • Materials Science and Engineering-B (Elsevier) • Materials Letters (Elsevier) • Applied Physics-A (Springer) • Chinese Optics Letters (Springer) • ***Crystal Growth and Design (RSC)*** • J. Chem. Eng. & Mat. Sci. • Journal of Materials Science-Materials Electronics (Springer) • Journal of Tissue Science and Engineering • Journal of Materials Science (Elsevier).

Publications in International Journals

71. P. K. Samanta, N. K. Rana, B. S. Kar, *Peak profile analysis, electrical, dielectric behaviour and defect mediated yellow photoluminescence of zinc oxide nanostructures*, **Phys. Scr.** 97, 075701**(2022)**
DOI: https://doi.org/10.1088/1402-4896/ac71db

70. S. Sahu, **P. K. Samanta**, *Microstructural study and crystallite size analysis of chemically grown bougainvillea flower-like zinc oxide nanostructures*. **Materials Today Proceedings** 65 (5) 2502-2505 **(2022)**
DOI: https://doi.org/10.1016/j.matpr.2022.04.474

70. P. K. Samanta, Optical Properties of Hydrothermally Grown ZnO Nanoflowers. **Nanoscience & Nanotechnology-Asia,** 12 (3) 39-45 **(2022)**
DOI : https://doi.org/10.2174/2210681212666220513095658

69. S. Mandal, **P. K. Samanta**, *Rietveld analysis of X-ray diffraction pattern of sol-gel synthesized copper oxide nanoparticles*. **Materials Today Proceedings**, 60 (2), 1051-1055(**2022**)
DOI: https://doi.org/10.1016/j.matpr.2022.01.242

68. S. Sahu, **P. K. Samanta**, *Profile Analysis of X-ray Diffraction Pattern of Zinc Oxide Nanostructure,* **Journal of Nano and Electronic Physics, 13 (5), 05001 (4p) (2021)** (EISSN: 2077-6772)
DOI:10.21272/jnep.13(5).05001

67. D. Aich, R. N. Mondal, S. Saha, **P. K. Samanta**, A. K. Bhunia, T. Kamilya
Sensitivity Enhancement in the Colorimetric/Spectroscopic Determination of Lysozyme Concentration in Nanomolar Level with Colloidal Citrate Capped Au@Ag Core-Shell Nanoparticles.
Nanoscience & Nanotechnology-Asia, 11(4) 98-111(14) (**2021**)
DOI : https://doi.org/10.2174/2210681210999200728114038

66. **P. K. Samanta**, T. Kamilya
Environment Friendly Synthesis of Undoped and Cu doped ZnO Nanoparticles and Study of their Optical Absorption Properties towards Biological Applications.
Journal of Nano and Electronic Physics, 13 (1), 01006 (3p) (2021) (EISSN: 2077-6772)
DOI: https://doi.org/10.21272/jnep.13(1).01006

65. S. Mandal, **P. K. Samanta**
Electrochemical Growth of Metallic Zinc and its Crystallographic Study Using Rietveld
Materials Today: Proceedings 43(5), 3091-3094 (2021) (EISSN: 2214-7853)
DOI: https://doi.org/10.1016/j.matpr.2021.01.579

64. K. Barman, P. Chakraborty, **P. K. Samanta**
Green Synthesis of Zinc Oxide Nanostructure using Azadirachta Indica Leaf Extract and its Structural and Microstructural Study
Physica Scripta 96, 035704 (**2021**) (EISSN: 1402-4896)
DOI: https://doi.org/10.1088/1402-4896/abda6c

63. P. K. Samanta
Effect of Ni-doping on the Defect Densities Associated with Photoluminescence from ZnO Quantum Dots
***Physics AUC*, 30 (1), 56-60 (December, 2020)** **(**ISSN - 1223 – 6039)
http://cis01.central.ucv.ro/pauc/vol/2020_30/7_I_56_60_2020.pdf

62. P. K. Samanta
Effect of Copper Doping on the Growth of c-axis of Zinc Oxide Nanostructure
***Physics AUC*, 30 (1), 42-47 (December, 2020)** **(**ISSN - 1223 – 6039)

61. S. Sahoo, A. K. Mandal, **P. K. Samanta** et. al.
A critical overview on Quantum Computing
Journal of Quantum Computing. 2(4) pp. 181-192, (**2020**) (EISSN: 2579-0145)
DOI:10.32604/jqc.2020.015688

60. D. Aich, S. Saha, R. N. Mondal, **P. K. Samanta,** T. Kamilya
Spectroscopic Study of Interaction of Bare, Citrate Capped and BSA Capped Fe_3O_4 Nanoparticles with Hemoglobin
Current Materials Science, 13 (2) pp (2020) (EISSN: 2666-1462)

59. S. Acharyya, S. Acharyya, **P. K. Samanta**
Demonstration of Wet Chemical Synthesis of Nanomaterials for High School Students.
World Scientific News, **148, 15-26 (2020)** (EISSN 2392-2192)

58. S. Acharyya, S. Acharyya, **P. K. Samanta**
Review on Multi-dimensional Zinc Oxide Nanostructures

World Scientific News, **147, 140-165 (2020)** (EISSN 2392-2192)

57. D. Aich, **P. K. Samanta**, S. Saha, T. Kamilya.
Inter-band Transition in Citrate Capped Marks Dodecahedral Colloidal Gold Nanoparticles.
Current Nanoscience 16 (5), 829 – 836 (July, 2020) (ISSN: 1875-6786)
DOI: http://dx.doi.org/10.2174/1573413715666191127115509

56. P. K. Samanta
Band Gap Engineering, Quantum Confinement, Defect Mediated Broadband Visible Photoluminescence and Associated Quantum States of Size Tuned Zinc OxideNanostructures.
Optik-IJLEO, **165337 (2020)** (ISSN: 0030-4026)

55. D. Aich, **P. K. Samanta**, S. Saha, T. Kamilya.
Synthesis and Characterization of Super paramagnetic Iron Oxide Nanoparticles.
Nanoscience and Nanotechnology-Asia **10(2), 123-126 (2020)** (EISSN: 2210-6820)
DOI : 10.2174/2210681208666180910110114

54. P K Samanta.
Investigation of the Structural Parameters of Copper Oxide Nanoparticles using X-ray Diffraction.
***Physics AUC*, 29, 84-91 (December , 2019)** **(**ISSN - 1223 – 6039)

53**. P. K. Samanta**.
Green Synthesis of Ultrafine Zinc Oxide Nanoparticles and Determination of its Band-gap in view of Effective Mass Model.
***Physics AUC*, 29, 61-67 (December , 2019)** **(**ISSN - 1223 – 6039)

52. **P K Samanta.**
Synthesis, Structural and Morphological Properties of $CaFe_2O_4$: a Potential Material in Photocathode for Artificial Photosynthesis.
Res. J. Chem. Environ. 23(6), 115-118, **2019.** (ISSN: 0972-0626)

51. **P. K. Samanta**, M. Das and N. K. Rana.
Sol-gel Synthesis and Structural Properties of Cu Doped ZnO Nanoparticles towards Biomedical Applications.
J. Nano- Electron. Phys. 11(1), 06028(3pp) (**2019**). (ISSN 2077-6772)

50. **P. K. Samanta,** T. Kamilya, D. Pahari.
Study of Time Dependent Interaction of ZnO Nanoparticles with Sucrose and Honey Molecules to Understand Sucrose Stabilization Mechanism using Nanoparticles towards Biomedical Applications.
Current Nanomaterials, 4, 216-222 **(2019).** (ISSN: 2405-4615)

49. **P. K. Samanta.**
Chemical Synthesis of Zinc Oxide Nanorods and its Transformation into Nanotubes.
***Turkish J. Physics*,** 43, 576-581 **(December, 2018)** **(** ISSN: 1303-6122)

48. **P K Samanta.**
Strong and Weak Quantum Confinement in Nanostructures and Size Dependent Optoelectronic Properties of Zinc Oxide.
Physics AUC. **28**, 17-23 **(December, 2018)** (ISSN - 1223 – 6039)

47. **P. K. Samanta**, A. K. Mandal, S.Mishra, A. Saha.
Wet-chemical Synthesis and Optical Properties of CuO Nanoparticles.
IEEE Digital Xplore, doi:10.1109/iementech.2017.8076941/ISSN-978-1-5386-1703-8 **(2017)**

46. **P. K. Samanta**, M. Das et. al,
Synthesis and Optical Absorption Properties of Copper Oxide Nanoparticles for Applications in Transparent Surface Coatings and Solar Cells.
J. Nano- Electron. Phys. 9(6), 06028(2pp) **(2017).** (ISSN 2077-6772)

45. **P. K. Samanta**, T. Kamilya, A. K. Bhunia, S. Mandal.
Absorption Spectroscopic Analysis of ZnO Nanoparticles.
Adv. Sci. Eng. Med. 8, 240-244 **(2016).** (EISSN: 2164-6635)

44. **P. K. Samanta**.
Dynamic Conduction in 2-Dimensional Conductor: Magneto-Conductivity Tensor under Rapid Oscillatory Electric field.
J. Nano- Electron. Phys. 8(2), 02037(2pp) **(2016).** (ISSN 2077-6772)

43. **P. K. Samanta**, T. Kamilya, A. K. Bhunia.
Structural and Optical Properties of Ultra-long ZnO Nanorods.
Adv. Sci. Eng. Med. 8, 128-130 (**2016**). (EISSN: 2164-6635)

42. **P. K. Samanta,** A. Saha and T. Kamilya.
Wet chemically Synthesized CuO Bipods and their Optical Properties.
Recent Patents on Nanotechnology, 10, 20-25, (**2016)**. (ISSN: 1872-2105)

41. **P. K. Samanta**.
Weak Quantum Confinement and Associated Energy Levels of CuO Nanoparticles.
Adv. Sci. Eng. Med. 7, 811-813 (**2015**). (EISSN: 2164-6635)

40. **P. K. Samanta** and A. Saha,
Wet Chemical Synthesis of ZnO Nanoflakes and Photoluminescence.
Optik, 126, 3786–3788 **(2015).** (ISSN 0030-4026)

39. A. K. Bhunia, **P. K. Samanta**, T. Kamilya, S. Saha.
Chemical Growth of Spherical Zinc Oxide Nanoparticles and Their Structural, Optical Properties.
Journal of Physical Sciences, 20, 205-12 **(2015).** (ISSN 2350-0352)

38. S. I Senatova, A. R. Mandal, F. S. Senatov, N. Yu Anisimova, S. E. Kondakov, **P. K. Samanta** and D. V. Kuznetsov.
Optical Properties of Stabilized ZnO Nanoparticles, Perspective for UV-Protection in Sunscreens.
Current Nanoscience 11(3), 354-359 **(2015).** (ISSN: 1573-4137)

37. A. K. Bhunia, **P. K. Samanta**, D. Aich, A. Saha, T. Kamilya
Biocompatibility study of protein capped and uncapped silver nanoparticles on human Hemoglobin.
Journal of Physics D-Applied Physics. 48(23), 235305 **(2015).** (ISSN 0022-3727)

36. **P. K. Samanta**, A. Saha and T. Kamilya.

Structural and Optical Property of Spherical ZnO Nanoparticles.
Optik. 126(18), 1740-1743 **(2015).** (ISSN 0030-4026)

35. **P. K. Samanta**, A. Saha and T. Kamilya.
Chemical Synthesis and Optical Properties of ZnO Nanoparticles.
J. Nano- Electron. Phys. 6(4), 04015 (2pp), (**2014)**. (ISSN 2077-6772)

34. S. Shit, T. Kamilya, and **P. K. Samanta**.
A Novel Chemical Reduction Method to Synthesize ZnO Nanocrystals.
Mater. Lett. 118, 123–125 **(2014).** (ISSN: 0167-577X**)**

33. **P. K. Samanta** and T. Kamilya.
Optical Properties of Surface Modified ZnO Nanorods.
Journal of Nanoengineering and Nanomanufacturing 4(3), 173-176, (**2014)**.
(ISSN: 2157-9334)

32. A. K. Bhunia, **P. K. Samanta**, S. Saha and T. Kamilya.
Safety concerns towards the biomedical application of PbS nanoparticles: An approach through protein-PbS interaction and corona formation.
App. Phys. Lett. 104, 123703 **(2014).** (ISSN 0003-6951)

31. **P. K. Samanta**, A. K. Bhunia, S. Saha, and T. Kamilya.
Interaction of Glucose with ZnO Nanoparticles.
J. Nano- Electron. Phys. 6(2), 02006(2 pp), (**2014)**. (ISSN 2077-6772)

30. A. K. Bhunia, **P. K. Samanta**, S. Saha and T. Kamilya.
ZnO Nanoparticles- Protein Interaction: Crona Formation with Associated Unfolding.
App. Phys. Lett. 103 143701 (4 pages) (**2013**). (ISSN 0003-6951)

29. **P. K. Samanta**, S. Datta and S. Basak and T. Kamilya.
Wet Chemical Growth of Ultra-long ZnO Nanoplates and their Optical Property.
Chem. Phys. Lett. 584, 155-158 **(2013)**. (ISSN: 0009-2614)

28. **P. K. Samanta**. S. Mishra.
Solution Phase Synthesis of ZnO Nanopencils and their Optical Property.
Mater. Lett. 91, 338-340 **(2013).** (ISSN: 0167-577X**)**

27. **P. K. Samanta.** S. Mishra.
Wet Chemical Growth and Optical Property of ZnO Nanodiscs.
Optik, 124, 2871-2873 **(2013)**. (ISSN 0030-4026)

26. N. Karak, **P. K. Samanta**, T. K. Kundu.
Structural and Optical Properties of Alumina Templated Undoped and Co-Doped Zinc Oxide Nanoparticles.
Journal of Nanoengineering and Nanomanufacturing 3, 211-216 **(2013)**.
(ISSN: 2157-9334)

25. **P. K. Samanta**.
Effect of Hexamine concentration on the morphology and optical properties of ZnO nanostructures.
Adv. Electrochem. 1, 10-15**(2013)**. (ISSN: 2330-1554)

24. N. Karak, **P. K. Samanta**, T. K. Kundu.
Green Photoluminescence from Highly Oriented ZnO Thin Film for Photovoltaic Application.
Optik, 124, 6227-6230**(2013)**. (ISSN 0030-4026)

23. **P. K. Samanta** and T. Kamilya.
Wet Chemical Growth and Photoluminescence of ZnO Nanoplates.
Physics Academy of North East Newsletter 2, 1-2**(2013)**.

22. **P. K. Samanta**, P. R. Chaudhuri.
Wet Chemical Growth of Zinc Oxide Octahedrons and their Optical Property.
Mater. Lett, 68, 510-512 **(2012).** (ISSN: 0167-577X**)**

21. **P. K. Samanta**.
Characteristics of Benzene assisted grown ZnO nanosheets.
Sci. Adv. Mater. 4, 219-226 **(2012).** (EISSN: 1947-2943)

20. **P. K. Samanta**, S. Basak.
Electrochemical growth of hexagonal ZnO pyramids and their optical property.
Mater. Lett. 83, 97–99 **(2012).** (ISSN: 0167-577X**)**

19. **P. K. Samanta**, A. K. Bandyopadhyay.
Chemical Growth of Hexagonal Zinc Oxide Nanorods and their Optical Properties.
Appl. Nanosci. 2, 111-117 **(2012**). (ISSN 2190-5517)

18. **P. K. Samanta**, P. R. Chaudhuri.
Understanding the Transition Levels of Photoluminescence of ZnO Quantum Dots under Weak Confinement
J. Optics, 41(2), 75-80 **(2012)**. (ISSN 0974-6900)

17. S. Dutta, S. Basak, **P. K. Samanta**.
Tunable photoemission from bio-compatible ZnO quantum dots and effect of PVA.
Int. J. Nanosci. Nanotech. 3(1), 27-32 **(2012)**. (ISSN 0974-3081)

16. S. Basak, **P. K. Samanta**.
Enhanced Photoluminescence from core-shell ZnO/ZnS nanostructures.
J. Chemical Eng. Mater. Sci. 3(2), 18-22 **(2012)**. (ISSN-2141-6605)

15. **P. K. Samanta**, A. K. Bandyopadhyay, S. Basak, P. Roy Chaudhuri.
Characteristics of Electrochemically Grown Dendritic Metallic Zinc.
Optik, 12, 1520-1522 **(2011).** (ISSN 0030-4026)

14. **P. K. Samanta**, S. Basak, P. Roy Chaudhuri.
Electrochemical Growth of ZnO Microspheres and Nanosheets.
Adv. Sci. Lett. 1, 554-557 **(2011**). (EISSN: 1936-7317)

13. **P. K. Samanta**, P. Roy Chaudhuri.
Growth and Optical Properties of Chemically Grown ZnO Nanobelts.
Sci. Adv. Mater. 3, 112-117 **(2011).** (EISSN: 1947-2943)

12. **P. K. Samanta**, S. Basak, P. Roy Chaudhuri.
Growing Fern-leaves: the Secret life of Zinc Oxide.
Materials Today, 14(6), 295 (**2011**) (ISSN: 1369-7021)

11. **P. K. Samanta**, P. R. Chaudhuri.
UV Photoluminescence from Substrate Free Growth of Zinc Oxide Nanopencils.
Sci. Adv. Mater. 3, 919-925 (**2011**). (EISSN: 1947-2943)

10. **P. K. Samanta**, S. Basak, P. Roy Chaudhuri.
Synthesis and Characterization of Chemically Grown Ultra-long Hexagonal ZnO Nanotubes.
Int. J. Nanosci. 10, 69-73 (**2011**). (ISSN 1793-5350)

9. **P. K. Samanta**, P. Roy Chaudhuri.
Substrate Effect on the Morphology and Photoluminescence from ZnO Nanoprisms.
Front. Optoelectron. China, 4, 130-136 (**2011**). (ISSN: 16744128)

8. **P. K. Samanta**.
Weak Quantum Confinement in ZnO Nanorods: a 1-D Potential Well Approach.
Optics & Photonics Letters, 4, 35-45 (**2011**). (ISSN 1793-7140)

7. **P. K. Samanta**, P. Roy Chaudhuri.
Porous Zinc Oxide Thin Film Synthesized by a Simple Chemical solution Method for Transparent UV Coating.
Int. J. Mater. Phy. 1(no.-1), 1-5, (**2010**) (ISSN 0974 –309X)

6. **P. K. Samanta**, S. Basak, P. Roy Chaudhuri.
Fabrication of ZnO Nanostructures: Effect of Organic and Inorganic Compounds.
IEEE EXPLORE CONFERENCE SERIES, ISBN: 978-1-4244-3543-2 (**2010**) 458-459

5. S. Basak, R. Kumar, **P. K. Samanta.**
Fabrication of Intensity Based Fiber-optic pH Sensor.
IEEE EXPLORE CONFERENCE SERIES, ISBN: 978-1-4244-3543-2 (**2010**) 370-371

4. **P. K. Samanta,** S. K. Patra, P. Roy Chaudhuri.
Violet Emission from Flower-like Bundle of ZnO Nanosheets.
Physica-E, 41, 664-667 (**2009**) (ISSN: 1386-9477)

3. **P. K. Samanta**.
Erratum: "Photoluminescence of ZnO quantum dots produced by a sol-gel process[Optical Materials, 30 (2008) 1233-1239]"
Optical Materials, 31, 700 (**2009**). (ISSN: 0925-3467)

2. **P. K. Samanta,** S. K. Patra, P. Roy Chaudhuri.
Green Photoluminescence from Chemically Synthesized Zinc Oxide Nanostructures.
Int. J. Mater. Sci. 4(6), 803-806 (**2009**) (ISSN 0974– 3081)

1. **P. K. Samanta**, S. K. Patra, P. Roy Chaudhuri.
Visible Emission from ZnO Nanorods Synthesized by a Simple Wet Chemical Method
Int. J. Nanosci. Nanotechnol. 1, 81-90 (**2009**) (ISSN 0974– 3081)