

CURRICULUM VITAE

Dr. Ramakanta Naik

Asst. Professor
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Personal Details

Date of Birth : 14th April 1981
Sex : Male
Nationality : Indian
Marital Status : Married

Teaching Experience

- Worked as Asst. Professor in Physics at APEX Institute of Technology and Management, Pahala, Bhubaneswar. I taught "*Physics of Semiconductor Device*" to the B.Tech students. (*1 year 2month*)
- Worked as Guest faculty in Physics Department, Utkal University from January 2012-May 2012. I taught *Statistical Physics* to the M.Sc. students. (*5months*)
- Worked as DST-INSPIRE Faculty at Physics Department, Utkal University, Bhubaneswar from 2nd July 2012-30th June 2017. I taught the courses *Advanced Condensed Matter Physics* (special paper), *Mathematical methods in Physics*, *Statistical Physics*, *Modern Physics and Optics lab*, *Condensed Matter Lab*. (*5 years*)
- Worked as Asst. Professor in Physics at CIPET, HLC, Bhubaneswar from 17.07.2017-11.10.2018. I taught the subjects *Physics*, *Semiconductor Physics*, *Materials Science* to M.Sc. Tech (Material Science) students. (*1 year 3month*)
- Currently working as Asst. Professor in Physics at ICT-IOC, Bhubaneswar from 22.10.2018. I am teaching the subjects *Physics and Electronics* to Int. M.Tech. (Chemical Engineering) students.

Post doctoral Experience

- Research Associate at Indian Institute of Science, Bangalore, India, (1st August 2009-30th April 2011) *1 year 9 month*.

Academic Credentials:

2004 –2009 Research Scholar
Department of Physics
Indian Institute of Science, Bangalore – 560 012, India
Title of the thesis: **Photo and thermal induced studies on Sb/As₂S₃ multilayered and (As₂S₃)_{1-x}Sb_x thin films.**
Thesis advisor: Professor K. S. Sangunni

- 2001 – 2003: Master of Science in Physics (1st class 70%)
 P.G Department of Physics, Utkal University, Bhubaneswar, Odisha
- 1998 – 2001: Bachelor of Science in Physics Hons (1st class with Distinction, 83% in Hons)
 S. V. M College, Utkal University, Bhubaneswar, Odisha
- 1996-1998 : +2 Science (1st class, 76%)
 Ravenshaw College, Cuttack, Odisha
- 1996 : HSC Exam (1st class, 86%)
 Nalibar High School, BSE, Odisha

Research Interests:

To do research in “Thin film semiconductor devices and their characterisation”. Specifically, I am interested in

- Photo-induced inter-diffusion in amorphous multilayer thin films.
- Optical and Non-linear optical effects in Amorphous semiconductors
- Topological insulating materials
- Ion irradiation studies on chalcogenide materials
- Solar cell materials
- Nano structured amorphous materials

Publications:

1. Light and heat induced interdiffusion in Sb/ As₂S₃ nano-multilayered film
Ramakanta Naik, R. Ganesan, K.V.Adarsh, K. S. Sangunni, V.Takats and S. Kokenyesi
Journal of Non-Crystalline Solids, 355, 1939-1942, (2009) **IF: 2.929**
<https://doi.org/10.1016/j.jnoncrysol.2009.05.062>
2. In situ pump probe optical absorption studies on Sb/As₂S₃ nanomultilayered film
Ramakanta Naik, R. Ganesan, K.V.Adarsh, K. S. Sangunni, V.Takats and S. Kokenyesi
Journal of Non-Crystalline Solids, 355, 1943-1946(2009) **IF: 2.929**
<https://doi.org/10.1016/j.jnoncrysol.2009.05.061>
3. X-ray Photoelectron Spectroscopic Studies on Se/As₂S₃ and Sb/As₂S₃ nanomultilayered film
Ramakanta Naik, K.V.Adarsh, K. S. Sangunni, T. Shripathi, V. Takats and S. Kokenyesi
Journal of Non-Crystalline Solids, 355, 1836-1839 (2009) **IF: 2.929**
<https://doi.org/10.1016/j.jnoncrysol.2009.05.064>
4. Kinetics and Chemical Analysis of Photo induced inter diffusion in nanolayered Se/As₂S₃ films.
 K.V. Adarsh, ***Ramakanta Naik***, K.S. Sangunni, S.Kokenyesi, H. Jain and A. C. Miller
Journal of Applied Physics, 104, 053501-053507 (2008). **IF: 2.286**
<https://doi.org/10.1063/1.2973460>
5. Compositional dependence on the optical properties of amorphous As_{2-x}S_{3-x}Sb_x thin films.
Ramakanta Naik, R. Ganesan and K.S. Sangunni
Thin Solid Films, 518, 5437-5441 (2010) **IF: 2.030**
<https://doi.org/10.1016/j.tsf.2010.04.009>
6. Photo induced optical changes in Sb/As₂S₃ multilayered film and (As₂S₃)_{0.93}Sb_{0.07} film of equal thickness.
Ramakanta Naik*, R.Ganesan , K.S. Sangunni

- Journal of Alloys and Compounds*, 505,249-254 (2010) **IF: 4.650**
<https://doi.org/10.1016/j.jallcom.2010.06.039>
7. Temperature dependent optical constants of amorphous Ge₂Sb₂Te₅ thin films.
 Vinod E. M, **Ramakanta Naik**, A. P. A. Faiyas, R. Ganesan, K. S. Sangunni
Journal of Non-Crystalline Solids, 356, 2172-2174 (2010) **IF: 2.929**
<https://doi.org/10.1016/j.jnoncrysol.2010.07.039>
 8. Optical properties change in amorphous (As₂S₃)_{0.87}Sb_{0.13} thin films by photo and thermal induced process.
Ramakanta Naik*, R.Ganesan ,K.S. Sangunni
Materials Chemistry and Physics, 125,505-509 (2011) **IF:3.408**
<https://doi.org/10.1016/j.matchemphys.2010.10.025>
 9. Photoinduced transparency of three photon absorption coefficient at femtosecond time scales in Ge₁₆As₂₉Se₅₅ thin films.
 A.R.Barik, **Ramakanta Naik**, K.V.Adarsh, D.Zhao, Himanshu Jain
Applied Physics Letter, 98,201111-201113 (2011) **IF:3.597**
Also Virtual Journal of Ultrafast Sciences-June 2011
<https://doi.org/10.1063/1.3591978>
 10. Photo and thermal induced effects on (As₂S₃)_{0.85}Sb_{0.15} amorphous thin films.
Ramakanta Naik*, R.Ganesan, K.S.Sangunni
Journal of Non-Crystalline Solids, 357,2344-2348 (2011) **IF: 2.929**
<https://doi.org/10.1016/j.jnoncrysol.2010.11.067>
 11. Photo-induced changes in the optical properties of thermally evaporated As₄₀Se₅₀Sb₁₀ films.
Ramakanta Naik*, Arpitha Jain, E.M. Vinod, R.Ganesan, K.S.Sangunni
Physica Status Solidi C, 8(9), 2785-2788 (2011)
<https://doi.org/10.1002/pssc.201084130>
 12. Kinetics of photodarkening at room and liquid helium temperatures in a As₄₅Se₅₅ thin film.
 A.R.Barik, **Ramakanta Naik**, K.V.Adarsh, R.Ganesan.K.S.Sangunni, D.Zhao,Himanshu Jain
Physica Status Solidi C 8(9), 2770-2772 (2011)
<https://doi.org/10.1002/pssc.201084079>
 13. Effect of Te addition on the optical properties of As₂S₃ thin film.
Ramakanta Naik*, C.Kumar, R. Ganesan, K. S. Sangunni
Materials Chemistry and Physics, 130,750-754 (2011) **IF:3.408**
<https://doi.org/10.1016/j.matchemphys.2011.07.062>
 14. Role of rigidity and temperature in the kinetics of photodarkening in Ge_xAs_(45-x)Se₅₅ thin films
 A.R.Barik, **Ramakanta Naik**, K.V.Adarsh, R.Ganesan, D.Zhao,Himanshu Jain
Optics Express, 19(14), 13158-13163 (2011) **IF: 3.669**
<https://doi.org/10.1364/OE.19.013158>
 15. Giant Photoinduced optical bleaching at room and liquid helium temperatures in Sb/As₂S₃ multilayered films
Ramakanta Naik*, K.V.Adarsh, R.Ganesan, K.S. Sangunni
Optics Communications, 284, 5319-5322 (2011) **IF: 2.125**
<https://doi.org/10.1016/j.optcom.2011.07.060>
 16. Compositional dependence optical properties change in As₄₀Se_{60-x}Sb_x chalcogenide thin films

- Ramakanta Naik***, Arpitha Jain, R.Ganesan, K. S. Sangunni
Thin Solid Films, 520, 2510-2513 (2012) **IF: 2.030**
<https://doi.org/10.1016/j.tsf.2011.10.029>
17. Optical properties change in $Sb_{40}S_{40}Se_{20}$ thin films by light induced effect.
Ramakanta Naik*, Sanjit K Parida, C.Kumar, R. Ganesan, K.S.Sangunni
Journal of Alloys and Compounds, 522, 172-177 (2012) **IF: 4.650**
<https://doi.org/10.1016/j.jallcom.2012.01.144>
18. Signature of $Ge_2Sb_2Te_5$ film at structural transitions.
E.M. Vinod, **Ramakanta Naik**, R.Ganesan, K. S. Sangunni
Journal of Non-Crystalline Solids, 358, 2927-2930 (2012) **IF: 2.929**
<https://doi.org/10.1016/j.jnoncrysol.2012.07.021>
19. Intensity-dependent transient photodarkening in visible and far infrared absorption spectra of $As_{50}Se_{50}$ thin film
A.R. Barik, **Ramakanta Naik**, Udaya Deshpandey, T.Shripathi and K. V.Adarsh
Materials Chemistry and Physics, 138, 479-483 (2013) **IF:3.408**
<https://doi.org/10.1016/j.matchemphys.2012.11.077>
20. Optical properties change with the addition and diffusion of Bi to As_2S_3 in the Bi/ As_2S_3 bilayer thin film
Ramakanta Naik*, R. Ganesan, K. S. Sangunni
Journal of Alloys and Compounds, 554, 293-298(2013) **IF: 4.650**
<https://doi.org/10.1016/j.jallcom.2012.11.198>
21. Unusual observation of fast photo darkening and slow photo bleaching a- $GeSe_2$ thin film.
A.R. Barik, **Ramakanta Naik**, and K. V. Adarsh
Journal of Non-Crystalline Solids, 377, 179-182 (2013) **IF: 2.929**
<https://doi.org/10.1016/j.jnoncrysol.2013.01.038>
22. Laser-induced optical properties change in $Sb_{10}S_{40}Se_{50}$ chalcogenide thin films: An investigation through FTIR and XPS measurements
Ramakanta Naik*, Shuvendu Jena, R. Ganesan, N.K.Sahoo.
Physica Status Solidi B, 251(8) 661-668(2014) **IF:2.291**
<https://doi.org/10.1002/pssb.201350060>
23. Thickness effect on the optical properties of Bi/ As_2S_3 bilayer thin films
Ramakanta Naik*, R. Ganesan
Journal of Non-Crystalline Solids, 385, 142-147 (2014) **IF: 2.929**
<https://doi.org/10.1016/j.jnoncrysol.2013.11.021>
24. Laser induced optical photo darkening in $Sb_{30}S_{40}Se_{30}$ chalcogenide thin films
Ramakanta Naik*, Namita Behera, R.Ganesan
Advanced Science Letters, 20, 559-564 (2014) **IF:1.25**
<https://doi.org/10.1166/asl.2014.5372>
25. Optimization of selenization and sintering conditions of DC magnetron sputtered Ag/In/Ag/In multi-layer metal precursor for preparation of $AgInSe_2$ thin films
R. Panda, M. Panda, H. Rath, P. Dash, **Ramakanta Naik**, U.P. Singh, N.C. Mishra
Advanced Science Letters, 20, 631-634 (2014) **IF:1.25**
<https://doi.org/10.1166/asl.2014.5425>
26. Compositional dependence properties change in $S_{40}Se_{60-x}Sb_x$ alloys.

- Ramakanta Naik***, C.Kumar R. Ganesan, K. S. Sangunni
Indian Journal of Pure and Applied Physics, 52, 444-449 (2014) **IF:0.766**
<http://14.139.47.23/index.php/IJPAP/article/view/2274>
27. Effect of Sb addition on optical properties change in As₄₀Se₆₀ chalcogenide thin films
Ramakanta Naik*
International Journal of Nano and Biomaterials 5(4) 236-242 (2014)
<https://doi.org/10.1504/IJNBM.2014.069813>
28. Photo induced optical bleaching in Ge₁₂Sb₂₅S₆₃ amorphous chalcogenide thin films: Effect of 532 nm laser illumination.
Ramakanta Naik*, Shuvendu Jena, R. Ganesan, N.K.Sahoo
Laser Physics, 25, 036001-036008 (2015) **IF:1.333**
<https://doi.org/10.1088/1054-660X/25/3/036001>
29. Effect of compositional variations on the optical properties of Sb_xSe_{60-x}S₄₀ thin films.
Ramakanta Naik*, R.Ganesan
Thin Solid Films, 579,95-102 (2015) **IF: 2.030**
<https://doi.org/10.1016/j.tsf.2015.02.072>
30. Effect of laser irradiation on optical properties of Ge₁₂Sb₂₅Se₆₃ amorphous chalcogenide thin films
Ramakanta Naik*, Shuvendu Jena, R. Ganesan, N.K.Sahoo
Indian Journal of Physics, 89 (10) 1031-1040 (2015) **IF:1.40**
<https://doi.org/10.1007/s12648-015-0678-8>
31. Influence of laser irradiation on the optical properties of As₄₀Se₄₅Sb₁₅ thin films by thermal evaporation technique.
Ramakanta Naik*
Advanced Materials Letters 6(6),531-537 (2015) **IF:1.46**
 DOI: 10.5185/amlett.2015.5753
32. Optical property modification by Sb addition into As₄₀Se₆₀ alloys
Ramakanta Naik*, Bibekananda Das
Orissa Journal of Physics, 23(1), 49-60 (2016)
33. Effect of Laser Irradiation on the Optical Properties of As₄₀Se₅₅Sb₅ Thin Films
Ramakanta Naik*, T. Panda, R. Ganesan
Advanced Science Letters, 22, 294-300 (2016)
<https://doi.org/10.1166/asl.2016.6885>
34. Thickness effect on nano-multilayered Sb/As₂S₃ chalcogenide thin films
Ramakanta Naik*
Advanced Materials Letters 7(10), 821-825 (2016) **IF:1.46**
[DOI:10.5185/amlett.2016.6339](https://doi.org/10.5185/amlett.2016.6339)
35. Optical properties change in laser induced Te/As₂Se₃ chalcogenide thin film.
 Mukta Behera, **Ramakanta Naik***
Applied Physics A, 122, 913-921 (2016) **IF:1.810**
<https://doi.org/10.1007/s00339-016-0451-7>
36. Characterization of thermally evaporated CZTSe thin films used by non-stoichiometric alloys.
 Chinnaiyah Sripan, R. Ganesan, **Ramakanta Naik***, Annamraju Kasi Viswanath
Optical Materials, 62, 199-204 (2016) **IF:2.779**

- <https://doi.org/10.1016/j.optmat.2016.09.070>
37. Laser induced optical properties change in Bi doped $\text{As}_{40}\text{S}_{60}$ chalcogenide thin films studied by FTIR and XPS
*Ramakanta Naik**, Pragyan Paramita Sahoo, C. Sripan, R. Ganesan
Optical Materials, 62, 211-218 (2016) **IF:2.779**
<https://doi.org/10.1016/j.optmat.2016.10.004>
38. Photo darkening in $\text{As}_{50}\text{Se}_{50}$ thin films by 532nm laser irradiation.
*Ramakanta Naik**, C. Sripan, R. Ganesan
Optics and Laser Technology, 90, 158-164 (2017) **IF:3.233**
<https://doi.org/10.1016/j.optlastec.2016.11.023>
39. Laser induced Te diffusion in amorphous $\text{As}_{50}\text{Se}_{50}$ thin films probed by FTIR and XPS
Mukta Behera, Rozalin Panda, *Ramakanta Naik**
Indian Journal of Physics 91, 555-562 (2017) **IF:1.40**
<https://doi.org/10.1007/s12648-016-0954-2>
40. Optical band gap tuning by laser induced Bi diffusion into As_2Se_3 film probed by spectroscopic technique
Mukta Behera, Sunita Behera, *Ramakanta Naik**
RSC Advances, 2017, 7, 18428 - 18437 **IF:3.19**
<https://doi.org/10.1039/C7RA00922D>
41. Role of Te on the spectroscopic properties of $\text{As}_{50}\text{Se}_{40}\text{Te}_{10}$ thin films: An extensive study by FTIR and Raman spectroscopy
Mukta Behera, Parbati Naik, Rozalin Panda, *Ramakanta Naik**
Optical Materials, 66, 2017, 616-622 **IF:2.779**
<https://doi.org/10.1016/j.optmat.2017.03.015>
42. Laser induced optical properties change by photo diffusion of Sb into As_2Se_3 chalcogenide thin films.
Prabhudutta Pradhan, *Ramakanta Naik**, N. Das, Ajit Kumar Panda
Optics and Laser Technology, 96, 158-165 (2017) **IF:3.233**
<https://doi.org/10.1016/j.optlastec.2017.05.033>
43. Band gap tuning in $\text{As}_{40}\text{Se}_{53}\text{Sb}_{07}$ thin films by 532 nm laser irradiation: An optical investigation by spectroscopic techniques.
P. Pradhan, *Ramakanta Naik*, N. Das, Ajit Kumar Panda
Optical Materials, 75, 699-709 (2018) **IF:2.779**
<https://doi.org/10.1016/j.optmat.2017.11.037>
44. Influence of Ge addition on the optical properties of $\text{As}_{40}\text{Se}_{50}\text{Ge}_{10}$ thin films: An investigation through FTIR and Raman spectroscopy
*Ramakanta Naik**, J. Pradhan, S. Chinnaiyah, R. Ganesan
Phase Transition, 91(5), 477-489 (2018) **IF:1.004**
<https://doi.org/10.1080/01411594.2018.1424337>
45. Effect of Bi addition on the optical properties of $\text{Ge}_{30}\text{Se}_{70-x}\text{Bi}_x$ thin films
Adyasha Aparimita, M. Behera, C. Sripan, R. Ganesan, S. Jena, *Ramakanta Naik**
Journal of Alloys and Compounds, 739, 997-1004, (2018) **IF: 4.650**
<https://doi.org/10.1016/j.jallcom.2017.12.303>
46. Photo-and thermal induced properties change in Ag diffusion into $\text{Ag}/\text{As}_2\text{Se}_3$ thin films
Adyasha Aparimita, C. Sripan, R. Ganesan, *Ramakanta Naik**
Applied Physics A, 124, 267-276 (2018) **IF:1.810**
<https://doi.org/10.1007/s00339-018-1692-4>

47. Annealing induced AgInSe₂ formation from Ag/In/Ag/In multilayer film for solar cell absorbing layer
R. Panda, M.Panda, H.Rath, U.P.Singh, **Ramakanta Naik***, N.C.Mishra,
Optical Materials, 84, 618-624 (2018) **IF:2.779**
<https://doi.org/10.1016/j.optmat.2018.07.049>
48. Low temperature growth of γ phase in thermally deposited In₂Se₃ thin films
R. Panda, **Ramakanta Naik***, N.C. Mishra
Phase Transition, 91(8),862-871, 2018 **IF:1.004**
<https://doi.org/10.1080/01411594.2018.1508680>
49. Influence of thermal annealing on optical and structural properties change in Bi doped Ge₃₀Se₇₀ thin films
Adyasha Aparimita, C.Sripan, R. Ganesan, S. Jena, **Ramakanta Naik***
Phase Transition, 91(8),872-886, 2018 **IF:1.004**
<https://doi.org/10.1080/01411594.2018.1506882>
50. Thermal annealing induced evolution of AgIn₅Se₈ phase from Ag/In₂Se₃ bilayer thin film
R. Panda, **Ramakanta Naik***, N.C. Mishra
Journal of Alloys and Compounds, 778, 819 (2019) **IF: 4.650**
<https://doi.org/10.1016/j.jallcom.2018.11.142>
51. Photo and thermally induced properties change in Bi/Ag/Se trilayer thin film
Ramakanta Naik*, Alok Kumar Rout, A.Aparimita, C.Sripan, R.Ganesan
Phase Transitions, 92(1) 65-78 (2019) **IF:1.004**
<https://doi.org/10.1080/01411594.2018.1550638>
52. Quantification of nonlinear absorption in ternary As-Sb-Se chalcogenide glasses
P.Pradhan, P.Khan, A.R.Aswin, K.V.Adarsh, **R. Naik**, N.Das, A.K.Panda
Journal of Applied Physics, 125 (1), 015105-5 (2019) **IF: 2.286**
<https://doi.org/10.1063/1.5063864>
53. Photo and thermal induced Bi₂Se₃ formation from Bi/GeSe₂ hetero junction layer for topological insulator
Adyasha Aparimita, C.Sripan, R. Ganesan, **Ramakanta Naik***
Optical Materials, 89,157-163 (2019) **IF:2.779**
<https://doi.org/10.1016/j.optmat.2019.01.043>
54. Structural and Morphological Modifications of AgInSe₂ and Ag₂Se₃ composite thin films on 140 MeV Ni ion irradiation
R. Panda, M.Panda, H. Rath, B. N. Dash, K. Asokan, U.P. Singh, **Ramakanta Naik**, N.C. Mishra
Applied Surface Science, 479, 997-1005 (2019) **IF:6.182**
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55. Thermal annealing induced evolution of Bi₃Se₂ topological phase from Bi/As₂Se₃ thin film.
Mukta Behera, N.C.Mishra, **Ramakanta Naik***
Physica B, 560, 51-59 (2019) **IF:1.902**
<https://doi.org/10.1016/j.physb.2019.02.034>
56. Bismuth thickness dependent structural and electronic properties of Bi/As₂Se₃ bilayer thin films
Mukta Behera, N.C.Mishra, **Ramakanta Naik***
Indian Journal of Physics, 1-7 (2019) **IF:1.4**
<https://doi.org/10.1007/s12648-019-01484-w>
57. Influence of Bi content on linear and nonlinear optical properties of As₄₀Se_{60-x}Bi_x chalcogenide thin films
Mukta Behera, C.sripan, R.Ganesan, N.C.Mishra, **Ramakanta Naik***
Current Applied Physics, 19(8), 884-893 (2019) **IF:2.281**
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58. Annealing induced transformations in structural and optical properties of $\text{Ge}_{30}\text{Se}_{70-x}\text{Bi}_x$ thin films
 Adyasha Aparimita, C.Sripan, R. Ganesan, **Ramakanta Naik**
Phase Transitions, 92 (8), 683-698 (2019) **IF:1.004**
<https://doi.org/10.1080/01411594.2019.1631962>
59. Structural, linear and non-linear optical properties of annealed and irradiated Ag/Se bilayer thin films for optoelectronic applications
Ramakanta Naik ,Adyasha Aparimita, C. Sripan, R.Ganesan
Optik, 194, 162894 (2019) ISSN: 0030-4026 **IF-2.187**
<https://doi.org/10.1016/j.ijleo.2019.05.100>
60. Thermal annealing induced structural, optical and electrical properties change in $\text{As}_{40}\text{Se}_{60-x}\text{Bi}_x$ chalcogenide thin films
 M.Behera, N.C.Mishra, R.Naik, C.Sripan, R.Ganesan,
AIP Advances,9,095065 (2019) ISSN: 2158-3226 **IF:1.627**
<https://doi.org/10.1063/1.5111019>
61. Laser irradiation induced structural, microstructural and optical properties change in Bi doped $\text{As}_{40}\text{Se}_{60}$ thin films
 M.Behera, N.C.Mishra, R.Naik
Phase Transitions, 93,158-167 (2020) **IF:1.004**
<https://doi.org/10.1080/01411594.2019.1687895>
62. Laser induced photo bleaching in Bi doped $\text{Ge}_{30}\text{Se}_{70}$ amorphous thin film
 Adyasha Aparimita, C. Sripan, R. Ganesan, **Ramakanta Naik***
Applied Physics A, 126 ,5 (2020) 5, 0947-8396 **IF:1.810**
<https://doi.org/10.1007/s00339-019-3194-4>
63. Linear and nonlinear optical properties change in Ag/GeS heterostructure thin films by thermal annealing and laser irradiation
Ramakanta Naik*, A. Aparimita,S. Patel, C. Sripan, R. Ganesan,
Optical and Quantum Electronics, 52, 136 (2020) **IF:1.842**
<https://doi.org/10.1007/s11082-020-2245-6>
64. Influence of low energy Ag ion irradiation on microstructural and optical properties of Bi/GeSe₂bilayer thin film
 Adyasha Aparimita,Satya P. Sahoo, C.Sripan, R.Ganesan, **Ramakanta Naik**
Applied Physics A, 126, 203 (2020) **IF:1.810**
<https://doi.org/10.1007/s00339-020-3390-2>
65. Role of thermal and photo annealing on nonlinear optical response of $\text{Ge}_{30}\text{Se}_{55}\text{Bi}_{15}$ thin films
 A. Aparimita, P. Khan, A. R. Aswin, K.V. Adarsh, R. Naik
Journal of Applied Physics, 127, 075102 (2020) **IF: 2.286**
<https://doi.org/10.1063/1.5132579>
66. Influence of 120 MeV Ag Ion Irradiation on the structural, optical and electronic properties of $\text{As}_{40}\text{Se}_{60-x}\text{Bi}_x$ thin films
 Mukta Behera, N.C.Mishra, S.A.Khan, **Ramakanta Naik***
Journal of Non-Crystalline Solids, 544,120191 (2020) **IF: 2.929**
<https://doi.org/10.1016/j.jnoncrysol.2020.120191>
67. Influence of solvent on solution processed $\text{Cu}_2\text{ZnSnS}_4$ nanocrystals and annealing induced changes in the optical, structural properties of CZTS film.
 C. Sripan, D. Alagarasan, S. Varadharajaperumal, **Ramakanta Naik**, R. Ganesan
Current Applied Physics, 20,925-930 (2020) **IF:2.281**
<https://doi.org/10.1016/j.cap.2020.05.003>
68. Role of annealing temperature on optimizing the linear and nonlinear optical properties of

As₄₀Se₅₀Ge₁₀ films

D.Sahoo,P.Priyadarshini,A.Aparimita,D.Alagarasan,S.Vardharajperumal,R.Ganesan,**R. Naik***
RSC Advances,10, 26675-26685 (2020) **IF:3.19**

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69. Optimization of nonlinear refractive index and 3rd order optical susceptibility $\chi^{(3)}$ in As-Se film by annealing at different temperature

D.Sahoo,P.Priyadarshini,D.Rambabu,D.Alagarasan,S.Vardharajperumal,R.Ganesan,**R. Naik***
Optik, 219 (2020)165286 **IF-2.187**

<https://doi.org/10.1016/j.ijleo.2020.165286>

70. Switching of linear and nonlinear optical parameters in As₃₅Se₆₅ thin films upon annealing at both above and below T_g

P.Priyadarshini,D.Sahoo,A.Aparimita,DAlagarasan,S.Vardharajperumal,R.Ganesan,**R. Naik***
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71. Influence of top layer on the linear and nonlinear optical parameters of Ag (Te)/As₅₀Se₅₀ bilayer thin films

D. Sahoo, P. Priyadarshini, D. Alagarasan, S. Vardharajperumal, R. Ganesan, **R. Naik***
Accepted in **Indian Journal of Physics**

Under Review

72. Tuning of linear and nonlinear optical parameters in As₄₀Se₅₀Te₁₀ thin films by different annealing temperatures

D.Sahoo,P.Priyadarshini,A.Aparimita,DAlagarasan,S.Vardharajperumal,R.Ganesan,**R. Naik***
Under Review: **Optics and Laser Technology**

73. Amorphous-crystalline transformation induced switching in both linear and nonlinear parameters in annealed As₅₀Se₅₀ thin films

D.Sahoo,P.Priyadarshini,D.Rambabu,DAlagarasan,S.Vardharajperumal,R.Ganesan, **R. Naik***
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Publications Details: (International: 66 National: 05)

AIP Publication: Journal of Applied Physics-**03**, Applied Physics Letters:**01**; AIP Advances: **01**

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- (i) In situ pump probe optical absorption studies on Sb/As₂S₃ nano-multilayered film.
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 (ii) Enhancement of $\chi^{(3)}$ by Sb Substitution in $\text{As}_{40}\text{Se}_{50}\text{Ge}_{10}$ Amorphous Semiconducting Thin Films
 R.Naik, **AbhilashParija**, SibaprasadMohapatra
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Research Projects

1. Photo induced optical property study in chalcogenide thin films, DST, India 35 lakh, **Completed ,2012-2017 No. DST/INSPIRE Faculty Award /2011 PH-IFA-11, 11th May 2012**
2. Thermal and light stimulated diffusion in Bi related chalcogenide thin films BRNS, DAE **Completed, 24.48 lakh , 2016-2019 No.37(3)/14/02/2016-BRNS/37016**
3. Swift heavy ion induced mixing of Bi/As₂Se₃ bi-layers for tailoring the properties of the Bi/As₂Se₃ composite system, IUAC, New Delhi, 5.79 lakh, **Completed -2015-2018 No. IUAC/XIII.7/UFR-58306**

Book/Chapter Published

- 1: Photo induced studies on chalcogenide thin films-by *Ramakanta Naik*, LAMBERT Academic Publishing, ISBN- 978-3-659-14617-6 (23.07.2012) (Book)
2. Influence of Bi additives on the optical properties of Chalcogenides- by *Ramakanta Naik & Pragyana Paramita Sahoo*, LAMBERT Academic Publishing, ISBN- 978-3-659-82989-5 10.3.16 (Book)
3. Laser induced optical properties change in Sb doped amorphous materials- by *Ramakanta Naik & Namita Behera*, LAMBERT Academic Publishing, ISBN- 978-3-659-86274-8 (11.04.2016) (Book)
4. *Pathogenesis, biology, and Immunology of tuberculosis* (Book Chapter) in the book entitled “Nanotechnology Based Approaches for Tuberculosis Treatment” Academic Press (19.06.20) Ravi Bandaru, Deviprasad Sahoo, Ramakanta Naik, Rambabu Dandela
5. *Oral drug delivery of nanomedicine* (Book chapter) in the book entitled “Theory and Applications of Nonparenteral Nanomedicines” Academic Press (2021) Deviprasad Sahoo, Ravi Bandaru, Ramakanta Naik, Rambabu Dandela, Sangram Samal

Research Guidance

Ph. D: 04 (On going) 01 submitted

1	Ion irradiation induced modifications in structural and Opto-electronic properties of AgInSe ₂	Rozalin Panda (UU)	(13.05.2014) Submitted
2	Thermal, Swift Heavy Ion Irradiation and Photo Induced Modifications in Bi doped As ₂ Se ₃ Thin Film	Mukta Behera (UU)	(25.09.2014) Pre-submission
3.	Structural and optical properties modification by light, heat and ion irradiation on Bi doped chalcogenide materials	Adyasha Aparimta(UU)	(24.03.2017) Pre-submission
4	Thermal annealing induced properties change in Te and Ge doped As-Se thin films	Deviprasad Sahoo (ICT)	Continuing (27.03.2019)
5	Thermal and light induced optical and structural changes in Bi doped thin films	Priyanka Priyadarshini	Continuing (07.11.2019)

M. Phil: 10 (Completed)

1	Photo induced effects in chalcogenide amorphous materials	Laxmidhara Nayak	28.01.13
2	Multilayer chalcogenide thin films and its applications	Karunakara Sahoo	28.01.13
3	Optical properties change in Sb ₃₀ Se ₃₀ S ₄₀ chalcogenide thin film	Namita Behera	28.02.14
4	Photo induced optical properties change in Bi/As ₂ Se ₃ bilayer thin film.	Sunita Behera	28.02.14
5	Effect of Te addition and diffusion in As ₂ Se ₃ thin film	Tribikram Panda	26.09.14
6	Optical properties change in Sb ₁₅ As ₄₀ Se ₄₅ thin film	Girija S. Mohapatra	26.09.14
7	Effect of Bi addition on the optical properties of Bi ₆ As ₄₀ S ₅₄ chalcogenide thin film	Pryagyan P.Sahoo	11.09.15

8	Optical Properties study of $As_{50}Se_{40}Te_{10}$ thin film	Parbati Naik	19.05.16
9	Effect of Ge addition to the optical properties of $As_{50}Se_{50}$ chalcogenide thin film	Jagnaseni Pradhan	19.05.16
10	Structural and Optical properties study of $Ge_{30}Se_{70}$ and $Ge_{30}Se_{55}Bi_{15}$ thin films	Rituparna Samal	16.05.17

M.Sc., M.Sc.Tech and UG Projects: 32 (Completed) 02 Cont.

1	Optical properties of As_2S_3 chalcogenide thin films: A Review	M.Sc. Project Bibhuti B. Jena (UU)	12.11.14
2	Carbon Nanotube: A Review	M.Sc. Project Pragyan P. Swain (UU)	11.11.14
3	Investigation of the optical property of $Sb_{40}S_{40}Se_{20}$ thin film	M.Sc. Project Bismaya Ratan Biswal	21.11.15
4	Effect of Sb addition on the optical properties of As_2Se_3 thin film	M.Sc. Project Bibekananda Das	21.11.15
5	Optical properties study of $Sb_{10}S_{40}Se_{50}$ thin film	M.Sc. Project Manoranjan Sethi	22.11.16
6	Structural and optical characterization of $As_{40}S_{60}$ thin film	M.Sc. Project Anil Kumar Rout	22.11.16
7	Optical property study of Sb_2S_3 , Ag/Sb_2S_3 and Bi/Sb_2S_3 thin films	Goutami Kar M.Sc. Project	19.06.17
8	Investigation of optical properties change of thermally evaporated laser induced As_2Se_3 thin films	Summer Project Satyabrata Raj	05.08.13
8	Properties study of Bismuth ferrite ($BiFeO_3$) by X-ray Diffraction	Summer Project Saumyashree Senapati	30.06.14
9	Optical properties study of As_2Se_3 thin film	Summer Project Tabsum Rehanuma	30.06.14
10	Preparation, properties and uses of chalcogenide materials	M.Sc. Project Karubaki Pattanaik	26.06.14
11	Structure determination of some samples by X-Ray Diffraction Technique	Summer Project Ganesh Kumar Nayak	2015
12	Investigation of the optical properties of thermally evaporated $As_{50}Se_{50}$ thin film.	Summer Project Sibani Shankar Sahoo	29.06.15
13	Optical properties of $As_{40}Se_{60}$ & $As_{40}Se_{50}Sb_{10}$ thin film	M.Sc. Project Biswashri B. Das	22.06.15
14	Effect of Ge addition into $As_{45}Se_{55}$ thin film	M.Sc. Project Santosh Sahoo	05.02.16
15	Optical properties study of $Bi_{10}As_{40}Se_{50}$ chalcogenide thin film	Summer Project Sourav K. Sahu	2015
16	Synthesis and study of SeS thin film	M.Sc. Project (NIT RKL) Prabhat Pradipta	12.07.16
18	Synthesis and characterization of Silver doped Arsenic selenide thin film	Abinash Bhuyan (UU) M.Sc. Project	29.06.2017

19	Photo and thermal induced Ag diffusion Into GeS Thin Films	Sidheswar Patel M.Sc. Tech (CIPET)	28.11.2018
20	Optical and structural property change in Ag/Se bilayer and Bi/Ag/Se trilayer thin films.	Alok Kumar Behera M.Sc. Tech (CIPET)	28.11.2018
21	Photo induced structural and optical properties in Bi doped In_2Se_3 chalcogenide thin films.	Chinmayee Mohapatra M.Sc. Tech (CIPET)	30.08.2019
22	Effect of annealing temperature on the nonlinear optical properties of As_2Se_3 thin films	Subhadarshini Nayak M.Sc. Tech (CIPET)	30.08.2019
23	Linear and nonlinear optical properties in Chalcogenide Thin films	Abhilash Parija M.Sc. Tech (CIPET)	30.08.2019
24	Optical nonlinearity in Ag (Te)/ $\text{As}_{50}\text{Se}_{50}$ bilayer thin films	S.Mohapatra, M.Sc.Tech (CIPET)	30.08.2019
25	Annealing induced structural and optical properties change in Germanium doped Arsenic selenide thin films.	Prajyan Priyadarshini (Utkal University)	23.12.2019
26	Thermal annealing induced optical/structural studies in $\text{As}_{40}\text{Se}_{50}\text{Te}_{10}$ thin films.	Amrit Pritam Nath M.Sc. Tech (CIPET)	23.10.20
27	Annealing induced properties change in $\text{As}_{50}\text{Se}_{50}$ thin films.	Sandipani Patra M.Sc. Tech (CIPET)	23.10.20
28	Optical and structural properties change in GeS thin films upon thermal annealing.	Tapan Naik M.Sc. Tech (CIPET)	23.10.20
29	Time dependent optical properties changes in laser irradiated $\text{As}_{40}\text{Se}_{57}\text{Sb}_{03}$ thin films.	Dharmendra Nayak M.Sc. Tech (CIPET)	23.10.20
30	Effect of laser irradiation on the optical properties of $\text{Ge}_{10}\text{As}_{45}\text{S}_{45}$ thin films at different irradiation time	Satyajit Mohapatra M.Sc. Tech (CIPET)	23.10.20
31	Effect of Bi addition on the physical properties of As_2S_3 thin films	Reshab Pradhan M.Sc. Tech (CIPET)	23.10.20
32	Phase transition in $\text{Ag}_{40}\text{Se}_{40}\text{Te}_{20}$ thin films	Aurobinda Biswal M.Sc. Tech (CIPET)	23.10.20
33	Calculation of optical parameters of $\text{Sb}_{15}\text{S}_{15}\text{Se}_{70}$ thin films by empirical formulas	Sasmita Naik M. Sc. (Utkal Univ)	Cont.
34	Determination of optical constants of As-Se-Sb thin films.	Mahendra Kumar Panda M.Sc.(Utkal Univ)	Cont.

Invited Talks

1. National seminar on "**Current Trends in Physics**": Photo-induced effects in amorphous chalcogenide materials. Physics Department, Utkal University, 3rd January 2015.
2. National Seminar on "**Recent Trends in Physics**": Laser induced optical properties change in Amorphous Chalcogenide Thin films, Maharishi College of Natural Law, 13th -14th Feb, 2016.
3. Resource person in Refresher course in Basic sciences "**From nanoscience to cosmology**" from 22nd February-14th March 2017, Physics Department Utkal University.
4. National Seminar on "**Functional Materials for Emerging Technologies**": Silver doped amorphous semiconducting materials for optical applications, Silicon Institute of Technology, 1st -2nd March 2019.

5. Department Seminar at S.V.M. College: “Energy Matter interaction in amorphous semiconductors” on 28.02.2020.

Online FDP Courses

1. 5-Days online FDP on “DEEKSHARAMBH (Student Induction Programme)”-NIT Patna-10-14th August 2020.
2. 2 Week online FDP on “ICT Tools for Teaching, Learning Process and Institute”-NIT Patna, MNIT Jaipur, PDPM IIITDM Jabalpur, IIT Guwahati and IIT Roorkee-10-21st August 2020.
3. FDP on “Communication strategies for effective leadership”-CET Bhubaneswar-22-26th September 2020.
4. FDP on “Recent Advances in Photonic Materials and its Applications”- CV Raman Global University, Bhubaneswar-28th Sep.-3rd October 2020.
5. FDP on “Recent Trends and Perspectives in Spintronic and Optical Materials”- NIT, Andhrapradesh-26th Oct.-30thOctober 2020.

Members of the scientific community

1. Patron Member of Odisha Physical Society, Membership No-114
2. Annual Member, Indian Science Congress Association, Membership No-120
3. Editorial Member- Heliyon (Cell Publication)

Administrative Responsibilities

- (i) Member, Scrutiny Committee, Utkal University 2015,2016
- (ii) Member, Instrumentation Technical Committee, Utkal University, 2016
- (iii) Coordinator, Add on Course in Physics (Physics Dept.)
- (iv) Organizing Member, SERB Interaction meeting APNTP 2016.
- (v) Convener, National Seminar on "Recent Trends in Physics" 12.03.2016, UU
- (vi) Convener, National Seminar on “International Year of Light" 15.11.2015, UU
- (vii) Convener, UGC Skill based Workshop on "Instrumentation and repairing of Basic Instruments" 17-18, November 2015 and 28-29 March, 2017.
- (viii) Deputy coordinator, M.Sc. Physics entrance examination, Utkal University, 2015, 2016.
- (ix) Instrumentation committee member, ICT-IOC
- (x) Grievance committee member, ICT-IOC
- (xi) Special Cell committee member, ICT-IOC
- (xii) Admission and Examination Committee, ICT-IOC

Reviewer for the Journals

1. **IOP publications:** Journal of Physics D: Condensed Matter Physics, Material Research Express, Semiconductor Science and Technology, Journal of Physics D: Applied Physics
2. **Springer Publications:** Applied Physics A, Indian Journal of Physics, Journal of Electronic Materials
3. **Elsevier publication:** Journal of Alloys and Compounds, Infrared Physics and Technology, Journal of Physics and Chemistry of Solids, Journal of Non-Crystalline Solids, Optical Materials, Chinese Journal of Physics, Physica E, Optik, Materials Chemistry and Physics, Results in Physics, Thin Solid Films, Materials Today: Proceedings, Radiation Physics and Chemistry
4. **Wiley Publication:** Advanced Materials, Journal of the American Ceramic Society, Physica Status Solidi B, Advanced Optical Materials, Physica Status Solidi (RRL)
5. **Nature Publication:** Scientific Reports
6. **RSC Publications:** RSC Advances

7. **ACS Publications:** ACS Applied Materials and Interface
8. **OSA Publications:** Optical Materials Express
9. **Taylor and Francis Publication:** Phase Transitions, Inorganic and Nano-Metal Chemistry
10. **DAE-SSPS conference papers**
11. **Indian Journal of Pure and Applied Physics, (NISCAIR, New Delhi)**

Project Review

1. **Title:** Role of self- assembly and microstructure on the electronic behavior under bending strain of conjugated semiconducting systems in thin films.

PI: Dr hab. Wojciech Igor Pisula, Lodz University of Technology, No. 300052, Panel ST3
National Science Centre, Poland

2. **Title:** Electronic Structure of Rare Earth Doped Group III Nitride Semiconductors

PI: Maciej Janusz Winiarski, Włodzimierz Trzebiatowski Institute of Low Temperature and
Structure Research of the Polish Academy of Sciences
Panel ST3-National Science Centre, Poland

Additional Achievements and awards

1. DST-INSPIRE Faculty Award from Government of India-2012
2. Young Scientist Award 2015, Orissa Physical Society.
3. Qualified in the joint entrance screening test (JEST) 2004.All India Rank-128
4. Qualified in the Graduate Aptitude Test in Engineering (GATE), 2004 (Score 96.01) All India Rank-112.
5. National Scholarship Holder for Graduation Degree.