

## **BIO-DATA**

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### **Educational Qualifications**

<b>Sr. No.</b>	<b>Degree</b>	<b>University/ Board</b>	<b>Year of Passing</b>	<b>% of Marks</b>	<b>Division</b>
1.	Matric	I.C.S.E., New Delhi	1999	92.8	1 <sup>st</sup>
2.	10+2	P.S.E.B., Mohali	2001	70.9	1 <sup>st</sup>
3.	B.Sc. (Non Medical)	Punjabi University, Patiala	2004	73.6	1 <sup>st</sup>
4.	M.Sc. (Hons.) Physics	Panjab University, Chandigarh	2006	75.3	1 <sup>st</sup> with Distinction
5.	Ph.D. (High Energy Physics)	Panjab University, Chandigarh	Degree awarded on 17/04/2011		

### **Academic Achievements**

- **1<sup>st</sup> Position** in the subject of **Physics** in BSc. (2004) of Pbi. Univ. PTA.
- **10<sup>th</sup> Position** in the **Merit List** of BSc (2004) of Pbi Univ. PTA.
- Passed **MSc (Hons.)** with **distinction** in 2006.
- **Qualified Joint Entrance Screening Test (J.E.S.T)** in 2006.
- Qualified **UGC-NET** in 2007.
- Held the position of **Junior Research Fellow (J.R.F.)** in the **DST** research project entitled “*Search for new particles at LHC, CERN, Geneva*” from 29<sup>th</sup> May 2007 to 30<sup>th</sup> April 2009.

- **Awarded the Research Fellowship** under “Meritorious Students Scheme funded by (UGC)” from 29<sup>th</sup> July 2009 till 31<sup>st</sup> March 2010.
- Held the position of **Senior Research Fellow (S.R.F.)** under **C.S.I.R** at Panjab University, Chandigarh from 1<sup>st</sup> June, 2010 till 12<sup>th</sup> August 2010.
- **Lifetime membership** of Indian Society for Radiation Physics.
- **Lifetime membership** of Punjab Academy of Sciences.
- Awarded DST Young Scientist Project by SERB, Govt. of India

## Research Experience

- Worked in Experimental High Energy Physics as Research Scholar on the basic concepts of Particle Physics, Standard Model & B-Physics, CMS software, CMS triggers, Electroweak Physics, PYTHIA & Root computational framework.
- In Hardware section, Fabrication and Testing of Tiles including DAQ.
- Assembling, testing and production of Bakelite RPCs for the end cap regions of Central Muon Solenoid (CMS) experiment at CERN done at BARC, Mumbai (2007).
- Installation and Commissioning of Outer Hadronic Calorimeter sub-detector system at CMS site in CERN, Geneva, Switzerland (2007, 2008).
- Took shifts for the cosmic data collection at CMS detector site in CERN, Geneva, Switzerland (2008).
- Actively worked in the analyses of B-physics analysis with **Monte Carlo Simulated and real data** for the CMS detector at Large Hadron Collider (LHC).
- Involved in trigger studies for the CMS detector during data taking at CERN, Geneva, Switzerland (2010).
- Took the CMS sub-detector monitoring shifts for three months at CERN, Geneva, Switzerland (2010)
- Research work related to preparation and investigation of properties of different glasses and Solar cell studies.
- Presently involved in structural, optical and thermoluminescence studies to identify and prepare the samples suitable for TLD reader.

## Teaching Experience:

S. No.	Name of the Inst./Employer	Position held	Duration	Major job responsibilities and Nature of experience
1	Department of Physics, Punjabi University, Patiala	Assistant Professor	From 18-08-2010 till date	PG Teaching & Research

### **R & D Projects: Two**

Sr. No.	Funding Agency	Amount	Title	Duration	Status
1	Department of Science and Technology (DST), Govt. of India	1.70 lakhs	Characterization of Silicon Sheets prepared by Capillary Action Shaping Technique (CAST) for Solar Cells Application	1 year	Completed
2	Science and Engineering Research Board (SERB), DST, Govt. of India	22.92 lakhs	Synthesis and Characterization of doped borate glasses for $\gamma$ -ray and neutron detection	3 years	Completed

### **Ph.D. students guided/under guidance (Details)**

S. No.	Name of the student	Title of thesis	Year of completion
1	Maninder Kaur	s-wave and p-wave Mesons emitting Weak Decays of Charm and Bottom Hadrons	2021
2	Dinesh Kumar	Thermoluminescence And Spectral Investigation Of Rare Earth Doped Borate Glasses	2021
3	Vijeta Bhatia	Structural, Spectral and Thermal Properties of Rare Earth Doped Borate Glasses	2023
4	Amardeep Kaur	Registered	
5	Rupinderjeet Kaur	Study of Natural Radioactivity in the Environment of Eastern Punjab	2023
6	Harpreet Singh	Registered	
7	Harjeet Kaur	Registered	
8	Ritika Arora	Registered	
9	Nitish Kapur	Enrolled	

### **List of papers/courses taught at P.G. and U.G. level**

S. No.	Paper	Class
1	Quantum Mechanics	M.Sc.
2	Mathematical Methods in Physics	M.Sc.
3	Experimental Techniques in Physics	M.Sc.
4	Electronics	M.Sc.
5	Applied Mathematics	M.Sc.

## Research Publications (2014 Onwards)

- 1) “The influence of Dy<sup>3+</sup> ions on physical, structural, optical, and thermoluminescence characteristics of Li<sub>2</sub>O – BaO – B<sub>2</sub>O<sub>3</sub> – P<sub>2</sub>O<sub>5</sub> glass system”, Harjeet Kaur, Navjeet Kaur, Vijeta Bhatia, Harpreet Singh, Dinesh Kumar, **Supreet Pal Singh\***, Materials Research Bulletin, 169, 112519, 2024.
- 2) “Effect of CuO on physical, structural and optical properties of lithium borosilicate glasses”, Hariom Kumar Kaushik, Amardeep Kaur, Vijay Garg, Km Abida, Sushil Kumar, K. Singh, **Supreet Pal Singh**, Savidh Khan, Materials Today Communications, 35, 106208, May 2023.
- 3) “The Role of MgO Modifier on Physical, Structural, Optical and Thermoluminescence Properties of Lithium Borate Glass System”, Navjeet Kaur, Vijeta Bhatia, Dinesh Kumar, Ritika Arora, Manpreet Kaur, **Supreet Pal Singh\***, Indian Journal of Pure and Applied Physics, Vol. 61, pp 343-354, May 2023.
- 4) “Up-conversion and down conversion studies of Nd<sup>3+</sup> doped borophosphate glasses”, Harpreet Singh, Tajinder Singh, Devinder Singh, Vijeta Bhatia, Dinesh Kumar and **Supreet Pal Singh\***, Optical Materials, Volume 137, 11356, March 2023
- 5) “Influence of Er<sup>3+</sup> on Structural and Optical properties of Borophosphate Glasses”, Harpreet Singh, Vijeta Bhatia, Dinesh Kumar, Tajinder Singh, Devinder Singh, and **Supreet Pal Singh\***, Applied Physics A 128, 429, April 2022.
- 6) “Searching a systematics for nonfactorizable contribution to B<sup>-</sup> and B<sup>-0</sup> hadronic decays”, Maninder Kaur, **Supreet Pal Singh**, R. C. Verma, Chinese Physics C, **46**, 073105, (2022).
- 7) “Effects of Sm<sup>3+</sup> ions on the structural, optical and thermoluminescence properties of MnKB glass system”, Vijeta Bhatia, Dinesh Kumar, Harpreet Singh, Navjeet Kaur, S.M. Rao, AshokKumar, Vimal Mehta, **Supreet Pal Singh\***, Journal of Physics and Chemistry of Solids, Volume 161, February 2022, 110408.
- 8) “Estimation of indoor radon and thoron levels along with their progeny in dwellings of Roopnagar District of Punjab, India”, Deep Shikha, Rupinderjeet Kaur, Ruchie Gupta, Jaswinder Kaur, Chandan, B. K. Sapra, **Supreet Pal Singh** & Vimal Mehta, Journal of Radioanalytical and Nuclear Chemistry volume 330, 1365–1381 (Oct. 2021).
- 9) “Measurement of indoor <sup>222</sup>Rn, <sup>220</sup>Rn and decay products along with naturally occurring radionuclides in some monuments and museums of Punjab, India”,

Rupinderjeet Kaur, Deep Shikha, Anjali Kaushal, Ruchie Gupta, **Supreet Pal Singh**, R. P. Chauhan & Vimal Mehta Journal of Radioanalytical and Nuclear Chemistry volume 330, 1357–1364 (Oct. 2021).

- 10) “Nonfactorizable Contribution to B-Meson Decays to s-Wave Mesons”, Maninder Kaur, **Supreet Pal Singh**, R. C. Verma, Journal of Nuclear Physics Material Sciences Radiation and Applications, Vol. 9 No. 1 (Aug. 2021)
- 11) “Physical, optical, structural and thermoluminescence behaviour of borosilicate glasses doped with trivalent neodymium ions”, R Kaur, RB Rakesh, SG Mhatre, V. Bhatia, D Kumar, H Singh, **S.P. Singh**, Ashok Kumar, Optical Materials 117, 111109 (July 2021).
- 12) “Thermoluminescence, structural and optical properties of Ce<sup>3+</sup> doped borosilicate doped glasses”, R Kaur, RB Rakesh, SG Mhatre, V Bhatia, D Kumar, H Singh, **S.P. Singh**, Ashok Kumar, Journal of Materials Science: Materials in Electronics, 1-16 (June 2021).
- 13) “Investigation of optical and physical properties of zinc sodium bismuth borate glass system”, V. Bhatia, D. Kumar, A. Kaur, D. Singh, A. Singh, and **S. P. Singh\***, IOP Conference Series: Materials Science and Engineering **1033** 012073, 2021.
- 14) “Lung dose measurement from indoor <sup>222</sup>Rn and <sup>220</sup>Rn in dwellings of Fatehgarh district of Punjab, India”, Rupinderjeet Kaur, Deep Shikha, Ruchie Gupta, Tejinder Singh, Amit Kumar, **Supreet Pal Singh**, Vimal Mehta, Journal of Physics: Conference Series 1706 (1), 012031 (2020).
- 15) “Environmental radon, its exhalation rates and activity concentration of <sup>226</sup>Ra, <sup>232</sup>Th, and <sup>40</sup>K in Northern India” R. Kaur, D. Shikha, **Supreet Pal Singh**, V. Mehta, Nuclear Technology and Radiation Protection 35 (3), 268-282 (2020).
- 16) “Structural, optical and thermoluminescence properties of newly developed MnKB: Er<sup>3+</sup> glass system”, Vijeta Bhatia, Dinesh Kumar, Harpreet Singh, Navjeet Kaur, S.M. Rao, Ashok Kumar, Vimal Mehta, **Supreet Pal Singh\***, Journal of Non-Crystalline Solids, Volume 543, 1 September 2020, 120113.
- 17) “Synthesis of NaSrB:Nd<sup>3+</sup> glass system for the analysis of structural, optical and thermoluminescence properties”, Dinesh Kumar, Vijeta Bhatia, S.M. Rao, Chi-Liang Chen, Navjeet Kaur, **Supreet Pal Singh\***, Materials Chemistry and Physics, Volume 243, 1 March 2020, 122546.

- 18) “Effect of MnO on structural, optical and thermoluminescence properties of lithium borosilicate glasses”, Amardeep Kaur, Savidh Khan, Dinesh Kumar, Vijeta Bhatia, S.M. Rao, Navjeet Kaur, K. Singh, Ashok Kumar, **Supreet Pal Singh\***, Journal of Luminescence, Volume 219, March 2020, 116872.
- 19) “Mixed transition and rare earth ion doped borate glass: structural, optical and thermoluminescence study”, Vijeta Bhatia, Dinesh Kumar, Ashok Kumar, Vimal Mehta, Sundeep Chopra, Ankush Vij, S.M.D. Rao and **Supreet Pal Singh\***, Journal of Materials Science: Materials in Electronics (2019) 30: 677.
- 20) “Physical, structural, optical and thermoluminescence behavior of Dy<sub>2</sub>O<sub>3</sub> doped sodium magnesium borosilicate glasses”, Ramandeep Kaur, Vijeta Bhatia, Dinesh Kumar, S.M.D Rao, **Supreet Pal Singh\***, Ashok Kumar, Results in Physics 12 (2019) 827-839.
- 21) “Effect of Er<sup>3+</sup> on NaSrB glass: thermoluminescence and structural analysis”, Dinesh Kumar, S.M. Rao and **Supreet Pal Singh\***, Appl. Phys. A (2019) 125: 38.
- 22) “Assessment of Indoor Radon and Thoron in Dwellings of Nangal Area using SSNTD”, Rupinderjeet Kaur, Deep Shikha, **Supreet Pal Singh** and Vimal Mehta, Journal of Geological Society of India (May 2019) Vol. 93, issue 5, pp 603-606.
- 23) “Measurement of Radon Concentration, Its Exhalation Rates in Some Soil Samples of Punjab”, Vimal Mehta, Rupinderjeet Kaur, Deep Shikha, **Supreet Pal Singh**, AIP Proceedings 2142,120012, 1-5 (Feb 2019).
- 24) “Measurement of Indoor Radon, Thoron and Dose Rates in Some Dwellings of Punjab”, Rupinderjeet Kaur, **Supreet Pal Singh**, Deep Shikha and Vimal Mehta, AIP Proceedings AIP Proceedings 2142,120001, 1-5 (Feb 2019).
- 25) “Measurement of Indoor Radon and Thoron Levels in Environment of Roopnagar district, Punjab”, Rupinderjeet Kaur, **Supreet Pal Singh**, Deep Shikha and Vimal Mehta, International Journal of Advance Research in Science and Engineering, vol. 7 No. 8 (June 2018), p.no.-186-190.
- 26) “Assessment of Indoor Radon and Thoron in Dwellings of Nangal Area using SSNTD”, Rupinderjeet Kaur, **Supreet Pal Singh**, Deep Shikha, Vimal Mehta, Journal of the Geological Society of India (2018) (accepted).
- 27) “Gamma ray shielding studies on 26.66 B<sub>2</sub>O<sub>3</sub>–16GeO<sub>2</sub>–4Bi<sub>2</sub>O<sub>3</sub>–(53.33–x) PbO–xPbF<sub>2</sub> glass system using MCNPX, Geant4 and XCOM”, Ashok Kumar, **Supreet Pal**

**Singh**, Y Elmahroug, U Kara, H O Tekin and M I Sayyed, *Materials Research Express*, Vol. 5, No. 2, 2018.

- 28) "Quark Diagram Analysis Of Bottom Meson Decays Emitting Pseudoscalar And Vector Mesons", Kaur, M., **Singh, S.P.** & Verma, R.C. *Phys. Part. Nuclei Lett.* (2018) 15: 12.
- 29) "Structural, optical and thermoluminescence Study of Dy<sup>3+</sup> ion doped sodium strontium borate glass", Dinesh Kumar, S.M. Rao and **Supreet Pal Singh**, *Journal of Non-Crystalline solids*, 464 (2017), 51-55.
- 30) "Comparative Study Of Passive Techniques Employed For Environmental Radon Measurement", Rupinderjeet Kaur, **Supreet Pal Singh** and Vimal Mehta, *ISST Journal of Applied Physics*, Vol. 7 No. 2, (2016), p.p. 94-97
- 31) "Structural Investigation of Zn doped sodium bismuth borate glasses", V. Bhatia, D. Kumar, D. Singh and **S. P. Singh**, *AIP Conference Proceedings* 1728, 020372 (2016).
- 32) "Surface chemical etching behavior of LR-115 type II solid state nuclear track detector", Vimal Mehta, **S. P. Singh**, R. P. Chauhan, G. S. Mudahar, *Romanian Reports in Physics*, Vol. 67(3), 865-871, 2015.
- 33) "Study of Indoor Radon, Thoron, Their Progeny Concentration and Radon Exhalation Rate in the Environs of Mohali, Punjab, Northern India", Vimal Mehta, **Supreet Pal Singh**, Rishi Pal Chauhan, Gurmel Singh Mudahar, *Aerosol and Air Quality Research*, 15, 1380-1389, 2015.
- 34) "Gamma radiation shielding and health physics characteristics of diaspore-flyash concretes", Kanwaldeep Singh, Sukhpal Singh, **S Singh**, Gurmel Singh and A Dhaliwal, *Journal of Radiological Protection*, 35 (2015), 401-414.
- 35) "Radon, thoron and their progeny levels in some dwellings of Union Territory Chandigarh, India, using SSNTDs", Vimal Mehta, **S.P. Singh**, G.S. Mudahar, Amit Kumar and R.P. Chauhan, *ISST Journal of Applied Physics*, Vol. 5 No. 2, (2014), p.p. 33-35
- 36) "Surface chemical etching behavior of LR-115 type II solid state nuclear track detector: effects of UV and ultrasonic beam", V. Mehta, **S.P. Singh**, R. P. Chauhan, G. S. Mudahar, *Optoelectronics And Advanced Materials–Rapid Communications*, Vol. 8, No. 9-10 (2014) p. 943 – 947.
- 37) "Measurement of indoor radon, thoron and their progeny levels in dwellings of Union Territory Chandigarh, India: correlation with radon exhalation rates", V. Mehta, A.

Kumar, **S.P. Singh**, R. P. Chauhan, G. S. Mudahar, *Indoor and Built Environment* (2014), published online, DOI:10.1177/1420326X14535792.

- 38) “Measurement of Indoor Radon, Thoron and Their Progeny Levels in Dwellings of Ambala District, Haryana, Northern India Using Solid State Nuclear Track Detectors”, Vimal Mehta, **S.P. Singh**, R.P. Chauhan, G.S. Mudahar, *Romanian Journal of Physics* 59 (2014) 834–845.

### **Conferences/Workshops Attended**

- VI SERC school on experimental High Energy Physics held in Feb. 2007 at Jammu University, **Jammu**.
- 1<sup>st</sup> Chandigarh Science Congress held on 10-11 March 2007 at Panjab University **Chandigarh**.
- IX International workshop on Resistive Plate Chambers in Feb. 2008 at TIFR, **Mumbai**.
- 2<sup>nd</sup> Chandigarh Science Congress held on 14-15 March 2008 at Panjab University, **Chandigarh**.
- Large Hadron Collider (LHC08) Workshop held on 26-29<sup>th</sup> March 2008 at TIFR, **Mumbai**.
- CTEQ-MCNET School 2008 at Debrecen University, **Hungary**.
- 3<sup>rd</sup> Chandigarh Science Congress held on 26-28 February 2009 at Panjab University **Chandigarh**.
- 3<sup>rd</sup> Linear Collider Physics School held on 17-23 August 2009 at Ambleside Campus of University of Cumbria, **United Kingdom**.
- First Young Indian Scientists Colloquium, September 7-10, 2009, TIFR, **Mumbai**.
- Large Hadron Collider (LHC09) Workshop held on 21-27 October 2009 at TIFR, **Mumbai**.
- National Symposium on Radiation Physics and Nanomaterials held on Feb 04-05, 2011 at Punjabi University **Patiala**.
- Attended Punjab Science Congress held at Guru Nanak Dev University, **Amritsar** on Feb 2012.
- Attended the refresher course in March 2012 at Punjabi University **Patiala**.
- Participated in the international conference on “Emerging trends in Physics for Environmental Monitoring and Management” held at Punjabi University **Patiala** in Dec 2012.
- Attended workshop on “Smart Technologies In Education” held on 15<sup>th</sup> January 2013 at Punjabi University Patiala.



- Participated and poster presentation in the National Symposium on “Emerging trends on Emerging Trends in Physics for Ionizing Radiations, Aerosols and Material Science” held at Punjabi University **Patiala** from Dec 13-14, 2013.
- Participated and presented work entitled “Preparation and Measurement of Some Physical Parameters of Erbium doped Sodium strontium borate glasses” in National Conference on “Recent Advancements in Science, Commerce and Technology 2016” held at Mata Sahib Kaur Girls College, **Talwandi Sabo** from 5-6<sup>th</sup> April 2016.
- Participated and presented work entitled “Study of effect of rare-earth doping on the properties of alkali-alkaline borate glasses” in National Conference on “Recent Advances in Materials Science and Technology” held at Amity University Haryana, **Gurugram** on 21<sup>st</sup> April 2017.
- Participated and presented work in the 12<sup>th</sup> National Conference on Chemical and Environmental Sciences: Advanced Innovations-2020 (CESAI-2020) organized by Department of Chemistry, Punjabi University Patiala on 19-20 Feb 2020.
- Participated and presented work in 25<sup>th</sup> Punjab Science Congress-2022 on Future Endeavours of Science and Technology for Sustainable Growth organized by Sri Guru Teg Bahadur Khalsa College, Sri Anandpur Sahib from 7-9<sup>th</sup> February, 2022.
- Participated and presented work in One Day National Seminar on Condensed Matter Physics And Materials (CMPM 2023) held on 8th May, 2023 at Department of Physics, Punjabi University Patiala.