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1. **Name** : Dr. Anil Kumar
2. **Designation** : Assistant Professor (Physics)
3. **Department** : Department of Basic and Applied Sciences
4. **Date of Birth** : 29/01/1981
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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			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 = 16
b. Conference/Seminar Presentation = 23

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: Registered

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	B.Tech
8.	Applied Physic-II	B.Tech

14. Administrative/ Academic Experience

- i) Member of Departmental Committee's.
- ii) Worked as guest faculty in Department of Physics, Punjabi University Patiala.

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. Experienced in designing of an experimental set-up relating to EDXRF/PIXE techniques.

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 $E_{M1} < E_{inc} \leq 150 \text{keV}$,
Yogeshwar Chauhan, **Anil Kumar** and Sanjiv Puri,
Atomic Data and Nuclear Data Tables, **95**(4), (2009) 475-500.
- 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**(10), (2009) S 309-313.
- 3) Measurement of L_1 and L_2 Sub-shell fluorescence yields for Dy at 22.6 keV incident photon energy,
Anil Kumar and Sanjiv Puri,
Asian journal of chemistry, **21**(10), (2009) S 314-317.
- 4) Incident photon energy and Z dependence of L x-ray relative intensities,
Anil Kumar, Yogeshwar Chauhan and Sanjiv Puri,
Atomic Data and Nuclear Data Tables, **96**, (2010) 567-585.
- 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.Methd.B, **268** (2010),1546-1550.
- 6) Chemical effects on the L_i ($i=1-3$) sub-shell x-ray relative intensities for some compounds of Hg,
Anil Kumar and Sanjiv Puri,
Radiation Physics and Chemistry, **80** (2011), 1166-1171.
- 7) L_i ($i=1-3$) sub-shell x-ray relative intensities for some compounds of ^{66}Dy at 22.6 and 59.54 keV incident photon energies,
Anil Kumar and Sanjiv Puri,
Radiation Physics and Chemistry, **81** (2012), 735-739.

- 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
AMRP-2013 Conf. Proc. in Int. J. of Engg. Res. and Tech. (2013) 95.
- 9) 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,
AMRP- 2015. AIP conf. Proc. 1675(2015) 030090.
- 10) Effect of wave function on proton induced L XRP cross sections for ^{62}Sm and ^{74}W .
Shehla, Rajnish Kaur, Anil Kumar and Sanjiv Puri,
AMRP- 2015. AIP conf. Proc. 1675(2015) 030091 .
- 11) Measurements of X-ray production cross sections at photon energies across the $L_i (i = 1-3)$ sub-shell absorption edges of ^{74}W and ^{76}Os using synchrotron radiation
Rajnish Kaur, Anil Kumar, M.K. Tiwari and Sanjiv Puri,
Electron spectroscopy and related phenomena 213 (2016), 22-31.
- 12) Parameterization of Proton Induced $M_i (i=1-5)$ sub-shell X-ray production cross sections.
Shehla, Rajnish Kaur, Anil Kumar and Sanjiv Puri,
Pure and Applied Physics 13 (2016) 205-208.
- 13) Measurements of the $L_i (i=1-3)$ sub-shell X-ray relative intensities for ^{76}Os using Synchrotron radiation.
Rajnish Kaur, Anil Kumar, M.K. Tiwari and Sanjiv Puri,
Pure and Applied Physics 13 (2016) 188-190.
- 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,
Pure and Applied Physics 13 (2016) 226-228.
- 15) Measurements of line resolved M- shell X-ray production cross sections for ^{79}Au , ^{82}Pb and ^{83}Bi by 100keV/u proton, C, N, O ions.
Shehla, Ajay Tomar, Anil Kumar, Chandan Bagdia, Lokesh c Tribedi and Sanjiv Puri,
Nucl.Instrum.Methd.B 399 (2017) 74-82.
- 16) 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
Radiation Physics and Chemistry, 136 (2017), 30-37.

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. $L_i (i=1,2)$ 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 $L_i (i=1,2)$ 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 $L_i(i=1,2)$ 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 M_i ($i=1-5$) 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 L_i ($i=1-3$) 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 M_j ($j=1-5$) 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).

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.

Date: 20 / 04 / 2017 __

Anil Kumar
(Signature of the Teacher)