# **Curriculum Vitae**

## Contact information:

1. Name: Dr. Mohinder Singh

2. Designation: Assistant Professor

3. Department: Physics

4. Institute: Punjabi University Patiala

5. Email: mohindersingh@pbi.ac.in

6. Contact: +91-82848-58913

7. Areas of specialization: Nuclear and radiation physics,

**Non-destructive testing** 

## Personal information:

8. Father's name: S. Ashok Singh

9. Mother's name: Smt. Kamaljit Kaur

10. Spouse' Name: Mrs. Manjit Kaur

11. Date of Birth: 12<sup>th</sup> March, 1986

12. Address for Correspondence: #196, Urban Estate Patiala

## 13. Academic Qualifications:

Sr.No	Degree	Year	Board/Univ./	Marks(%)	Division	<b>Subjects Studied</b>
1	B.Sc.	2007	Punjabi University Patiala	65.67	1 <sup>st</sup>	Physics, Chemistry, Mathematics, Punjabi, English.
2	M.Sc.	2009	Punjabi University Patiala	74.25	1 <sup>st</sup>	Physics
3.	GATE	2009			Qualified	
4.	CSIR (JRF)	2010	UGC-CSIR		Qualified	Physical Sciences
5.	Ph. D. (Course Work)	2013	Punjabi University Patiala		B+	Radiation Physics, Research Methodology, Techniques in Experimental physics.



#### 14. Membership of Professional Bodies/Organizations

Life Member: Indian Society of Radiation Physics.

#### 15. Details of Experience:

S.	Name of the		<b>Position Held</b>	Duration	Major Job Responsibilities
No	Inst./Employer				and Nature of Experience
1.	Department of	Physics	Assistant Professor	Dec 2011	Teaching and Research
	Punjabi University	Patiala	(Physics)	to till date	

#### 16. Published Work (Please specify numbers only):

**a.** Research Papers

i) National = 03

ii) International = 12

**b.** Research Paper published in conference/symposia proceedings: **10** 

## 17. Number of guided/completed/pursuing students in Ph.D— 01 (Perusing)

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

S. No.	Paper	Class
1.	Applied Physics-I	B. Tech
2.	Applied Physics-II	B. Tech
3.	Nuclear Physics (PHYM1104T)	MSc Physics
4.	Waves and Optics (BAS-PH-CT4)	FYI MSc. Programme in Physics & MD-FYIP Physical & Chemical Sciences
5.	Fundamentals of Quantum Mechanics (BAS-PH-CT10)	FYI MSc. Programme in Physics
6.	Classical Mechanics	FYI MSc. Programme in Physics

## 19. Technical Proficiency

I have an experience to handle radioactive sources of variety of strengths, NaI (Tl) (scintillation detector) and electronic equipment's associated with it. Knowledge of PC based ORTEC Mastreo-32 Multi channel analyzer (MCA), Origin, Windows, Projector overhead. The non-invasive measurements of materials using higher strength of Radioactive source. Experience in measurements of radiation interaction characteristics and interface determination in gamma ray-spectrometry using Compton scattering techniques. Also, expertise in generating numerous gamma energies from a single conventional radioisotope which are not available from traditional sources. As an assistant professor in the current institute, I am playing a role of teaching different subjects such as;

Nuclear physics, Classical mechanics, Quantum mechanics, Waves and Optics, Engineering physics at postgraduate and graduate level. Besides this, I am/was a member of various administrative committees such as, Departmental Research Board, Subject Expert, Hostel management, admission cell, Question setter etc. I have also published my research as a book chapter. There are my 15 research papers published in National/International peer reviewed journals. Along with this, I have technical proficiency in handling different radioactive sources of different strengths and I have an experience handling the statistical data analytically on the machine.

#### 20. Administrative/Academic Experience

- 1. Worked as member of ACD of Department of basic and applied sciences.
- **2.** Wardenship in a hostel in the university campus.
- **3.** Member of various Departmental Committees (Admission Committee, Fee ConcessionCommittee, Orientation Committee, Discipline Committee, Anti-Ragging).

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- **4.** Secretary Indian Society for Radiation Physics (ISRP).
- 5. Member of ACD of Department of Physics for the session 2023-24

#### 20. Citations of Research publications (as per Google Scholar)

	All	Since 2018
Citations	66	66
h-index	5	5
i10-index	3	3

#### 21. List of Published Research Papers

#### (a) Published in National/International Journals.

A Compton scattering technique to determine wood density and locating defects in it.

1. Akash Tondon, Mohinder Singh, B. Singh, B. S. Sandhu AIP Conference Proceedings 1675 (2015) 020048

https://aip.scitation.org/doi/abs/10.1063/1.4929206

Compton scattering technique in concentration and fluid-fluid interface measurements using low resolution detector.

2. Akash Tondon, **Mohinder Singh**, B.S. Sandhu and Bhajan Singh **NSRP-20 Conf. Proc.**, ISBN 978-93-82845-96-6, (2015). https://www.ndt.net/search/docs.php3?id=21219

	Use Of Gamma Ray Back Scattering For The Detection Of Foreign Body In Dalbergia
_	Sissoo Wood
3.	Akash Tondon, <b>Mohinder Singh</b> , B. Singh, B. S. Sandhu
	Non-Destructive Evaluation (NDE)-INDIA (2016)
	https://doi.org/10.1016/j.apradiso.2017.08.031
	A Compton scattering technique for concentration and fluid-fluid interface
	measurements using NaI(Tl) detector
4.	Akash Tondon, <b>Mohinder Singh</b> , B. Singh, B. S. Sandhu
	Nuclear Instruments and Methods in Physics Research B 403 (2017), 21–27
	https://doi.org/10.1016/j.nimb.2017.04.080
	Non-destructive study of wood using the Compton scattering technique
_	Akash Tondon, Mohinder Singh, B. Singh, B. S. Sandhu
5.	Applied Radiation and Isotopes, 129 (2017), 204–210
	https://doi.org/10.1016/j.apradiso.2017.08.031
	Molar extinction coefficient of organic compounds as a function of effective atomic
(	number
6.	Mohinder Singh, Akash Tondon, B. S. Sandhu, and Bhajan Singh
	AIP Conference Proceedings 1953, (2018) 140129.
	https://doi.org/10.1063/1.5033304
	Effective Atomic Number Dependence of Radiological Parameters of Some Organic
	Compounds at 122 KeV Gamma Rays
7.	Mohinder Singh, Akash Tondon, Bhajan Singh and B. S. Sandhu
	Journal of Nuclear Physics, Material Sciences, Radiation and Applications, 5
	(2018) 299-310
	https://jnp.chitkara.edu.in/index.php/jnp/article/download/62/39
	Energy dependence of radiation interaction parameters of some organic
8.	Compounds
	Mohinder Singh, Akash Tondon, B. S. Sandhu, and Bhajan Singh
	Radiation Physics and Chemistry, 145 (2018) 80-88
	https://doi.org/10.1016/j.radphyschem.2017.12.020
9.	Effect of addition of cerium (III) nitrate hexahydrate on gamma ray
9.	interaction properties in acetone at various gamma energies obtained by Compton scattering technique
	Mohinder Singh, Akash Tondon, Bhajan Singh and B. S. Sandhu
	Chemical Physics 525 (2019) 110377
	https://doi.org/10.1016/j.chemphys.2019.05.004
	Importance of Voxel Size in Defect Localization Using Gamma-Ray Scattering
10.	Akash Tondon, <b>Mohinder Singh</b> , B. S. Sandhu, and Bhajan Singh
10.	Nuclear Science and Engineering (2019), 193, 1265-1275.
	https://doi.org/10.1080/00295639.2019.1614802
	Study of radiation interaction parameters for organic compounds at gamma photon
	energies different from available standard radioisotope.
11.	Mohinder Singh, Akash Tondon, B. S. Sandhu, and Bhajan Singh
	Chinese Journal of Physics 65 (2020) 221–234
	https://doi.org/10.1016/j.cjph.2020.03.009
	Radiation Interaction Characteristics of Solutions of La(NO3)3.6H2O and
	Sm(NO3)3.6H2O in Acetone Using Compton Scattering Technique.
12.	Mohinder Singh, Akash Tondon, B. S. Sandhu, and Bhajan Singh.
	Nuclear Science and Engineering (2022) 196, 1172-1193.
	https://doi.org/10.1080/00295639.2022.2067737

Estimating the mineral density of trabecular bone using Compton scattering
Akash Tondon, Mohinder Singh, Bhajan Singh and B. S. Sandhu.
Applied Radiation and Isotopes (2023) 191, 110530
<a href="https://doi.org/10.1016/j.apradiso.2022.110530">https://doi.org/10.1016/j.apradiso.2022.110530</a>.

Compton scattering geometry: a tool to study radiation interaction characteristics of rare earth compounds doped in low-Z organic compound.

14. Mohinder Singh, Akash Tondon, B. S. Sandhu, and Bhajan Singh.
Radiochimica acta (2023)
<a href="https://doi.org/10.1515/ract-2022-0094">https://doi.org/10.1515/ract-2022-0094</a>

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Applied Radiation Isotopes (2023) 191, 110530
<a href="https://doi.org/10.1016/j.apradiso.2022.110530">https://doi.org/10.1016/j.apradiso.2022.110530</a>

## (b) Papers in the Symposia/Conferences/Seminars:

	Evaluation of Radiological parameters for various organic compounds at						
1.	differentEnergies.						
	Mohinder Singh, Akash Tondon, Bhajan Singh and B. S. Sandhu Two Days National						
	Conference on "Research Trends In Physics And Electronics						
	(NPE-2016)" S. G. G. S. Khalsa College Mahilpur, Nov. 25, 26 (2016)						
	Variation of mass attenuation coefficient of Organic compounds as a function						
2.	ofEffective atomic number at different energies.						
4.	Mohinder Singh, Akash Tondon, Bhajan Singh and B. S. Sandhu						
	20 <sup>th</sup> Punjab Science Congress. IET Bhaddal, Ropar, Punjab. Feb, 7-9, 2017.						
	Variation of mass attenuation coefficient of Organic compounds as a function						
	ofEffective atomic number at different energies.						
3.	Mohinder Singh, Akash Tondon, Bhajan Singh and B. S. Sandhu						
	5th International Conference on Advancements in Engineering & Technology-						
	2017(ICAET), B. G. I. E.T., Sangrur, Punjab. March 24, 25 (2017).						
	Energy dependence of Effective Atomic Number and Electron Density for						
	variousOrganic compounds.						
4.	Mohinder Singh, Akash Tondon, Bhajan Singh and B. S. Sandhu						
	International Conference on Advancements in Science and Technology						
	(ICAST), Mohali, April, 20, 21 (2017).						
	Energy dependence of molar extinction coefficient and effective atomic number						
	oforganic compounds.						
5.	Mohinder Singh, Akash Tondon, Bhajan Singh and B. S. Sandhu						
	Two-day National Seminar on Recent Trends in Chemistry						
	Chemistry department, Punjabi University Patiala, 15-16 Feb						
	(2018).						
	Z <sub>eff</sub> dependence of radiological parameters at 511 keV gamma energy.						
6.	Mohinder Singh, Akash Tondon, Bhajan Singh and B. S. Sandhu						
	21 <sup>st</sup> Symposium on Radiation Physics (NSRP21) Indore, March 5-7 (2018).						
	Compton scattering: A tool to study the radiation interaction parameters for low-Z						
7.	organic compounds.						
	Mohinder Singh, Akash Tondon, B. S. Sandhu and Bhajan Singh						
	23 <sup>rd</sup> Punjab Science Congress, February 7-9 (2020), SLIET, Longowal, Sangrur.						

8.	Study of radiation interaction parameters using Compton scattering technique.  M. Singh, A. Tondon, B. S. Sandhu and B. Singh  22nd National Symposium on Radiation Physics (NSRP-22) November 8-10, 2019  Jawaharlal Nehru University, New Delhi, India
9.	Experimental evaluation of radiation transmission factors for some polymeric materials at six gamma energies obtained by Compton scattering technique.  Mohinder Singh, Amandeep Sharma, Bhajan Singh, B. S. Sandhu 23 <sup>rd</sup> National Symposium on Radiation Physics (NSRP-23) to be held at University of Mysore, Manasagangotri, Mysuru on January 19-21, 2023
10.	Evaluation of transmission factors by Compton Scattering technique for some Inorganic compounds.  Mohinder Singh, Rajni Devi, B. S. Sandhu and Bhajan Singh One Day National Seminar on Condensed Matter Physics and Materials (CMPM-2023) on 8th May, 2023, Science Auditorium, Punjabi University, Patiala.

# Dr. Mohinder Singh

Assistant Professor

Department of Physics

Punjabi University Patiala, Punjab, 147002.