

Personal Profile



Prof. Pradip Kumar Kalita
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Educational Profile

Ph.D.	University of Gauhati, Guwahati, Assam; 2000 Supervisor: Prof. H L Das & Prof. B K Sarma
M.Sc./M.Tech/	University of Gauhati, Guwahati, Assam; 1990
M.Com./M.A./	Subject: Physics
M.Ed etc.	Specialization: Solid State Physics
B.Sc./B.Tech/	University of Gauhati, Gauhati, Assam; 1988
B.Com./B.A. etc.	Subject: Physics

Professional Experience

Professor , Department of Physics Rajiv Gandhi University, Arunachal Pradesh, India	September, 2015-till date
Associate Professor , Department of Physics, Guwahati College, Guwahati, Assam India	August 2007- September, 2015
Assistant Professor , Department of Physics, Guwahati College, Guwahati, Assam India	August 1995- August 2007

Administrative Experience

Dean, Faculty of Basic Sci., IT & Engg Rajiv Gandhi University, Arunachal Pradesh, India	August, 2018- July 2021
Head of Department , Department of Physics, Rajiv Gandhi University, Arunachal Pradesh, India	July 2021- Till date

Awards & Honours

Membership of Professional Bodies

1. Member of Material Research Society of India (Life Member)
2. Member of Indian Physics Teacher Association (Life Member)
3. Member of Indian Physics Association (Life Member)
4. Member of Physics Association of North East (Life Member)

Research Interests

- Thin Films
- Photoconductivity
- Nano-Optoelectronics
- Design and simulation of nanoscale devices
- Theoretical modelling of nanostructures

Research Publications

1. Green synthesis of copper sulfide (CuS) nanostructures for heterojunction diode applications: Deb, S.; Kalita, P. K.; *J Mater Sci : Mater Electron* **2021**
<https://doi.org/10.1007/s10854-021-06879-2>
2. Influence of back surface field layer on enhancing the efficiency of CIGS solar cell: Barman, B.; Kalita, P. K.; *Solar Energy* **2021**, *216*, 329-337
3. Temperature dependent structural, optical and electrical properties of CuS nanorods in aloe vera matrix: Nath, S. K.; Kalita, P. K.; *Nanostructures & Nano-Objects* **2021**, *25*, 100351-(9pp)
4. Optical properties of PbO/ZnO core/shell dispersed in PVP matrix : Pathak, B., Roychoudhury, J. P.; Kalita, P. K.; Aomoa, N.; *Materials Today: Proceeding*, **2021**, *46*, 6196-6200
5. Synthesis and characterization of chemically synthesized CuSe nanoparticles for photovoltaic application: Barman, B.; Handique, K.; Nanung, Y.; Kalita, P. K.; *Materials Today: Proceeding*, **2021**, *46*, 6213-17
6. Effect of temperature on the optical properties of chemically synthesized CdSe nanostructures: Handique, K.; Siboh, D.; Nanung, Y., Barman, B.; Kalita, P. K.; *Materials Today: Proceeding*, **2021**, *46*, 6312-17.
7. Opto-electronic characterization of starch capped zinc chalcogenides (core-shell) nanocomposites and their application as Schottky device: Deb, S.; Kalita, P. K.; Datta, P.; *Physica Scripta* **2020**, *95*, 095810-(12pp)
8. Effects of cadmium ion concentration on the optical and photo-respon se properties of CdSe/PVP nanocomposites for white light sensing application: Handique, K.; Kalita, P. K.; *Applied Phys A: Mater. Sci & Process* **2020**, *126*, 755-(12pp)
9. Effect of Weak Confinement on the Optical Properties of Chemically Synthesized ZnS Nanoparticles: Handique, K.; Kalita, P. K.; *J Nano & Electronic Phys* **2020**, *12*, 04015-(5pp)
10. Theoretical Investigation on Performance Enhancement of CIGS Based Solar Cells: Barman, B.; Kalita, P. K.; *J Nano & Electronic Phys* **2020**, *12*, 06036-(4pp)

11. Optical Properties of poly-vinyl pyrrolidone encapsulated PbS/CdS core-shell quantum dots : Handique, K.; Barman, B.; Nanung, Y.; Kalita, P. K.; *Carbon-Sci & Tech.* **2019**, *11*, 29-35
12. A study on growth of ZnSe quantum dot through chemical route : Siboh, D.; Handique, K.; Kalita, P. K.; *Carbon-Sci & Tech.* **2019**, *11*, 36-42
13. Memristive, memcapacitive and meminductive behaviour of single and co-doped cadmium selenide nanocomposites under different doping environment: Das, B.; Devi, J.; Kalita, P. K.; Datta, P.; *J Mater Sci: Mater Electron* **2018**, *29*, 546-557
14. Structural and optoelectronic properties of glucose capped Cu doped ZnO/Zn(OH)₂ nanosheets : Patwari, G.; Singha, R.; Kalita, P. K.; *Materials Today: Proceeding*, **2018**, *5*, 2197-2206
15. Quantum confinement induced shift in energy band edges and band gap of a spherical quantum dot: Bora, P.; Siboh, D., Nath, N. M.; Kalita, P. K.; Sarma, J. K.; *Physica B: Phys of Condensed Mater.* **2017**, *530*, 208-214
16. Microstructural and Optoelectronic properties of green synthesized ZnS nanostructures: Deb, S.; Kalita, P. K.; Datta, P.; *Inter J Nanosci.* **2017**, *16*, 1760032-1-9
17. Determination of shift in energy of band edges and band gap of ZnSe spherical quantum dot.: Siboh, D., Nath, N. M.; Kalita, P. K.; *AIP conference Proceedings* **2017**, *1942*, 50111-4
18. Effect of capping agents on the optical properties of synthesized CuS nanostructures: Nath, S. K.; Kalita, P. K.; *Materials Today: Proceeding*, **2017**, *4*, 3972-3978
19. Effect of self-assembled ZnO₂ intermediate layer on the growth of starch capped ZnO/ZnS core/shell nano composites through chemical bath deposition method: Deb, S.; Kalita, P. K.; Datta, P.; *Materials Today: Proceeding*, **2017**, *4*, 3994-4000
20. Structural and optoelectronic properties of glucose capped Al and Cu doped ZnO nanostructures: Patawari, G.; Singha, R.; Kalita, P. K.; *Mater. Sci.-Poland* **2016**, *34*, 69-78
21. Optical properties of DNA induced starch capped PbS, CdS and PbS/CdS nanocomposites: Das, D.; Konwar, R.; Kalita, P. K.; *Indian J Phys.* **2015**, *89*, 845-855
22. Synthesis and characterization of Al-doped ZnO nanostructures in glucose matrix: Patwari, G.; Singha, R.; Kalita, P. K.; *J Basic & Appl. Engg. Res*, **2015**, *19*, 1728-31
23. Excess sulphur induced structural and optical properties of Green synthesised CuS nanostructures: Nath, S. K.; Kalita, P. K.; *J Basic & Appl. Engg. Res*, **2015**, *19*, 1684-87
24. Synthesis of ZnO/ZnS core/shell nanostructures for its possible fabrication as photoconductors: Deb, S.; Kalita, P. K.; Datta, P.; *J Basic & Appl. Engg. Res*, **2015**, *19*, 1785-89.

Patent: -

Book/Book Chapter published

1. Handique, K.; Barman, B.; Kalita, P. K.; Design and stimulation studies of CdTe and CIGS based solar cells using SCAPS-1D.: *Frontiers in Basic Physics and Applications*, Eds. Nath, K. J.; Banik, D. K.; Nath, N. M. and Banik, S. K.; Barnagar College, Barpeta **2020** pp 58-69

2. Nath, S. K.; Kalita, P. K.; Synthesis and characterization of starch capped CuS nanostructures on low molar concentration.: *Spectrum: Recent trends in Multiplinary Research* Eds. Saikia, R.; Eduoxia Research Centre, Guwahati, **2020** pp11-21
3. Handique, K.; Barman, B.; Siboh, D.; Nanung, Y.; Kalita, P. K.; Synthesis and characterization of CdS/PbS core/shell nanocomposites for photovoltaic application.: *Advances in Nuclear Physics and Condensed Matter*, Eds. Singh, L. K.; **2019** pp.182-190
4. Handique, K.; Roy, M.; Kalita, P. K.; On an artificial intelligence based material search engine: *Rengani* Eds. Gogoi, Rijumoni & Gogoi, Ritamoni, Madhavdev Mahavidyala Prakashan, Lakhimpur, **2017** pp.182-189
5. Nath, S. K.; Kalita, P. K.; Chemical synthesis of Cu₂S/PVA quantum dots.: *Treasure Trove*, Eds. Singh, S. S.; B H College Publication, Howly **2016** pp.13-17
6. Roychoudhury, J. P.; Kalita, P. K.; Effect of atmospheric oxidation on chemical synthesis of ZnS nanostructures.: *Treasure Trove*, Eds. Singh, S. S.; B H College Publication, Howly **2016** pp.169-175
7. Kalita, P. K.; Nanotechnology: A technological breakthrough towards a new world of fantasy.: *Science Spectrum*, Eds. Sarma, Kavita.; Bhabani Press, Guwahati **2015** pp.160-183

Research guidance

Post-doc fellow: --

Ph.D scholars:

1. (For ongoing scholars)

(i) Full name of the Scholar: Yowa Nanung

Topic of research: *Studies of opto-electronic properties of transition metal doped CdS/ZnS core/shell nanocomposites.*

Year of PhD degree: Ongoing

(ii) Full name of the Scholar: Khirod Handique

Topic of research: *An investigation on quasi type II nature of CdSe/ZnSe core/shell nanostructures for possible optoelectronic application.*

Year of PhD degree: Ongoing

(iii) Full name of the Scholar: Barnali Barman

Topic of research: *Studies on photoresponse characteristics of chemically synthesised CIGS nanoparticles for Photoconductive devices*

Year of PhD degree: Ongoing

(iv) Full name of the Scholar: Dutem Siboh

Topic of research: *Theoretical and experimental investigation on the effect of shell with emphasis to optoelectronic properties of ZnSe/ZnS core/shell quantum dots.*

Year of PhD degree: Ongoing

2. (For degree awarded scholars)

(i) Full name of the Scholar: Bandana Das

Title of the thesis: *Synthesis and characterization of rare earth metal doped CdSe nanostructures for their possible device application*

Year of PhD degree: 2018

Present occupation: Assistant Prof, Pandu College, Guwahati

(ii) Full name of the Scholar: Sujata Deb

Title of the thesis: *A study on growth and optical properties of ZnO/ZnS core/shell nanocomposites and their application in optoelectronic devices*

Year of PhD degree: 2017

Present occupation: Assistant Prof, Royal Global University, Guwahati

(iii) Full name of the Scholar: Rhituraj Saikia

Title of the thesis: *Growth and characterization of CdSe/CdS core/shell nanostructures for application in solar cell*

Year of PhD degree: 2015

Present occupation: Director, Eudoxia Research Centre, Guwahati

Course/Conference/Workshop organized

1. International Conference on Advances in Nano-optoelectronics and its Application (ICANOPA-2020) by Department of Physics, Rajiv Gandhi University, Arunachal Pradesh, India

Duration: 12 October-14 October 2020

Role: *Convenor*

Course/Conference/Workshop etc. attended

1. Delivered an invited talk in Workshop, *Frontiers in Basic Physics and Applications* an National Workshop held at Department of Physics, Baranagar College, Barpeta, Assam, India during 21August-22August,2020.

Title of the presentation/talk: *Physics of Quantum dots and Core/Shell Nanomaterials*

2. Delivered an invited talk in Workshop on Research Methodology (WORAM-2020) an International Workshop held at Eudoxia Research Centre, Guwahati, Assam, India during 05April-11April, 2020.

Title of the presentation/talk: *Research Methodology*

3. Delivered an invited talk in International Conference on New Frontiers in Engineering and Science conference (*INFES-2019*) an International Conference held at Eudoxia Research Centre, Guwahati, Assam, India during 23 February 2019.

Title of the presentation/talk: *Beauty of Quantum dots*

4. Delivered an invited talk in Himalayan University, a one day Workshop held at Department of Physics, Himalayan University, Itanagar, Arunachal Pradesh, India during 06 February 2019.

Title of the presentation/talk: *Advances in nanoscience & nanotechnology*

5. Delivered two invited lectures in Workshop *Nano-Electronics and Related disciplines* an National Workshop held at Department of Electronics and Communication Technology, Gauhati University, Assam,. India during 01August-06August, 2017.

Title of the presentation/talk: *(1) Thin films optoelectronics & (2) Core/shell nanostructures*

Sponsored Project
