

## **BIO-DATA**

**1. Name** : Dr. Anup Thakur

**2. Official Address** : Professor  
Department of Physics,  
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**3. Area of Specialisation:** Chalcogenide Phase Change Materials and Nanomaterials

**4. Academic Qualifications:**

1. Ph.D. in Physics (2006) from Department of Physics, Panjab University, Chandigarh.
2. UGC-CSIR, JRF qualified in Physical Sciences.
3. M.Sc. (Hons. School) Physics (1999), with 1<sup>st</sup> division from Department of Physics, Panjab University, Chandigarh.
4. B.Sc. (N.M.) (1997) with 1<sup>st</sup> division from H.P. University, Shimla.

**5. Fellowships:**

- i) Post Doctorate Fellowship (PDF):** Worked as a Post Doctorate Fellow at Pohang Accelerator Laboratory (PAL), POSTECH, S. Korea from January 2010 to December 2011.
- ii) Senior Research Fellow (CSIR, New Delhi):** Department of Physics, P.U. Chandigarh from July 2004 to June 2006.
- iii) Junior Research Fellow (CSIR, New Delhi):** Department of Physics, P.U. Chandigarh from July 2002 to June 2004.

**6. Details of Experience:**

- Working as a Head, Department of Physics, Punjabi University, Patiala, from 1<sup>st</sup> April, 2022 till date.
- Working as a Professor, Department of Physics, Punjabi University, Patiala, from 3<sup>rd</sup> July, 2021 till date.
- Worked as an Associate Professor (Physics) in the Department of Basic and Applied Sciences, Punjabi University, Patiala, from 3<sup>rd</sup> July, 2018 to 2<sup>nd</sup> July, 2021.
- Worked as an Assistant Professor (Physics) in the Department of Basic and Applied Sciences, Punjabi University, Patiala from 3<sup>rd</sup> July 2006 to 2<sup>nd</sup> July, 2018.

**7. Administrative/Academic Experience**

- Director, Rapid Prototyping and Material Testing Research Centre, Punjabi University, Patiala, from 27<sup>th</sup> July 2023 till date.
- Chairman, Academic Council of Department (ACD) from 1<sup>st</sup> April, 2022 till date.
- Chairman, Department Research Board (DRB) from 1<sup>st</sup> April, 2022 till date.
- Chairman, “Undergraduate Board of Studies for Physics” for 2022-23 onwards.
- Chairman, “Postgraduate Board of Studies for Physics” for 2022-23 onwards.

## 8. Published Work:

- I. (a) Research Papers in International Journal: **146**  
(b) Research Papers published in conference/symposia proceedings: **10**  
(c) Book Chapters: **05**

## II. R & D Projects:

### Ongoing:

- i) A research project titled "**Developing broad red emitting  $Zn_{1-x}Sr_xAl_2O_4$  based nanophosphors through cationic site engineering**" awarded by UGC DAE Indore to me as Principal Investigator.

### Completed:

- i) A research project titled "**Phase transition studies of Ga doped  $Ge_2Sb_2Te_5$  thin films for data storage applications**" worth of approx. **Rs. 26,75,332/-** awarded for three years (2019-2022) by Department of Science and Technology (DST), N. Delhi to me as Principal Investigator, was implemented at Punjabi University, Patiala.
- ii) A research project titled "**Luminescence studies of swift heavy ion irradiated rare earth doped MgO based nanophosphors**" worth of **Rs. 7,72,461/-** awarded for three years (2018-2022) by IUAC, New Delhi to me as Principal Investigator and Dr. Ankush Vij as Co-PI, from Amity University Haryana, Gurgaon, was implemented at Department of Basic and Applied Sciences, Punjabi University, Patiala.
- iii) A research project titled "**Phase Transition Studies of Ag doped Ge-Sb-Te Thin Films**" worth of **Rs. 26,77,408/-** awarded to me as Principal Investigator for three years (2014-2017) by the Department of Science and Technology (DST), N. Delhi was implemented at Department of Basic and Applied Sciences, Punjabi University, Patiala.
- iv) I was one of the co-investigator of the project titled "**Preparation of Silicon Sheets by Capillary Action Shaping Technique (CAST) for solar cell Applications**" sanctioned by Department of Science and Technology, N. Delhi worth **Rs. 81,54,400/-** for three years and successfully completed (Principal Investigators: Dr. S.M.D. Rao & Prof. R.C. Verma).

## 9. Overseas visits related to research:

| S. No. | Address of overseas institute/Venue | Duration      |               | Agency which sponsored the visit | Purpose of visit                        |
|--------|-------------------------------------|---------------|---------------|----------------------------------|---|
|        |                                     | From          | To            |                                  |   |
| 1      | Quebec, Canada                      | June 17, 2018 | June 21, 2018 | DST, New Delhi                   | To present research work in ISNOG 2018. |
| 2      | ICTP, Italy                         | April 4,      | April 15,     | ICTP                             | To attend School on                     |

|   |                          |                   |                   |                        |   |
|---|--------------------------|-------------------|-------------------|------------------------|---|
|   |                          | 2016              | 2016              |                        | Synchrotron and Free-Electron-Laser.        |
| 3 | ICTP, Italy              | November 17, 2014 | November 28, 2014 | ICTP-IAEA              | To attend ICTP-IAEA School                  |
| 4 | DESY, Germany            | October 7, 2013   | October 9, 2013   | DST, New Delhi         | To present research work in GISAXS-2013.    |
| 5 | NSRRC, Hsinchu, Taiwan   | October 7, 2011   | October 13, 2011  | PAL, POSTECH, S. Korea | To perform XAS and XPS experiments.         |
| 6 | Ningbo University, China | June 13, 2010     | June 18, 2010     | PAL, POSTECH, S. Korea | To present the research work in ISNOG-2010. |
| 7 | PAL, POSTECH, S. Korea   | January, 2010     | December, 2011    | PAL, POSTECH, S. Korea | Post Doctorate Fellowship (PDF).            |

#### 10. Ph.D. Students guided/under guidance:

| S. No. | Name of the Student | Title of the Thesis  | Year of Completion/Registration |
|--------|---------------------|--|---------------------------------|
| 1.     | Dr. Virender Kumar  | Structural, morphological and optical characterization of transition metal doped nanostructures  | 07-08-2018                      |
| 2.     | Dr. Palwinder Singh | Effect of Ag doping on the phase transition of Ge-Sb-Te thin films   | 21-11-2018                      |
| 3.     | Dr. Gurpreet Kaur   | FeS <sub>2</sub> based nanocomposites for photo catalysis and photovoltaic applications  | 16-04-2019                      |
| 4.     | Dr. Megha Jain      | Structural and spectroscopic studies of zinc aluminate based nanocrystals for solid state lighting                                       | 29-09-2021                      |
| 5.     | Dr. Kulwinder Singh | Boron nitride based nano-composites for gas sensing and photo-detection applications   | 23-12-2021                      |
| 6.     | Dr. Manju           | Local electronic structure and luminescence study of SrZnO <sub>2</sub> based nanophosphors  | 26-05-2022                      |
| 7.     | Dr. Neetu Kanda     | Optical, transport and structural properties of ion irradiated pure and doped Ge <sub>2</sub> Sb <sub>2</sub> Te <sub>5</sub> thin films | 26-07-2023                      |
| 8.     | Ms. Sudesh Kumari   | Fabrication and characterization of molybdenum oxide thin films-A chromogenic smart material   | Thesis Submitted                |
| 9.     | Mr. Harpreet Singh  | Effect of swift heavy ion irradiation on structural and optical properties of metal selenide thin films                                  | Registered 28-09-2018           |
| 10.    | Ms. Savita          | Structural and optical studies of magnesium aluminate based nanostructures   | Registered 21-05-2019           |

|     |                    |  |                          |
|-----|--------------------|--|--------------------------|
| 11. | Mr. Kamaljit Singh | Effect of additives on the structural, electrical and optical properties of GeTe thin films                      | Registered<br>28-08-2019 |
| 12. | Ms. Neeru Bala     | Phase transition studies of Ga doped Ge-Sb-Te thin films   | Registered<br>08-02-2021 |
| 13. | Mr. Bheem Khan     | Swift heavy ion induced modification in structural, electrical and optical properties of chalcogenide thin films | Registered<br>19-07-2021 |

#### 11. Invited Talk/Expert Talk/Session Chair:

1. Delivered two expert lectures in Two Weeks Refresher Course in Engineering Physics during July 17-28, 2023 organized by Department of Applied Sciences, National Institute of Technical Teachers Training & Research, Sector-26, Chandigarh.
2. Delivered an expert lecture on "Superconductivity and Superconducting Materials." In Refresher Course in Engineering Materials Science during April 18-29, 2022 organized by Department of Applied Sciences, National Institute of Technical Teachers Training & Research, Sector-26, Chandigarh.
3. Delivered an invited talk in One Day Workshop on "Basics of Research Paper Writing" held on 8<sup>th</sup> June 2021, Sri Guru Gobind Singh College, Sector 26, Chandigarh.
4. Delivered series of invited talks in "Two days online National Workshop on Latex" held on March 1-2, 2021, Organized by Department of Physics, GSSDGS Khalsa College, Patiala, Punjab.
5. Delivered an expert lectures on "Superconductivity." In Refresher Course in Engineering Physics during October 12-23, 2020 organized by Department of Applied Sciences, National Institute of Technical Teachers Training & Research, Sector-26, Chandigarh.
6. Delivered an expert lecture on "Demonstration on research writing using LaTeX." In STC on "Research Pedagogy and Technical Writing" scheduled from 21/09/2020 to 25/09/2020 organized by Department of Computer Science and Engineering, National Institute of Technical Teachers Training & Research, Sector-26, Chandigarh.
7. Delivered an invited talk on "Writing research paper using LaTeX." In 84<sup>th</sup> Refresher Course in Information Communication Technology (ICT), held on from August 10, 2020 to August 24, 2020 organized by UGC-Human Resource Development Center, Punjabi University, Patiala, Punjab.
8. Delivered an invited talk on "How to write an article using LaTeX?" in 45<sup>th</sup> Faculty Induction Programme, Organized by UGC-Human Resource Development Center, Punjabi University, Patiala, Punjab from August 10, 2020 to September 08, 2020.

9. Delivered an expert talk on "UV-Vis-NIR Spectroscopy: Analytical Tool for Optical Analysis" in the One Week Short Term Course, Department of Physics, Dr. B.R. Ambedkar National Institute of Technology, Jalandhar, from 30/12/19 to 03/01/2020.
10. Chaired a session in UGC Sponsored 10<sup>th</sup> National Conference on Recent Advances in Chemical and Environmental Sciences (RACES-2019), April 11-12, 2019, at Multani Mal Modi College, Patiala, Punjab, India.
11. Delivered an invited talk on "X-ray Diffraction and Rietveld Refinement" in the 2<sup>nd</sup> National Conference on 'Role of Mathematics and Computer Science in Advancement of Physics' Organized by Department of Physics, Govt. Degree College, Kathua (J & K) on 10<sup>th</sup> and 11<sup>th</sup> November 2017.
12. Delivered an expert talk on "Ge<sub>2</sub>Sb<sub>2</sub>Te<sub>5</sub> as Reversible NIR window" in National Conference on Recent Advances in Materials Science & Technology-2017 (RAMST-17) held on 21<sup>st</sup> April 2017, Amity University Haryana, Gurgaon.
13. Delivered an expert talk on "Brief introduction to Rietveld Refinement" in the short term course on "Recent advances in Nanostructured Materials" Department of Physics, Dr. B.R. Ambedkar National Institute of Technology, Jalandhar, from September 19-23, 2016.
14. Chaired a session in two days National Seminar on "New Frontiers in Physics" March 02-03, 2016, at Gandhi Memorial National Postgraduate College Ambala Cantt, Haryana, India.
15. Expert Lectures on Latex Software in Refresher Course in Mathematics held during July 7-12, 2014, Chandigarh University, Gharuan, Punjab, India.

## 12. Conference/Workshop Organized:

1. As a Convener, organized One Day National Seminar on Condensed Matter Physics and Materials (CMPM-2023), in the Department of Physics, Punjabi University, Patiala on 8<sup>th</sup> May, 2023.
2. As a Convener, organized One Week STUTI Workshop Sponsored by DST, New Delhi on "Emerging Materials: Synthesis and Characterization Techniques" in the Department of Physics Punjabi University, Patiala in collaboration with Amity University during December 14–20, 2022.
3. As a Secretary, organized a Three Days National Workshop on LATEX and Technical Writing in the Department of Basic and Applied Sciences, Punjabi University, Patiala during 23–25 November, 2018.

## 13. List of Papers/Courses taught at P.G. and U.G. Level

| S. No. | Paper   | Class             |
|--------|---|-------------------|
| 1.     | Material Science                              | Ph.D. Course Work |
| 2.     | Material Science                              | M.Phil.           |
| 3.     | Condensed Matter Physics                      | M.Sc.             |
| 4.     | Ceramic Materials and their Characterisations | M.Tech.           |

|    |                                     |         |
|----|-------------------------------------|---------|
| 5. | Nanoelectronics Devices Engineering | M.Tech. |
| 6. | Solid State Physics                 | B.Sc.   |
| 7. | Statistical Mechanics               | B.Sc.   |
| 8. | Applied Physics-I                   | B.Tech. |
| 9. | Applied Physics-II                  | B.Tech. |

#### 14. List of Papers Published in International Journals:

1. Dysprosium site occupancy in SrZnO<sub>2</sub> nanophosphors probed through XANES  
Manju, Parasmani Rajput, Ankush Vij, Anup Thakur  
**Physical Chemistry Chemical Physics, (2023) In Press. (Impact Factor: 3.676)**
2. Ga doping induced thermal stabilization of fcc phase in Ge<sub>2</sub>Sb<sub>2</sub>Te<sub>5</sub> thin films: A step toward power-efficient phase change memories  
Neeru Bala, Manju, Uttam Kumar Goutam  
**Journal of Applied Physics, (2023) In Press. (Impact Factor: 2.546)**
3. Impact of annealing on charge storage capability of thermally evaporated molybdenum oxide thin films  
S. Kumari, R. Mir, S. Upadhyay, O.P. Pandey, Anup Thakur  
**Functional Material Letters (2023) In Press. (Impact Factor: 2.170)**
4. Air annealing evolution to physical characteristics of Cd<sub>0.85</sub>Zn<sub>0.15</sub>Te thin films: absorber layer applications to solar cell devices  
R. Sharma, A. Sharma, S. Chuhadiya, Anup Thakur, M.D. Kannan, M. S. Dhaka  
**Journal of Materials Science: Materials in Electronics 34 (2023) 1403. (Impact Factor: 2.478)**
5. Altered the structural, morphological and optical properties of SbSe thin films through swift heavy ion irradiation  
H. Singh, P. Singh, F. Singh, A.P. Singh, A. Kumar, **Anup Thakur**  
**Physica Scripta 98 (2023) 065947. (Impact Factor: 3.081)**
6. One-step crystallization in (Ge<sub>2</sub>Sb<sub>2</sub>Te<sub>5</sub>)<sub>90</sub>Ga<sub>10</sub> thin film  
Neeru Bala, **Anup Thakur**  
**Materials Letters 338 (2023) 134025. (Impact Factor: 3.423)**
7. An evolution to Cu concentration on ZnTe thin films: functionality as interface layer to CdTe solar cells  
Deepak Suthar, R. Sharma, Himanshu, **Anup Thakur**, M. S. Dhaka  
**Applied Physics A 129 (2023) 163. (Impact Factor: 2.584)**
8. Combinatorial study to the physical properties of Cd<sub>1-x</sub>Zn<sub>x</sub>Te thin films as budding absorber for solar cell applications  
R. Sharma, A. Sharma, Himanshu, **Anup Thakur**, M.D. Kannan, M.S. Dhaka  
**Materials Research Bulletin 163 (2023) 112214. (Impact Factor: 5.60)**

9. Carrier transport and photoconductivity properties of BN50/NiO50 nanocomposite films  
M. Kaur, K. Singh, Ram K. Sharma, N. Sharma, **Anup Thakur**, A. Kumar  
**Heliyon 9 (2023) e13865. (Impact Factor: 3.776)**
10. Cr dopant induced tailoring of intrinsic defects and trap distribution in MgAl<sub>2</sub>O<sub>4</sub> nanocrystals: electron spin resonance and thermoluminescence  
Savita, Sanjay Kumar, Ankush Vij and **Anup Thakur**  
**J. Phys. D: Appl. Phys. 56 (2023) 075301. (Impact Factor: 3.207)**
11. Temperature- and light-dependent photoconductivity studies of thermally evaporated WTe<sub>2</sub> thin film for photo detection application  
I. Chauhan, M. Kaur, K. Singh, R.K. Sharma, A. Vij, **Anup Thakur**, A. Kumar  
**Applied Nanoscience 13 (2023) 3225. (Impact Factor: 3.674)**
12. UV/blue/green converted efficient red-NIR photoluminescence in Cr incorporated MgAl<sub>2</sub>O<sub>4</sub> nanocrystals: Site selective emission tailored through cation inversion and intrinsic defects  
Savita, Pargam Vashishtha, Govind Gupta, Ankush Vij and **Anup Thakur**  
**J. Phys.: Condens. Matter 35 (2023) 115303. (Impact Factor: 2.333)**
13. Recent advances in doped Ge<sub>2</sub>Sb<sub>2</sub>Te<sub>5</sub> thin films-based phase change memories  
Neeru Bala, K. Singh, B. Khan, P. Singh, A. P. Singh, **Anup Thakur**  
**Materials Advances 4 (2023) 747-768.**
14. A review on GeTe thin film based phase change materials  
K. Singh, S. Kumari, H. Singh, N. Bala, P. Singh, A. Kumar, **Anup Thakur**  
**Applied Nanoscience 13 (2023) 95-110. (Impact Factor: 3.674)**
15. Effect of annealing on structural, morphological and optical properties of InSe thin films  
H. Singh, S. Kumari, P. Singh, A. Kumar, **Anup Thakur**  
**Journal of Materials Science: Materials in Electronics 33 (2022) 1-8. (Impact Factor: 2.478)**
16. Ce doping induced trapping states and local electronic structure modifications in SrZnO<sub>2</sub> nanophosphors  
Manju, M. Jain, Parasmani Rajput, A. Vij, **Anup Thakur**  
**J. Mater. Chem. C 10 (2022) 11379-11387. (Impact Factor: 8.067)**
17. Effect of thermal annealing on physical properties of Cu doped ZeTe thin films: Functionality as interface layer  
D. Suthar, R. Sharma, A. Sharma, **Anup Thakur**, M.D. Kannan, M.S. Dhaka  
**Journal of Alloys and Compounds 918 (2022) 165756. (Impact Factor: 6.371)**
18. Ga doping induced structural and optical modification in Ge<sub>2</sub>Sb<sub>2</sub>Te<sub>5</sub> thin films  
Neeru Bala, **Anup Thakur**  
**Journal of Materials Science: Materials in Electronics 33 (2022) 14419–14425. (Impact Factor: 2.478)**

19. Comprehensive investigation on influence of Copper doping on physical properties of CdSe thin films for solar cell applications  
Himanshu, G. Chasta, D. Suthar, **Anup Thakur**, M.D. Kannan, M.S. Dhaka  
**Materials Research Bulletin 152 (2022) 111845. (Impact Factor: 5.60)**
20. Heat treatment induced structural, optical, electrical and surface topographical characteristics of CdSe:Zn films: Functionality as absorber layer  
Himanshu, R, Sharma, S. Chuhadiya, **Anup Thakur**, M.S. Dhaka  
**Optical Materials 126 (2022) 112180. (Impact Factor: 3.080)**
21. Charge transport and photo detection properties of Mo-doped MnS thin film  
Monika, K. Singh, M. Kaur, **Anup Thakur**, R.K. Sharma, A. Vij, A. Kumar  
**Applied Physics A 128 (2022) 255. (Impact Factor: 2.584)**
22. Temperature-dependent photoconductivity studies of WTe<sub>2</sub>/MoS<sub>2</sub> nanocomposite thin film  
I. Chauhan, M. Kaur, K. Singh, M. Kumar, **Anup Thakur**, A. Vij, A. Kumar  
**Surfaces and Interfaces 29 (2022) 101795. (Impact Factor: 4.837)**
23. Swift heavy ion irradiation induced microstructural transformation in selenium thin films  
H. Singh, P. Singh, F. Singh, A.P. Singh, A. Kumar, Anup Thakur  
**Radiation Physics and Chemistry 191 (2021) 109863. (Impact Factor: 2.858)**
24. Effect of temperature on carrier transport and photoconductivity of Mn-doped FeS<sub>2</sub> thin films  
J. Singh, K. Singh, M. Kaur, **Anup Thakur**, R.K. Sharma, A, Vij, A. Kumar  
**Progress in Natural Sciences 32 (2021) 135-142. (Impact Factor: 3.607)**
25. Structural and optical properties of thermally induced nanostructures in amorphous molybdenum oxide thin films  
S. Kumari, P. Singh, H. Singh, K. Singh, A. Kumar, S. Kumar, **Anup Thakur**  
**Journal of Materials Science: Materials in Electronics 32 (2021) 24990-24996. (Impact Factor: 2.478)**
26. Charge transfer-induced fast blue emission in SrZnO<sub>2</sub>:Ce  
Manju, M. Jain, P. Vashishtha, G. Gupta, M. Gupta, A. Vij, **Anup Thakur**  
**Applied Physics Letters 119 (2021) 121108. (Impact Factor: 3.791)**
27. Radiation hardness of Ge<sub>2</sub>Sb<sub>2</sub>Te<sub>5</sub> thin films to 80 MeV Si ion irradiation  
N. Kanda, **Anup Thakur**, F. Singh, A.P. Singh  
**Radiation Effects and Defects in Solids 176 (2021) 896-905. (Impact Factor: 1.141)**
28. Effect of swift heavy ion irradiation on structural and electrical properties of Ag-doped Ge<sub>2</sub>Sb<sub>2</sub>Te<sub>5</sub> (GST) thin films



N. Kanda, A.P. Singh, **Anup Thakur**

**AIP Conference Proceedings 2352 (2021) 050026.**

29. Effect of  $\text{MgCl}_2$  passivation on Bi incorporated CdTe absorber films: Alternative to  $\text{CdCl}_2$  passivation on Cu incorporated CdTe films

Himanshu, S.L. Patel, **Anup Thakur**, M.S. Dhaka

**AIP Conference Proceedings 2352 (2021) 020080.**

30. Role of  $\text{Fe}^{3+}$  in altering the degrees of freedom in  $\text{ZnAl}_2\text{O}_4$  spinel

M. Jain, Manju, M. Kumar, H.W. Lee, S.O. Won, K.H. Chae, G. Gupta, A. Vij and **Anup Thakur**

**Journal of Applied Physics 130 (2021) 55103. (Impact Factor: 2.546)**

31. Tailoring of Structural, Morphological and Optical Properties of Boron Nitride/Nickel Oxide ( $\text{BN}_{100-x}/\text{NiO}_x$ ) Nanocomposites

K. Singh, M. Kaur, I. Chauhan, R. Meena, J. Singh, **Anup Thakur**, A. Kumar

**Journal of Cluster Science 32 (2021) 865-873. (Impact Factor: 3.061)**

32. Probing the defects and trap distribution in  $\text{MgAl}_2\text{O}_4$  nanocrystals through electron spin resonance and thermoluminescence

Savita, S. Dani, S. Kumar, F. Singh, A. Vij, **Anup Thakur**

**Journal of Physics D: Applied Physics 54 (2021) 335303. (Impact Factor: 3.207)**

33. Galvanostatic deposition of manganese oxide films for super capacitive application and their fractal analysis

A. Singh, D. Singh, **Anup Thakur**, N. Gupta, V. Shinde, B. Singh, R. Kaur

**Ionics 27(49) (2021) 1-10. (Impact Factor: 2.817)**

34. Unravelling trapping defects distribution using thermoluminescence in gamma irradiated  $\text{SrZnO}_2:\text{Dy}$  nanophosphors

Manju, M. Jain, A. Kumar, A. Vij, **Anup Thakur**

**Physica Status Solidi (a) - Applications and Materials Science 218 (2021) 2100063. (Impact Factor: 1.981)**

35. Thermally induced cation ordering in  $\text{ZnAl}_2\text{O}_4:\text{Mg}^{2+}$ ,  $\text{Fe}^{3+}$  for sensing thermal history through photoluminescence

M. Jain, Manju, M. Kumar, H. Lee, S. Won, K. Chae, G. Gupta, A. Vij, **Anup Thakur**

**Journal of Material Science 56(21) (2021) 1-10. (Impact Factor: 4.220)**

36. Fluorescent boron carbide quantum dots synthesized with a low-temperature solvothermal approach for boron neutron capture therapy

P. Singh, M. Kaur, K. Singh, R. Meena, M. Kumar, J. Yun, **Anup Thakur**, F. Nakagawa, M. Suzuki, H. Nakamura, A. Kumar

**Physica E: Low-dimensional Systems and Nanostructures 132 (2021) 111766. (Impact Factor: 3.382)**

37. Modulation of radiative defects in  $\text{MgAl}_2\text{O}_4$  nanocrystals probed using NMR, ESR, and PL spectroscopies  
Savita, M. Jain, Manju, A.K. Sinha, F. Singh, A. Vij, **Anup Thakur**  
**Journal of Applied Physics** **129** (2021) 125111. (Impact Factor: 2.546)
38. Temperature-Dependent Ultrafast Charge Carrier Dynamics in Amorphous and Fluorescent Crystalline  $\text{Sb}_2\text{Se}_3$  Thin Films  
P. Singh, N. Ghorai, **Anup Thakur**, H. Ghosh  
**Journal of Physical Chemistry C** **125** (2021) 5197-5206. (Impact Factor: 4.126)
39. Low temperature carrier transport mechanism and photo-conductivity of  $\text{WSe}_2$   
M. Kaur, K. Singh, I. Chauhan, H. Singh, R.K. Sharma, A. Vij, **Anup Thakur**, A. Kumar  
**Journal of Alloys and Compounds** **797** (2021) 148-151. (Impact Factor: 6.371)
40. Effect of ammonia gas on electrical properties of boron nitride/nickel oxide ( $\text{BN}_{80}/\text{NiO}_{20}$ ) nanocomposite  
K. Singh, M. Kaur, I. Chauhan, H. Singh, A. Awasthi, M. Kumar, **Anup Thakur**, A. Kumar  
**Journal of Materials Science: Materials in Electronics** **32** (2021) 5556-5566. (Impact Factor: 2.195)
41. Photoconductivity of gold nanoparticles loaded boron nitride/nickel oxide nanocomposites  
K. Singh, G. Kaur, M. Kaur, I. Chauhan, M. Kumar, **Anup Thakur**, A. Kumar  
**Chemical Physics Letters** **762** (2021) 138153. (Impact Factor: 2.328)
42. Enhanced performance of Fe-doped manganese oxide films as a super capacitor electrode  
A. Singh, D. Kumar, **Anup Thakur**, B.S. Saini, R. Kaur  
**Bulletin of Materials Science** **43** (2020) Article No.: 165 (Impact Factor: 1.783)
43. Annealing evolution to physical properties of  $\text{CdCl}_2$  activated  $\text{CdTe}:\text{Cu}$  films for absorber layer functioning  
Himanshu, S.L. Patel, D. Agrawal, S. Chander, **Anup Thakur**, M.S. Dhaka  
**AIP Conference Proceedings** **2265** (2020) 030330.
44. Modification of structural and optical properties of Ag doped  $\text{Ge}_2\text{Sb}_2\text{Te}_5$  thin films using swift heavy ion irradiation  
N. Kanda, **Anup Thakur**, A.P. Singh  
**AIP Conference Proceedings** **2265** (2020) 030230.
45. Switchable cool and cold white emission from dysprosium doped  $\text{SrZnO}_2$   
Manju, M. Jain, P. Vashishtha, G. Gupta, A. Sharma, S. O. Won, A. Vij and **Anup Thakur**  
**J. Phys.: Condens. Matter** **33** (2020) 035703. (Impact Factor: 2.333)
46. Oxygen vacancies induced photoluminescence in  $\text{SrZnO}_2$  nanophosphors probed by theoretical and experimental analysis

Manju, M. Jain, S. Madas, P. Vashishtha, P. Rajput, G. Gupta, M.U. Kahaly, K. Ozdogan, A. Vij and **Anup Thakur**  
**Sci. Rep. 10 Article number: 17364 (2020). (Impact Factor: 4.379)**

47. Mechanistic insights into defect generation and tuning of optical properties in  $Zn_{1-x}Fe_xAl_2O_4$  ( $0.01 \leq x \leq 0.40$ ) nanocrystals  
M. Jain, Manju, P. Vashishtha, G. Gupta, A. K. Sinha, M. Gupta, A. Vij and **Anup Thakur**  
**Acta Crystallographica Section B (2020) B76, 757-768. (Impact Factor: 2.266)**
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137. Effect of Sb Additive on the Electrical Properties of Se-Te Alloy  
S.K. Tripathi, V. Sharma, **Anup Thakur**, J. Sharma, G.S.S. Saini and N. Goyal  
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138. Calculation of Optical Parameters of a-Ge-Se-Sn Thin Films  
**Anup Thakur**, V. Sharma, G.S.S. Saini, N. Goyal and S.K. Tripathi  
**Journal of Optoelectronics and Advanced Materials 7 (2005) 2077-2083. (Impact Factor: 0.587)**
139. Transient Photoconductivity in Se<sub>85-x</sub>Te<sub>15</sub>In<sub>x</sub> Thin Films  
V. Sharma, **Anup Thakur**, N. Goyal, G. S. S. Saini and S. K. Tripathi  
**Journal of optoelectronics and Advanced Materials 7 (2005) 2103-2112. (Impact Factor: 0.587)**
140. Effect of Light Intensity and Temperature on the Recombination Mechanism in a a-(Ge<sub>20</sub>Se<sub>80</sub>)<sub>99.5</sub>Cu<sub>0.5</sub> Thin Films  
**Anup Thakur**, V. Sharma, G.S.S. Saini, N. Goyal and S.K. Tripathi  
**Journal of Physics D: Applied Physics 38 (2005) 1959-1965. (Impact Factor: 3.207)**
141. Irradiation Effects on the Optical Properties of a-Ge-Se-Ag Thin Film Induced Changes on the Optical Parameters of a-(Ge<sub>20</sub>Se<sub>80</sub>)<sub>0.96</sub>Ag<sub>0.04</sub> Thin Films  
S.K. Tripathi, **Anup Thakur**, G. Singh, J. Sharma, V. Sharma, K.P. Singh, G.S.S. Saini and N. Goyal  
**Journal of optoelectronics and Advanced Materials 7 (2005) 2095-2101. (Impact Factor: 0.587)**
142. Effect of In Additive on the Electrical Properties of Se-Te Alloy  
V. Sharma, **Anup Thakur**, N. Goyal, G.S.S. Saini and S.K. Tripathi  
**Semiconductor Science and Technology 20 (2005) 103-107. (Impact Factor: 2.352)**

143. Effect of Sn Impurity on the Photoconductivity in a-  $\text{Se}_{85}\text{Te}_{15}$  Thin Films  
V. Sharma, **Anup Thakur**, P.S. Chandel, G. Madhok, N. Goyal and S.K. Tripathi  
**Indian Journal of Pure and Applied Physics** **42** (2004) **845-848**. (Impact Factor: **0.923**)
144. Effect of Thermal Annealing on the Electrical Properties of Amorphous  $\text{Se}_{75}\text{Te}_{15}\text{Sn}_{10}$  Thin Films  
V. Sharma, **Anup Thakur**, P.S. Chandel, N. Goyal, G.S.S. Saini and S.K. Tripathi  
**Journal of Optoelectronics and Advanced Materials** **5** (2003) **1243-1248**. (Impact Factor: **0.587**)
145. Dielectric Relaxation of  $(\text{Ge}_{20}\text{Se}_{80})_{0.98}\text{Sn}_{0.02}$  Glassy Alloy  
P.S. Chandel, **Anup Thakur**, V. Sharma, N. Goyal and S.K. Tripathi  
**Indian Journal of Pure and Applied Physics** **42** (2004) **539-543**. (Impact Factor: **0.923**)
146. Photoelectrical Properties in Thin Films of  $(\text{Ge}_{20}\text{Se}_{80})_{0.98}\text{Sn}_{0.02}$  Glassy Alloy  
**Anup Thakur**, P.S. Chandel, V. Sharma, N. Goyal, G.S.S. Saini and S.K. Tripathi  
**Journal of Optoelectronics and Advanced Materials** **5** (2003) **1203-1208**. (Impact Factor: **0.587**)

#### 15. Books/Book Chapter Published:

1. Metal-Organic Frame Works (NOFs) for smart applications  
Manju, Megha Jain, Sanjay Kumar, Ankush Vij, **Anup Thakur**  
**In Book:** Synthesis and Applications of semiconductor Nanostructures  
**Edited by:** Karamjit Singh Dhaliwal; **Publisher:** Bentham Science Publishers (2023).
2. Luminescence study of alkaline earth aluminate-based nanophosphors  
Savita, Ankush Vij, **Anup Thakur**  
**In Book:** Radiation Dosimetry Phosphors: Synthesis, Mechanisms, Properties and Analysis. **Edited by:** Sanjay J. Dhoble, Vibha Chopra, Vinit Nayar, George Kitis, Dirk Poelman, Hendrik C. Swart. **Publisher:** Woodhead Publishing (2022).
3. Graphene based nanocomposites for energy applications  
Deepakjot Singh, Sanjay Kumar, **Anup Thakur**  
**In Book:** **Advanced Ceramics for energy and environmental application**,  
**Publisher:** **CRC Press (2021)**. (eBook ISBN9781003005155)
4. Synthesis Methods of Spinel based Luminescent Materials  
Megha Jain, Manju, Ankush Vij, **Anup Thakur**  
**In Book:** **Phosphors for Display, Forensic and Biomedical Applications**.  
**Publisher:** **Nova Science Publishers, Inc. (2021)**
5.  $\text{FeS}_2$  Pyrite Nanostructures: An Efficient Performer in Photocatalysis

G. Kaur, M. Kaur, **Anup Thakur**, A. Kumar

**In Book: Green Methods for Wastewater Treatment. Publisher: Springer, Cham (2019). (DOI: 10.1007/978-3-030-16427-0\_3).**

**16. Conference/Workshop/Symposium attended:**

1. 21<sup>st</sup> International Symposium on Non-Oxide and New Optical Glasses (ISNOG 2018), held at the Quebec, Canada, from 17-21 June, 2018.
2. National Conference on 'Recent Advances in Experimental and Theoretical Physics (RAETP-2018) held on April 17-18, 2018, Central University of Jammu, J&K, India.
3. 9<sup>th</sup> National Conference on 'Recent advances in Chemical, Biological & Environmental Sciences (RACES-2018) held on February 09-10, 2018, Modi College, Patiala, Punjab, India.
4. National Conference on Recent Advances in Materials Science & Technology-2017 (RAMST-17) on 21<sup>st</sup> April 2017, Amity University Haryana, Gurgaon.
5. Short Term Course for Asstt. Prof. Grade III on "Quality Management in Higher Education" organized by the Human Resource Development Centre, Panjab University, Chandigarh w.e.f. 17-01-2017 to 23-01-2017.
6. 61<sup>st</sup> Accelerator Users Workshop held on December 16-18, 2016 at Inter-University Accelerator Centre, New Delhi.
7. One Day National Workshop on IPR awareness and Plagiarism Detection for India Languages, May 13, 2016 at Department of Computer Science, Punjabi University, Patiala, Punjab, India.
8. School on Synchrotron and Free-Electron-Laser Based Methods: Multidisciplinary Applications and Perspectives, 04-15 April, 2016 at ICTP, Trieste, Italy.
9. International conference on Recent Advances in Emerging Technologies (ICRAET-2016) from February 23-24, 2016 at Shri Guru Granth Sahib World University, Fatehgarh Sahib, Punjab.
10. International Conference on Emerging Areas of Mathematics for Science and Technology from 30<sup>th</sup> January to 1<sup>st</sup> February, 2015 at Patiala, Punjab, India.
11. Joint ICTP-IAEA School on Novel Experimental Methodologies for Synchrotron Radiation Applications in Nano-Science and Environmental Monitoring, 17-28 November, 2014 at ICTP, Trieste, Italy.
12. International Conference on Condensed Matter Physics 2014 (ICCMP-2014), November 4-6, 2014, at Department of Physics, H.P. University, Shimla, India.
13. NRC-M Workshop on Phase Field Modeling, held at the Department of Materials Engineering, Indian Institute of Science, Bangalore, from 08-12 June 2014.
14. NRC-M Winter Workshop on Integrated Computational Materials Engineering, held at the Department of Materials Engineering, Indian Institute of Science, Bangalore, from 23-27 December 2013.
15. International Workshop on Grazing Incidence Small Angle X-ray Scattering (GISAXS-2013), held at the DESY, Germany, from 7-9 October 2013.
16. National Workshop on Latex, from 8-10 July, 2013 organized by School of Applied Sciences, Chitkara University, Punjab.
17. National Workshop on Nano Science and Technology (NST-2013) held at the NIT, Hamirpur, from 3-7 June 2013.
18. UGC-Sponsored Refresher Course from 6<sup>th</sup> May to 25<sup>th</sup> May 2013 at Academic Staff College, Panjabi University, Patiala.

19. International Conference on Recent Trends in Applied Physics & Material Science (RAM 2013), February 01-02, 2013, at Govt. College of Engineering & Technology, Bikaner.
20. International Conference on Emerging Trends in Physics for Environmental Monitoring & Management (ETPEMM-2012), 17-19, December 2012, at Department of Physics, Punjabi University, Patiala, Punjab, India.
21. International Conference on Materials Science and Technology (ICMST 2012), 10-14 June 2012, at St. Thomas College, Pala, Kerala, India.
22. UGC-Sponsored Refresher Course from 23<sup>th</sup> April to 15<sup>th</sup> May 2012 at Academic Staff College, Himachal Pradesh University, Shimla.
23. International Conference on Recent Trends in Physics (ICRTP 2012), 4-5 February 2012, School of Physics, Devi Ahilya University, Indore, India.
24. National Conference on Recent Advances in Material Science [NCRAMS-2012], 25-26 February 2012, Dyal Singh College, Karnal, Haryana, India.
25. The 24<sup>th</sup> Workshop on Nanoscale and Mesoscopic Systems "Topological Insulators: Recent Developments" November 24-25, 2011, at Posco International Center, POSTECH, Pohang, S. Korea.
26. Korean Physical Society Meeting, 19-21 October 2011, at Busan, South Korea.
27. 2011 International Forum on Functional Materials (IFFM2011) and the 2<sup>nd</sup> Special Symposium on Advances in Functional Materials (AFM-2), July 28-31, 2011, at Jeju Grand Hotel, Jeju, S. Korea.
28. Korean Physical Society Meeting, 13-15 April 2011, at Daejeon, South Korea.
29. 55<sup>th</sup> DAE Solid State Symposium, 26-30 December 2010 at Manipal, India.
30. Workshop for ab initio powder structure determination for chemists and material scientists & 3<sup>rd</sup> powder crystallography tutorial course at Postech, South Korea from 27-29 October 2010.
31. Korean Physical Society Meeting, 20-22 October 2010, at Pyongsong, South Korea.
32. 17<sup>th</sup> International Symposium on Non-Oxide and New Optical Glasses (ISNOG-2010), June 13<sup>th</sup>-18<sup>th</sup>, 2010 at Ningbo, China.
33. International Convention on Solar Photovoltaic Technologies, 5<sup>th</sup> October 2009, at Guru Gobind Singh Indraprastha University, New Delhi.
34. Workshop on Structural Characterization of Materials, 29<sup>th</sup> June to 17<sup>th</sup> July 2009, at Department of Materials Engineering, Indian Institute of Science, Bangalore, India.
35. UGC-Sponsored Orientation Program from 2<sup>nd</sup> December to 29<sup>th</sup> December 2008 at Academic Staff College, Panjab University, Chandigarh.
36. Contact meeting for popularizing the national Fusion Programme CMPNFP-08 (Northern Region) organized by the Department of Applied Science & Humanities in association with Board for Research in Fusion Science & Technology (BRFST) India, held at NIT Hamirpur (H.P.) on 29<sup>th</sup> November 2008.
37. National Seminar on Radiation and Materials (NSRM08) from 10-11, March, 2008 at Physics Department, Punjabi University, Patiala.
38. National Symposium on Nanomaterials Design, Bridging Nanolength scale (NSNMD-2007) held on 17<sup>th</sup> November 2007 at NIT Hamirpur, H.P. India.
39. Symposium on Radiation Sources, Detection and Applications (SRSDA07), held at Physics Department, Punjabi University, Patiala, during Feb. 5-6, 2007.
40. XV International Symposium on Non-Oxide and New Optical Glasses from April 10-14, 2006 at IISc. Bangalore, India.
41. XXXI Symposium of the Optical Society of India, Dec. 2005, IRDE, Dehradun, India.

42. DAE Solid State Physics Symposium from Dec. 26-30, 2004 at GNDU Amritsar, India.
43. 91<sup>st</sup> Indian Science Congress from January 3-7, 2004 at Panjab Univ., Chandigarh, India.
44. National Conference on Materials and their Applications (NCMA-2004) from March 11-13, 2004 at Department of Physics, Kurukshetra University, Kurukshetra, India.
45. 45<sup>th</sup> DAE Solid State Physics Symposium from Dec. 26-30, 2002 at Panjab University, Chandigarh, India.
46. Second National Conference on Thermo-Physical Properties from September 19-21, 2002 at Department of Physics, University of Rajasthan, Jaipur, India.
47. National Seminar on Materials and Devices (MD-2002) from March 9-10, 2002 at M.J.P. Rohilkhand University, Bareilly, India.
48. Seminar on “Computational Techniques in Physics” from March 6-7, 2002 at Panjab University, Chandigarh.

**Date: 30/09//2023**

Anup Thakur  
**(Signature of the Teacher)**