Curriculum Vitae

1. Name : Dr. Anil Kumar
2. Designation : Assistant Professor (Physics)
3. Department : Department of Physics
4. Date of Birth : 29/01/1981
5. Address for Correspondence : Punjabi University, Patiala-147002
Punjab, India

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6 Areas of Specialisation : Experimental Atomic Physics/ Radiation Physics

7. Academic Qualifications:

Sr. no.	Degree Held	Year	Board/Univ./ Inst.	% of marks	Div./ Rank	Subjects Taken
1	B.Sc.	2002	Punjabi University, Patiala	61%	First	Non-medical
2	M.Sc.	2004	Punjabi University, Patiala	60.5%	First	Pure Physics
3	Ph.D.	2012	Punjabi University, Patiala			Experimental Atomic Physics

8. Membership of Professional Bodies/Organisations

i) Life member, Indian Society for Radiation Physics
ii) Life member, Indian Society of Atomic & Molecular Physics

9. Medals/Awards/Honours/Received

i) Best poster presentation award in 3rd National Conference on Advanced Materials and Radiation Physics held at SLIET, Longowal, Sangrur from Nov 22-23, 2013.

10. Details of Experience:

S. No.	Name of the Inst./Employer	Position Held	Duration	Major Job Responsibilities and Nature of Experience
1.	SLIET, Longowal, Sangrur, Punjab	Assistant Professor	July 2012 – July 2013	Teaching and Research
2.	Punjabi University, Patiala	Assistant Professor	July 2013 Onwards	Teaching and Research

11. Published Work (Please specify numbers only)

a. Research Papers in International Journals = 30
b. Conference/Seminar Presentation = 38

11(a) Visits to National and International Research Laboratories for research purposes

Purpose	Duration
To perform experiments at INDUS-II Synchrotron, RRCAT, Indore.	Jun. 12-16, 2012
To perform experiments at INDUS-II Synchrotron, RRCAT, Indore.	Jun. 10-13, 2013
To perform experiments at INDUS-II Synchrotron, RRCAT, Indore.	Mar. 30-April 03, 2015
To perform experiments at ECR ion accelerator, TIFR, Mumbai.	Nov. 21-26, 2016
To perform experiments at Low energy ion beam facility (LEIBF), Inter-University Accelerator Centre (IUAC), Delhi..	May 09-12, 2018
To perform experiments at ELETTRA Synchrotron, Trieste, ITALY.	Nov. 02-07, 2016
To perform experiments at ELETTRA Synchrotron, Trieste, ITALY.	Dec. 03-11, 2017
To perform experiments at ELETTRA Synchrotron, Trieste, ITALY.	Mar. 03-12, 2019
To perform experiments at Low energy ion beam facility (LEIBF), Inter-University Accelerator Centre (IUAC), Delhi.	April 18-22, 2022
To perform experiments at Inter-University Accelerator Centre (IUAC), Delhi.	Mar 06-21, 2023

12. M phil / Ph.d Student guided/under guidance

(i) Ms. Jaspreet Kaur
Topic: Elemental analysis of different varieties of rice samples using XRF technique

Status: Awarded

(ii) Ms. Rajnish Kaur
Topic: Investigation of photon-atom interaction processes at energies across the atomic inner-shell ionization thresholds of different elements using synchrotron radiation
Status: Awarded

(iii) Ms. Vibha Ayri
Topic : Study of Synchrotron radiation induce dinner-shell photoionization processes at energies across the Li absorption- edges of some heavy elements
Status: Submitted

(iv) Ms. Sandeep Kaur
Topic : Investigation of fundamental parameters for photon-atom interaction processes at energies near absorption-edges of some medium Z elements
Status: Submitted

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

S. No.	Paper	Class
1.	Classical Mechanics	M.Sc. Physics
2.	Applied Fluorescent X-ray Spectroscopy	M.Sc. Physics
3.	Radiation Physics	M.Sc. Physics
4.	Basic Electronics	M.Sc. Physics
5.	Material Science and Engineering	B.Tech
6.	Modern Physics	B.Tech
7.	Applied Physics-I & II	B.Tech
8.	Experimental techniques in Physics	Ph.D. (Physics) course work
9.	Mechanics	FYI M.Sc. Physics
10.	Electricity and Magnetism	FYI M.Sc. Physics

14. Administrative/ Academic Experience
(i) Member of Departmental Committee's.
(ii) Secretary, Administrative Committee of department (ACD) June, 2020-2021.

15. Technical Proficiency

Competent in handling radioactive sources, Solid state radiation detector and associated electronics including spectroscopy amplifiers, Digital pulse processor, Analog prefilters, ADC's, Digital pulse shaper, Pulse selection logic, multichannel analysers and power supplies.
Experience in using XRF beam line at RRCAT, Indore, Elettra Synchrotron Trieste, Italy and atomic physics beam line at the particle accelerator, TIFR, Mumbai and IUAC, New Delhi.

16.

a) PAPERS PUBLISHED IN REFEREED INTERNATIONAL RESEARCH JOURNALS

1. *M-shell X-ray production cross sections for elements with $67 \leq Z \leq 92$ at incident photon energies $E_{M1} < E_{inc} \leq 150$ keV.*
   Yogeshwar Chauhan, Anil Kumar and Sanjiv Puri
   Atom. Data Nucl. Data Tables 95 (2009) 475 ***(IF 2.57, ISSN No. 0092-640X)***
2. *L_i(i=1-3) sub-shell X-ray Relative Intensities for some Elements.*
   Anil Kumar, Yogeshwar Chauhan and Sanjiv Puri
   Asian Journal of Chemistry 21 (2009) S309
3. *Measurements of L_1 and L_2 Subshell Fluorescence Yields for Dy at22.6 keV Incident Photon Energy.*
   Anil Kumar and Sanjiv Puri
   Asian Journal of Chemistry 21 (2009) S314
4. *Incident photon energy and Z dependence of L X-ray relative intensities.*
   Anil Kumar, Yogeshwar Chauhan, and Sanjiv Puri
   Atom. Data Nucl. Data Tables 96 (2010) 567*(IF 2.57, ISSN No. 0092-640X)*
5. *L_1 and L_2 sub-shell fluorescence yields for elements with $64 \leq Z \leq 70$*
   Anil Kumar and Sanjiv Puri
   Nucl. Instrum. and Methds. B 268 (2010) 1546
6. *Chemical effects on the Li(i=1–3) sub-shell X-ray relative intensities for some compounds of Hg.*
   Anil Kumar and Sanjiv Puri,
   Radiation Physics and Chemistry 80 (2011) 1166 (IF 1.20, ISSN No. 0969-806X)
7. *Li(i=1-3) sub-shell X-ray relative intensities for some compounds of ^{66}Dy at 22.6 and 59.5 keV incident photon energies.*
   Anil Kumar and Sanjiv Puri
   Radiation Physics and Chemistry 81 (2012) 735 ***(IF 1.20, ISSN No. 0969-806X)***
8. *Measurements of Resonant Raman scattering Differential Cross sections for $_{74}$W using Synchrotron radiation.*
   Anil Kumar, M.K. Tiwari, G.S. Lodha and Sanjiv Puri
   Int. J. of Engg. Res. and Tech. (2013) 95 ***(ISSN NO. 2278-0181)***
9. *X-ray production cross sections at incident photon energies across the Mi (i=1-5) edges of Th.*
   Rajnish Kaur, Shehla, Anil Kumar and Sanjiv Puri
   AIP Conf. Proc. 1675, 030090 (2015); 10.1063/1.4929306 ***(ISSN: 0094-243X)***
10. *Effect of wave function on the proton induced L XRP cross sections for $_{62}$Sm and $_{74}$W*
    Shehla, Rajnish Kaur, Anil Kumar, and Sanjiv Puri
    AIP Conf. Proc. 1675, 030091 (2015); doi: 10.1063/1.4929307 ***(ISSN: 0094-243X)***
11. *Measurements of X-ray production cross sections at photon energies across the Li(i = 1–3) sub-shell absorption edges of$_{74}$W and$_{76}$Os using synchrotron radiation*
    Rajnish Kaur, Anil Kumar, Manoj K. Tiwari and Sanjiv Puri
    J. Electron Spectroscopy and Related Phenomenon 213 (2016) 22. ***(IF 1.56, ISSN 0368-2048)***
12. *Measurements of the L X-ray production cross sections for $_{74}$W at incident photon energies 12.1-13.0 keV using synchrotron radiation*
    Rajnish Kaur, Anil Kumar, M.K. Tiwari and Sanjiv Puri
    International J. Pure and Appl. Phys. 13 (2017) 188 ***(ISSN: 0973-1776)***
13. *Parameterization of Proton Induced M_i (i=1-5) sub-shell X-ray Production Cross Sections*
    Shehla, Rajnish Kaur, Anil Kumar and Sanjiv Puri

International J. Pure and Appl. Phys. 13 (2017) 205 ***(ISSN: 0973-1776)***

14. *L_3 sub-shell X-ray production cross sections for $_{76}$Os at incident photon energies 10.9-12.7 keV using synchrotron photoionization method*
Rajnish Kaur, Anil Kumar, M.K. Tiwari and Sanjiv Puri
International J. Pure and Appl. Phys. 13 (2017) 226 ***(ISSN: 0973-1776)***
15. *Measurements of mass attenuation coefficients and determination of photoionization cross sections at energies across the L_i (i=1-3) edges of $_{66}$Dy*
Rajnish Kaur, Anil Kumar, Janos Osan, M. Czyzycki, A. G. Karydas and Sanjiv Puri
Radiat. Phys. Chem. 136 (2017) 30 (IF 1.20, ISSN No. 0969-806X)
16. *Measurements of the line resolved M-shell X-ray production cross sections for $_{79}$Au, $_{82}$Pb and $_{83}$Bi by 100 keV/u proton, C, N, O ions*
Shehla, Ajay Kumar, C. Bagdia, Anil Kumar, D. Misra, Sanjiv Puri and L. C. Tribedi
Nucl. Instrum and Methd. B 399 (2017) 74 ***(IF 1.11, ISSN NO. 0168-583X)***
17. *Measurements of fluorescence and Coster-Kronig yields for $_{66}$Dy using synchrotron radiation induced selective photoionization method*
Rajnish Kaur, Anil Kumar, M. Czyzycki, A. Migliori, A.G. Karydas and Sanjiv Puri
Nucl. Instru. And Methds. B 407 (2017) 210 ***(IF 1.11, ISSN NO. 0168-583X)***
18. *Synchrotron radiation induced X-ray production cross sections of $_{66}$Dy at energies across its Li (i=1-3) sub-shell absorption edges.*
Rajnish Kaur, Anil Kumar, M. Czyzycki1, A. Migliori, A. G. Karydas and Sanjiv Puri
X-ray Spectrometry 47 (2018) 11 ***(IF 1.29, ISSN: 1097-4539*****)**
19. *Cascade Mi (i=1-5) sub-shell X-ray emission at incident photon energies across the Lj (j=1-3) sub-shell absorption edges of $_{66}$Dy*
Rajnish Kaur, Anil Kumar, M. Czyzycki1, A. Migliori, A. G. Karydas and Sanjiv Puri
X-ray Spectrometry 47 (2018) 294 ***(IF 1.29, ISSN: 1097-4539)***
20. *A study of the influence of chemical environment on the L_i (i=1-3) sub-shell X-ray intensity ratios and the L_3 absorption-edge energy for some compounds of $_{66}$Dy using synchrotron radiation*
Rajnish Kaur, Anil Kumar, M. Czyzycki1, A. Migliori, A. G. Karydas and Sanjiv Puri
X-ray Spectrometry 48 (2019) 126 ***(IF 1.29, ISSN: 1097-4539)***
21. *Low energy carbon ion induced M X-ray relative intensities for $_{70}$Yb, $_{82}$Pb and $_{83}$Bi*
Shehla, Ajay Kumar, Anil Kumar, Deepak Swamy Sanjiv Puri
Nucl. Instrum and Methd. B 458 (2019) 130 ***(IF 1.11, ISSN NO. 0168-583X)***
22. *Measurements of mass attenuation coefficients for $_{51}$Sb over energy region 4 keV–14 keV using synchrotron radiat*ion.
Sandeep Kaur, Anil Kumar , M. Czyzycki, A.G. Karydas , SanjivPuri
Radiat. Phys. Chem. 177(2020) 109149 ***(IF 1.20, ISSN No. 0969-806X)***
23. *Experimental evidence for onset of L_1–L_3M_5transition at Z = 75 through measurements of fluorescence and Coster–Kronig yields for W and Re.*
Vibha Ayri, Sandeep Kaur, Anil Kumar , M. Czyzycki, A.G. Karydas , SanjivPuri
J. Anal. At. Spectrom. 36 (2021) 380. ***(IF 4.023, ISSN No. 0267-9477)***
24. *Experimental validation of theoretically predicted cut-off of L_1–$L_3M_{4,5}$ transitions at Z = 50 through measurements of fluorescence and Coster–Kronig yields for Sn and Sb.*
Sandeep Kaur, VibhaAyri, Anil Kumar , M. Czyzycki, A.G. Karydas , SanjivPuri
J.of Metrologia 58 (2021) 035002. ***(IF 3.157, ISSN No. 0026-1394)***
25. *Measurements of L X ray intensity ratios for $_{51}$Sb at incident photon energies across its L_i (i=1-3) edge energies.*
Sandeep Kaur, Vibha Ayri, Anil Kumar, M. Czyzycki, A. G. Karydas and SanjivPuri
AIP Conf. Proc. 2352(1), 050002 (2021); 10.1063/5.0052413 ***(ISSN: 1551-7616)***
26. *Influence of wave function on proton induced M XRP cross sections for $_{71}$Lu and $_{80}$Hg.*
Balwinder Singh**, Anil Kumar** and SanjivPuri
AIP Conf. Proc. 2352(1), 050012 (2021); 10.1063/5.0052419 ***(ISSN: 1551-7616)***
27. *Measurements of L X ray intensity ratios for $_{75}$Re at incident photon energies across its L_i(i=1-3) edge energies.*
Vibha Ayri, Sandeep Kaur, Anil Kumar, M. Czyzycki, A. G. Karydas and SanjivPuri
AIP Conf. Proc. 2352(1), 050004 (2021); 10.1063/5.0052425 ***(ISSN: 1551-7616)***
28. *Experimental L-series x ray production cross sections for Re by tuning synchrotron radiation across its Li (i=1-3) sub-shell ionization thresholds*.
Vibha Ayri, Sandeep Kaur, Anil Kumar , M. Czyzycki, A.G. Karydas , SanjivPuri
Radiat. Phys. Chem. 188(2021) 109599 ***(IF 2.858, ISSN No. 0969-806X)***
29. *Experimental production cross sections for synchrotron radiation induced L-series X-ray of Sn and Sb at energies across their Li (i=1-3) absortion edges.*
Sandeep Kaur, VibhaAyri, Anil Kumar, M. Czyzycki, A. G. Karydas and Sanjiv Puri
X-ray Spectrometry (2021) 1-11 ***(IF 1.488, ISSN: 1097-4539)***
30. *Measurements of L-shell X-ray production cross sections for Sn and Sb using 6–14 keV synchrotron radiation.*
Sandeep Kaur, VibhaAyri, Anil Kumar, M. Czyzycki, A. G. Karydas and Sanjiv Puri
Nucl. Instrum and Methd. B 521 (2022) 33 ***(IF 1.11, ISSN NO. 0168-583X)***

b) PAPERS PRESENTED IN NATIONAL/INTERNATIONAL CONFERENCES/SYMPOSIA

1. Measurements of XRP cross sections and fluorescence yields for Yb at 22.6 keV incident photon energy.
Anil Kumar and Sanjiv Puri,
Presented at *Nuclear Technology for Sustainable Development* held at Thapar University, Patiala, *NTSD-09*, October 10 - 11, (2009).
2. Li (i=1,2) sub-shell fluorescence yields for rare earth elements.
Sanjiv Puri, **Anil Kumar** and Yogeshwar Chauhan,
Proceedings of *National Conference on X-ray Fluorescence* held at Saha Institute of Nuclear Physics, Kolkata, *XRF-2010*, January 12-15, (2010).
3. Angular dependence of L x-ray emission in Dy at 22.6 keV photon energy.
Anil Kumar and Sanjiv Puri,
Presented at *Interaction of EM Radiation with Atoms Molecules & Clusters* held at RRCAT, Indore, *TC-2010*, March 3-6, (2010).
4. Measurements of XRP cross sections and Li (i=1,2) sub-shell fluorescence yields for Ho at 22.6 keV incident photon energy.
Anil Kumar and Sanjiv Puri,
Presented at *9th Asian International seminar on Atomic and Molecular Physics* held at Korea Institute for Advanced Study, Seoul, Korea, *AISAMP-9*, October 4 - 8, (2010).

5. Energy dependence of L_i(i=1-3) sub-shell x-ray relative intensities of Dy.
Anil Kumar and Sanjiv Puri,
Presented at *National Symposium on Radiation Physics and Nanomaterials* held at Punjabi University, Patiala, *NSRPN-11*, February 4 - 5, (2011).
6. Measurements of the L_i(i=1-3) sub-shell x-ray relative intensities for some compounds of Hg at 22.6 keV.
Anil Kumar and Sanjiv Puri,
Presented at *National Symposium on Radiation Physics and Nanomaterials* held at Punjabi University, Patiala, *NSRPN-11*, February 4 – 5, (2011).
7. Affects of Herbicide on soil and vegetation – A study using EDXRF Technique.
Yogeshwar Chauhan, **Anil Kumar** and Sanjiv Puri,
Presented at *National Symposium on Radiation Physics and Nanomaterials* held at Punjabi University, Patiala, *NSRPN-11*, February 4 – 5, (2011).
8. Measurements of XRP cross sections and Li (i=1,2) sub-shell fluorescence yields for Gd at 22.6 keV incident photon energy.
Anil Kumar and Sanjiv Puri,
Presented at *14th Punjab Science Congress* held at SLIET,Sangrur, *PSC-14*, February 7 - 9, (2011).
9. Chemical effects on L_i(i=1-3) sub-shell x-ray relative intensities for Dy.
Anil Kumar and Sanjiv Puri,
Presented at *14th Punjab Science Congress* held at SLIET,Sangrur, *PSC-14*, February 7 - 9, (2011).
10. Chemical effects on L_i(i=1-3) sub-shell x-ray relative intensities for some compounds of Hg at 22.6 keV.
Anil Kumar and Sanjiv Puri,
Presented at *XXVII International conference on Photonic, Electronic and Atomic collisions* held at Queen's University, Belfast, U.K. *ICPEAC-XXVII*, July 27 – 2nd August, (2011).
11. Elemental analysis of lubricating oil used in petrol engine using EDXRF technique.
Anil Kumar, Gurjeet singh and Sanjiv Puri,
Presented at *2nd National Conference on Advanced Materials and Radiation Physics* held at SLIET, Longowal, Sangrur, *AMRP-2011*, Nov 4-5, (2011).
12. Measurements of the L_i(i=1-3) sub-shell intensity ratios for $_{58}$Ce at 22.6 keV incident photon energy.
Sanjiv Puri and **Anil Kumar,**
Presented at *2nd National Conference on Advanced Materials and Radiation Physics* held at SLIET, Longowal, Sangrur, *AMRP-2011*, Nov 4-5, (2011).
13. Measurements of the L_i(i=1-3) sub-shell intensity ratios for $_{74}$W at 15 keV incident photon energy.
Anil Kumar and Sanjiv Puri**,**
Presented at *International Conference on Emerging Trends in Physics for Environmental Monitoring & Management* held at Punjabi University, Patiala, *ETPEMM-12*, Dec 17-19, (2012).
14. Measurement of resonant Raman scattering differential cross sections for $_{74}$W Using Synchrotron radiation.
Anil Kumar and Sanjiv Puri**,**
Presented at *3rd National Conference on Advanced Materials and Radiation Physics* held at SLIET, Longowal, Sangrur, *AMRP-2013*, Nov 22-23, (2013).
15. Measurements of the L_i(i=1-3) sub-shell intensity ratios and chemical effects for $_{58}$Ce at 22.6 keV incident photon energy.
Anil Kumar and Sanjiv Puri**,**
Presented at *New Frontiers in Chemical Sciences* held at G.S.S.D.G.S Khalsa College, Patiala, NFCS-*01*, Nov 15, (2014).
16. X-ray production cross sections at incident photon energies across the M_i(i=1-5) edges of $_{90}$Th.
Rajnish Kaur, Shehla, **Anil Kumar** and Sanjiv Puri,
Presented at *4th National Conference on Advanced Materials and Radiation Physics* held at SLIET, Longowal, Sangrur, *AMRP-2015*, March 13-14, (2015).
17. Effect of wave function on proton induced LXRP cross sections for $_{62}$Sm and $_{74}$W.
Shehla, Rajnish Kaur, **Anil Kumar** and Sanjiv Puri,
Presented at *4th National Conference on Advanced Materials and Radiation Physics* held at SLIET, Longowal, Sangrur, *AMRP-2015*, March 13-14, (2015).
18. Measurements of the L X-rays production cross sections for $_{74}$W at incident photon energies 12.1-13.0 keV using synchrotron radiations.
Rajnish Kaur, **Anil Kumar,** M.K. Tiwari and Sanjiv Puri,
Presented at *Two Days National Conference on Research Trends in physics and Electronics* held Department of Physics, S.G.G.S Khalsa College, Mahilpur, Hoshiarpur, Nov 25-26, (2016).
19. L_3 sub-shell X-ray production cross sections for $_{76}$Os at incident photon energies 10.9-12.7 keV using synchrotron photoionization method.
Rajnish Kaur, **Anil Kumar,** M.K. Tiwari and Sanjiv Puri,
Presented at *Two Days National Conference on Research Trends in physics and Electronics* held Department of Physics, S.G.G.S Khalsa College, Mahilpur, Hoshiarpur, Nov 25-26, (2016).
20. Parameterization of Proton Induced Mi (i=1-5) sub-shell X-ray production cross sections.
Shehla, Rajnish Kaur, **Anil Kumar** and Sanjiv Puri,
Presented at *Two Days National Conference on Research Trends in physics and Electronics* held Department of Physics, S.G.G.S Khalsa College, Mahilpur, Hoshiarpur, Nov 25-26, (2016).
21. Measurements of the Li (i=1-3) sub-shell X-ray relative intensities for $_{76}$Os using Synchrotron radiation.
Rajnish Kaur, **Anil Kumar,** M.K. Tiwari and Sanjiv Puri,
Presented at *21st National Conference on Atomic and Molecular Physics* held at PRL, Ahmedabad, NCAMP–2017, Jan 3-6, (2017).
22. Low velocity O^{+6} ion induced M_j sub-shell X-ray production cross sections for $_{79}$Au, $_{82}$Pb and $_{83}$Bi.
Shehla, Ajay Tomar, **Anil Kumar,** Chandan Bagdia, Lokesh c Tribedi and Sanjiv Puri,
Presented at *21st National Conference on Atomic and Molecular Physics* held at PRL, Ahmedabad, NCAMP–2017, Jan 3-6, (2017).
23. Cross sections for production of the Mj (j=1-5) sub-shell X-rays of $_{79}$Au, $_{82}$Pb and $_{83}$Bi produced by 100keV proton impact.
Shehla, Ajay Tomar, **Anil Kumar,** Chandan Bagdia, Lokesh c Tribedi and Sanjiv Puri,
Presented at *21st National Conference on Atomic and Molecular Physics* held at PRL, Ahmedabad, NCAMP–2017, Jan 3-6, (2017).
24. M-shell X-ray production cross sections by proton impact on $_{81}$Tl.
Shehla. A. Mandal, Madhushree, Ajay Kumar, **Anil Kumar,** Sanjiv Puri and L.C. Tribedi,
Presented at *21st National Symposium on Radiation Physics* held at RRCAT, Indore, NSRP-2018, March 5 – 7, 2018.
25. Measurements of L_1 to L_3 subshell Coster-Kronig transition probability for $_{66}$Dy.

Rajnish Kaur, Anil Kumar, M. Czyzycki1, A. Migliori, A. G. Karydas and Sanjiv Puri
Presented at *21st National Symposium on Radiation Physics* held at RRCAT, Indore, NSRP-2018, March 5 – 7, 2018.

26. Li (i=1-3) subshell X ray intensity ratios for $_{66}$Dy using synchrotron radiation.
Rajnish Kaur, **Anil Kumar**, M. Czyzycki1, A. Migliori, A. G. Karydas and Sanjiv Puri
Presented at *21st National Symposium on Radiation Physics* held at RRCAT, Indore, NSRP-2018, March 5 – 7, 2018.

27. M_i (i=1-5) sub-shell X-ray production cross section measurements at photon energies in vicinity of the Lj (j=1-3) sub-shell absorption edge energies of $_{66}$Dy.
Rajnish Kaur, **Anil Kumar,** M. Czyzycki1, A. Migliori, A. G. Karydas and Sanjiv Puri
Presented at *European Conference on X-Ray Spectrometry* (EXRS-2018) held at Ljubljana,June 24-29 , 2018.

28. Energy dependence of the line resolved M_i (i=1-5) sub-shell X-ray production cross section & intensity ratio for $_{82}$Pb.
Sandeep Kaur, Vibha Ayri, An**il Kumar** and Sanjiv Puri,
Presented at *22nd National Symposium on Radiation Physics* held at JNU, New Delhi, NSRP-2019, Nov 8 – 10, 2019.

29. M_i (i=1-5) sub-shell X-ray production cross-sections for $_{75}$ Re at incident photon energies $1.8<E_{inc}<60$keV.
Vibha Ayri, Sandeep Kaur, **Anil Kumar** and Sanjiv Puri,
Presented at *22nd National Symposium on Radiation Physics* held at JNU, New Delhi, NSRP-2019, Nov 8 – 10, 2019.

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30. Low energy N^{7+} ion induced Mj sub-shell X-ray production cross sections for $_{79}$Au, $_{82}$Pb and $_{83}$Bi
Shehla, Ajay Kumar, **Anil Kumar**, C. Bagdia, L.C. Tribedi and Sanjiv Puri,
Presented at *22nd National Symposium on Radiation Physics* held at JNU, New Delhi, NSRP-2019, Nov 8 – 10, 2019.

31. M X-ray relative intensities for $_{70}$Yb by C ion impact.
Shehla, Ajay Kumar, **Anil Kumar**, D. Swami and Sanjiv Puri,
Presented at *22nd National Symposium on Radiation Physics* held at JNU, New Delhi, NSRP-2019, Nov 8 – 10, 2019.

32. M_i (i=1-5) sub shell X-ray Emission across I_j (j=1-3) sub shell absorption edges of $_{66}$Dy.
Rajnish Kaur, **Anil Kumar,** M. Czyzycki1, A. Migliori, A. G. Karydas and Sanjiv Puri,
Presented at *22nd National Symposium on Radiation Physics* held at JNU, New Delhi, NSRP- 2019, Nov 8 – 10, 2019.

33. Measurements of L X ray intensity ratios for $_{51}$Sb at incident photon energies across its L_i(i=1-3) edge energies.
Sandeep Kaur, Vibha Ayri, **Anil Kumar**, M. Czyzycki, A. G. Karydas and SanjivPuri
Presented at *5th National e-Conference on Advanced Materials and Radiation Physics* held at SLIET, Longowal, Sangrur, *AMRP-2020,* Nov 9-11, (2020)

34. Measurements of L X ray intensity ratios for $_{75}$Re at incident photon energies across its L_i(i=1-3) edge energies.
Vibha Ayri, Sandeep Kaur, **Anil Kumar**, M. Czyzycki, A. G. Karydas and SanjivPuri
Presented *at 5th National e-Conference on Advanced Materials and Radiation Physics* held at SLIET, Longowal, Sangrur, *AMRP-2020,* Nov 9-11, (2020)

35. Influence of wave function on proton induced M XRP cross sections for $_{71}$Lu and $_{80}$Hg.
Balwinder Singh**, Anil Kumar** and SanjivPuri
Presented *at 5th National e-Conference on Advanced Materials and Radiation Physics* held at SLIET, Longowal, Sangrur, *AMRP-2020,* Nov 9-11, (2020)

36. L-shell average fluorescence yield for $_{75}$Re using synchrotron radiation.
Vibha Ayri, Sandeep Kaur, Harpreet Singh, **Anil Kumar**, M. Czyzycki, A. G. Karydas and SanjivPuri
Presented *at National association of Radioisotopes and Radiation industry (NAARRI)* held at LBICC, Kochi, Kerala, Jan 9-12, (2023)

37. Measurements of L X-ray branching ratios for $_{75}$Re at incident photon energies across its L_i(i=1-3) edge energies.
Vibha Ayri, Sandeep Kaur, Harpreet Singh, **Anil Kumar**, M. Czyzycki, A. G. Karydas and SanjivPuri
Presented at *One day National Seminar on Condensed Matter Physics and Materials* held at Punjabi University, Patiala, *CMPM-2023*, May 8, (2023).

38. Measurements of mass-attenuation coefficients for $_{51}$Sb at photon energies across its L3 sub-shell absorption edge.
Sandeep Kaur, Vibha Ayri, **Anil Kumar**, M. Czyzycki, A. G. Karydas and SanjivPuri
Presented at *One day National Seminar on Condensed Matter Physics and Materials* held at Punjabi University, Patiala, *CMPM-2023*, May 8, (2023).

c) Symposia/workshops and Orientation /Refresher courses attended:

1. *National Seminar on Radiation & Materials* held at Department of Physics, Punjabi University, Patiala from March 10 – 11, 2008.

2. Indian Nuclear Society National Seminar on *Nuclear Technology for Sustainable Development* held at Thapar University, Patiala from October 10 – 11, 2009.

3. Tropical Conference on *Interaction of EM Radiation with Atoms Molecules & Clusters* held at Raja Ramanna Centre of Advanced Technology, Indore from March 3 – 6, 2010.

4. *9th Asian International seminar on Atomic and Molecular Physics* held at Korea Institute for Advanced Study, **Seoul, KOREA** from October 4 - 8, 2010.

5. *National Symposium on Radiation Physics and Nanomaterials* held at Department of Physics, Punjabi university, Patiala from February 4 – 5, 2011.

6. *14th Punjab Science Congress* held at Sant Longowal Institute of Engineering and Technology, Longowal, Sangrur from February 7 - 9, 2011.

7. *XXVII International conference on Photonic, Electronic and Atomic collisions* held at Queen's University, **Belfast, U.K.** from July 27-2nd August, 2011.

8. *2nd National Conference on Advanced Materials and Radiation Physics* held at Sant Longowal Institute of Engineering and Technology, Longowal, Sangrur from Nov 4-5, 2011.

9. *International Conference on Emerging Trends in Physics for Environmental Monitoring & Management* held at Department of Physics, Punjabi University, Patiala from Dec 17-19, 2012.

10. *Workshop on Computational Techniques in Physics* held at Sant Longowal Institute of Engineering and Technology, Longowal, Sangrur from March 23-24, 2013.

11. *3rd National Conference on Advanced Materials and Radiation Physics* held at Sant Longowal Institute of Engineering and Technology, Longowal, Sangrur from Nov 22-23, 2013.

12. *National Symposium on Emerging Trends in Physics for Ionizing Radiations, Aerosols and Material Science* held at Department of Physics, Punjabi University, Patiala from Dec 13-14, 2013.
13. *1st National conference on New Frontiers in Chemical Sciences* held at G.S.S.D.G.S Khalsa College, Patiala, NFCS-*01*, Nov 15, 2014.

14. UGC Sponsored *23rd Orientation Programme* held at Academic Staff College, Punjabi University, Patiala from Dec 1-27, 2014.

15. *4th National Conference on Advanced Materials and Radiation Physics* held at SLIET, Longowal, Sangrur, *AMRP-2015*, March 13-14, 2015.

16. UGC Sponsored *52nd Refresher Course in Research Methodology in Physical and Life Sciences* held at UGC-Human Resource Development Centre, Punjabi University, Patiala from June 01-20, 2015.

17. *Fullbright-Nehru Fellowship opportunities for Research and Professional Development in USA* held at Skill Development Centre, Punjabi University, Patiala on 5th April 2016.

18. *Two Days National Conference on Research Trends in physics and Electronics* held at Post Graduate Department of Physics, S.G.G.S Khalsa College, Mahilpur, Hoshiarpur from Nov 25-26, 2016.

19. *21st National Conference on Atomic and Molecular Physics* (NCAMP–2017) held at Physical Research Laboratory, Ahmedabad from Jan 3-6 2017.

20. GIAN Sponsored *X-ray Absorption Spectroscopy: Materials inside-Analysis Tool* held at Punjab University, Chandigarh from Oct 03-08, 2017.

21. *21st National Symposium on Radiation Physics* (NSRP-21) held at Raja Ramanna Centre of Advanced Technology, Indore from March 5 – 7, 2018.

22. *Three Days National Workshop on Latex and Technical Writing* held at Department of Basic and Applied Sciences, Punjabi University, Patiala from Nov 23-25, 2018.

23. *22nd National Symposium on Radiation Physics* (NSRP-22) held at University Science Instrumentation Centre, Jawaharlal Nehru University, New Delhi from Nov 8 – 10, 2019.

24. TEQIP-III sponsored *One Day National Seminar on Recent Developments in Condensed Matter Physics (RD-CMP)* held at Department of Applied Sciences, Punjab Engineering College, Chandigarh Nov 16, 2019.

25. UGC Sponsored *Refresher Course in Physics* held at UGC-Human Resource Development Centre, Punjabi University, Patiala from Dec 02-14, 2019.

26. AICTE Recognised Faculty Development Programme *Refresher course on Application of Nano science in Modern Day Research and Technology* held at Applied Science Department, NITTTR Chandigarh from June 19-02, 2020.

27. *5th National e-Conference on Advanced Materials and Radiation Physics* held at Sant Longowal Institute of Engineering and Technology, Longowal, Sangrur from Nov 9-11, 2020.

28. *Two days workshop on Nano-scale Characterization and Analysis* held at Applied Science Department, NITTTR Chandigarh from March 10-11, 2022.

29. *One day National Seminar on Condensed Matter Physics and Materials (CMPM-2023*) held at Punjabi University, Patiala, May 8, 2023.

Date: _19_/ 09 /_2023__ **(Signature of the Teacher)**