BIO-DATA

1. **Name** : **Dr Sukhpal Singh**
2. **Designation** : Associate Professor
3. **Department** : Department of Physics
4. **Address for Correspondence** : Department of Physics, Punjabi University, Patiala, Punjab-147002.

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6 **Areas of Specialization** : Nuclear & Radiation Physics/ Development of Nuclear Radiation Shielding Materials

7. Academic Qualifications:

Sr. no.	Degree Held	Year	Board/Univ./ Inst.	Div./ Rank	Subjects Taken
1.	B.Sc. (N.M)	1998	P.U.Chandigarh	First	Physics, Chemistry, Mathematics, Punjabi, English
2.	B.Ed.	1999	P.U.Chandigarh	First	Teaching of Science and Mathematics
3.	M.Sc. (H.S)	2001	P.U.Chandigarh	First	Physics
4.	NET		UGC-CSIR	Qualified	Physical Sciences
4.	Ph.D.	2008	Punjabi University, Patiala	---	Experimental Radiation Physics

8. Membership of Professional Bodies/Organizations:

(i) Indian Society for Radiation Physics (ISRP)

(ii) Indian Association of Physics Teachers (IAPT)

9. Details of Experience:

S. No.	Name of the Inst./Employer	Position Held	Duration	Major Job Responsibilities and Nature of Experience
1.	Principal, Guru Nanak College, Budhlada (Mansa)	Assistant Professor	July 14, 2009 to December 22, 2011	Teaching and Research
2.	Registrar, Punjabi University, Patiala	Assistant Professor	December 22, 2011 to July 13, 2021	Teaching and Research
3.	Registrar, Punjabi University, Patiala	Associate Professor	July 14,2021 to till date	Teaching and Research

10. Published Work (Please specify numbers only):

a. Research Papers i) International: **39**

b. Conference/Seminar Presentation : **28**

c. Books

a. Original : 1

b. Book Chapter : 1

11. Reviewer/Referee for Research Journals

i) Annals of Nuclear energy (ii) Applied radiation and isotopes (iii) Radiation Physics and chemistry (iv) Journal of Alloys and Compounds (v) Materials Research Express (vi) Progress in Nuclear Energy (vii) Journal of Physics and Chemistry of Solids (viii) Journal of Physics Communications (ix) Journal of Physics and Chemistry of Solids (x) Journal of Testing and Evaluation (xi) Physica B (xii) ECS sensors plus (xiii) Waste Management (xiv) Physica Scripta

12. M.Phill. Students guided/under guidance (Details):

S.No.	Name of the student	Remarks
1.	Mr. Sandeep Kumar	Degree awarded

13. Ph.D. Students guided/under guidance (Details):

S.No.	Name of the student	Remarks
1.	Mr. Kanwaldeep Singh	Degree awarded
2.	Mr. Ravinder Singh	Degree awarded
3.	Mr. Sandeep Kumar	Registred
4.	Ms. Ramanpreet Kaur	Registred
5.	Ms. Nisha Rani	Registred
6.	Ms. Saffi Rani	Registred
7.	Ms. Kamal Bansal	Registred

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

S. No.	Paper	Class
1.	Nuclear Science	M.Sc. (Applied Physics)
2.	Quantum Mechanics	M.Sc. (Applied Physics)
3.	Digital Electronics	M.Sc. (Applied Physics)
4.	Radiation Physics	M.Sc. (Pure Physics)
3.	Experimental techniques in Physics	Ph.D. (Physics) course work
4.	Applied Physics	B.Tech.
5.	Vibrations and waves	B.Sc.
6.	Mechanics	B.Sc.
7.	Electricity and Magnetism	B.Sc.
8.	Quantum Mechanics(Modern Physics)	B.Sc.
9.	Condensed Matter Physics	B.Sc.
10.	Statistical Mechanics	B.Sc.
11.	Nuclear and Particle Physics	B.Sc.

15. Technical Proficiency:

I can handle various nuclear physics equipment and radioactive sources; Competent to design nuclear and radiation physics experiments for different studies such as measurements of attenuation coefficients, multiple scattering studies, gamma ray spectrometry etc. Preparation and characterization of nuclear radiation shielding glasses, and special radiation shielding concrete.

16. List of Research Papers Published

(a) In Journals:

1. Contribution of near-edge processes to the L X-ray emission lines for various lanthanum (III) compounds
   Nisha Rani, Harpreet Singh Kainth, **Sukhpal Singh**, Balvir Singh Sandhu , Gurjeet Singh
   Radiation Physics and Chemistry, 201 (2022) 110468
2. Physical, structural and spectroscopic studies of Al_2O_3-B_2O_3-Sm_2O_3 scintillating glass doped with heavy metal oxides
   Kamal Bansal , Param Jeet Singh , Mohit Tyagi, Amanjot Kaur , **Sukhpal Singh**
   Journal of Luminescence, 250 (2022) 119093
3. On the use of flyash-lime-gypsum (FaLG) bricks in the storage facilities for low level nuclearwaste
   Baltej Singh Sidhu, A.S.Dhaliwal, K.S.Kahlon, **Suhkpal Singh**
   Nuclear Engineering and Technology, 54 (2022) 674-680
4. Physical, structural and nuclear radiation shielding behaviour of xBaO-(0.30 x)MgO-$0.10Na_2O$-$0.10Al_2O_3$-$0.50B_2O_3$ glass matrix
   Sukhpal Singh, Ramanpreet Kaur , Saffi Rani, Baltej Singh Sidhu
   Materials Chemistry and Physics**,** 276 (2022) 125415
5. Investigations on physical, structural and nuclear radiation shielding behaviour of niobium–bismuth–cadmium–zinc borate glass system
   Sukhpal Singh, Ramanpreet Kaur , Saffi Rani, Baltej Singh Sidhu
   Progress in Nuclear Energy 142 (2021) 104038
6. Characterization of Fly Ash Using Different Techniques: A Review
   Nisha Rani, Saffi Rani, Kamal Bansal, **Sukhpal Singh ,** Gurjeet Singh,
   AIP Conference Proceedings, 2352, 030014 (1–4) (2021)
7. Physical and Radiation Shielding Properties of Tantalum-Zinc-Sodium-Borate Glasses
   Kamal Bansal, Saffi Rani, Nisha Rani, Gurjeet Singh, **Sukhpal Singh**
   AIP Conference Proceedings, 2352, 050023 (1–6) (2021)
8. Facile Solution Combustion Based Synthesis of V_2O_5 Nanocrystals and Size-Strain Study by XRDAnalysis
   Saffi Rani, Kamal Bansal, Nisha Rani, Mohd Tauheed Ilyas, Gurjeet Singh, **Sukhpal Singh**
   AIP Conference Proceedings, 2352, 040024 (1–5) (2021)
9. Molar volume, elastic and gamma radiation shielding parameters of Bismuth-Niobium-Alumino silicate glasses
   Sukhpal Singh
   AIP Conference Proceedings, 2352, 050033 (1–6) (2021)
10. Influence of binding effects in cerium materials for Lq (q = l, η and α1,2) X-ray emission spectra.
    Nisha Rani, H.S. Kainth, Ankita Garg, Deeksha Khandelwal, **Sukhpal Singh,** Gurjeet Singh
    Journal of Alloys and Compounds 881 (2021) 160617
11. On the use of green concrete composite as a nuclear radiation shielding material.
    Sukhpal Singh, Kanwaldeep Singh
    Progress in Nuclear Energy 136 (2021) 103730

12. Investigations on the gamma-ray shielding performance of green concrete using theoretical, experimental and simulation techniques
Sandeep Kumar, Kulwinder Singh Mann, Tejbir Singh, **Sukhpal Singh**
Progress in Nuclear Energy 134 (2021) 103654

13. Vapour Phase techniques for deposition of CZTS thin films – A review
Ramanpreet Kaur, Sandeep Kumar, **Sukhpal Singh**
AIP Conference Proceedings **1953**, 100039(1-3) (2018)

14. Study of buildup factor of gamma ray photons in bismuth –ground granulated blast furnace slagconcrete
Sandeep Kumar, Ramanpreet Kaur, Tejbir Singh, **Sukhpal Singh**
AIP Conference Proceedings **1953**, 030156 (1-4) (2018)

15. Gamma Radiation Shielding Properties of Steel and Iron Slags
Ravinder Singh, **Sukhpal Singh**, G.S.Mudahar, Kulwant Singh Thind
New Journal of Glass and Ceramics, 7 (2017), 1-11

16. Study of mass attenuation coefficients and effective atomic numbers of bismuth-ground granulated blast furnace slag concretes
Sandeep Kumar and **Sukhpal Singh**
AIP Conference Proceedings **1728**, 020484 (2016)

17. Study of some health physics parameters of bismuth-ground granulated blast furnace slag shielding concretes.
Sandeep Kumar and **Sukhpal Singh**
AIP Conference Proceedings **1728**, 020484 (2016)

18. Gamma radiation shielding and health physics characteristics of diaspore-flyash concretes.
Kanwaldeep Singh, **Sukhpal Singh**, S P Singh, G.S.Mudahar and A S Dhaliwal
Journal of Radiological Protection **35** (2015) 401–414

19. Gamma radiation shielding analysis of lead-flyash concretes.
Kanwaldeep Singh, **Sukhpal Singh** , A.S. Dhaliwal, G.S.Mudahar
Applied Radiation and Isotopes 95 (2015) 174-179

20. Effect of flyash addition on mechanical and gamma radiation shielding properties of concrete.
Kanwaldeep Singh, **Sukhpal Singh** , G.S.Mudahar
Journal of energy vol.2014 (2014) 1-7

21. Study of Effective Atomic Numbers (Zeff) of Zinc Doped Lead Borate Flyash Glasses.
Sukhpal Singh
International Journal of Pure and Applied Physics, 9 (2013) 181-184.

22. Measurement of gamma ray attenuation coefficients of irregular shaped samples using improved twomedia method.
Sukhpal Singh
International Journal of Applied Physics, 3 (2013) 79-83.

23. Gamma ray interaction cross sections for zinc doped lead borate glasses.
Sukhpal Singh
International Journal of Applied Physics, 3 (2013) 85-90.

24. Gamma ray exposure Buildup factor of Ilmenite-Flyash Concretes.
Sukhpal Singh
International Journal of Pure and Applied Physics, 9 (2013) 169-173.

25. Gamma ray energy absorption buildup factors (EABF) of hematite-flyash concrete.
Sukhpal Singh
International Journal of Pure and Applied Physics, 9 (2013) 175-180.

26. Computations of Energy Absorption Buildup Factors of Flyash using Geometrical- Progression Fitting Formula.
Sukhpal Singh, Jasleen Kaur and G.S.Mudahar
International Journal of Applied Physics, 1 (2011) 59-67.

27. Buildup of gamma ray photons in flyash concretes: A study
Sukhpal Singh,S.S.Ghumman, Charanjeet Singh ,Kulwant Singh Thind**,** G.S.Mudahar
Annals of Nuclear Energy 37 (2010) 681.

28. γ-γ sum-coincidence effect on γ-ray intensities in the decay of ^{147}Nd-^{147}Pm.
S.S. Ghumman, Charanjeet Singh, **Sukhpal Singh**
Annals of Nuclear Energy 36 (2009) 1484

29. Gamma-Ray Summing in Germanium Detectors and Its Effects on Nuclear Decay Parameters,
S.S.Ghumman, **Sukhpal Singh** & H. S. Sahota
Asian Journal of Chemistry, 22 (2010) 8155.

30. The study of reduced transition probabilities for E_2 transitions in the decays of ^{192}Osand ^{192}Pt nuclei
S.S. Ghumman, Charanjeet Singh, **Sukhpal Singh**
Annals of Nuclear Energy 36 (2009) 1484-1485.

31. Study of CSDA and extrapolated ranges of electrons in some selected solvents in the energy range of 0.01-100 MeV.
Ashok Kumar, B.S. Salaria, **Sukhpal Singh**, Balkrishan, Charanjit Singh & G.S.Mudahar,
Asian Journal of Chemistry 21 (2009) S 130.

32. Effects of finite Sample dimensions and total scatter acceptance angle on the gamma ray buildupfactor
Sukhpal Singh, Ashok Kumar, Charanjit Singh, K.S. Thind, & G.S.Mudahar
Annals of Nuclear Energy 35 (2008) 2414-2416.

33. Two media method: an alternative methodology for the measurement of attenuation coefficients of irregular shaped samples
Sukhpal Singh, Ashok Kumar, Kulwant S. Thind & G.S.Mudahar
Nuclear Science and Engineering, 159 (2008) 338-345.

34. Measurements of linear attenuation coefficients of irregular shaped samples by two media method .
Sukhpal Singh, Ashok Kumar, Kulwant S. Thind & G.S.Mudahar
Nuclear Instruments and Methods in Physics Research-B 266 (2008) 1116-1121.

35. Barium-borate-flyash glasses: as radiation shielding materials.
Sukhpal Singh, Ashok Kumar, Devinder Singh, Kulwant S. Thind & G.S.Mudahar
Nuclear Instruments and Methods in Physics Research-B 266 (2008) 140-146.

36. Studies on effective atomic numbers and electron densities in some commonly used solvents.
Ashok Kumar, **Sukhpal Singh**, G.S.Mudahar & Kulwant S. Thind
Nuclear Science and Engineering, 155 (2007) 102-108.

37. A study of buildup factor under different geometrical conditions for 1332 keV gamma rays
Ashok Kumar, **Sukhpal Singh**, Kulwant Singh Thind & G.S.Mudahar
Asian Journal of Chemistry 18 (2006) 3348

38. Mass attenuation studies in some flyash materials
Sukhpal Singh, Ashok Kumar, Kulwant Singh Thind & G.S.Mudahar
Asian Journal of Chemistry 18 (2006) 3314

39. Molar extinction coefficients of some commonly used solvents.
Ashok Kumar, **Sukhpal Singh**, G.S.Mudahar, Kulwant Singh Thind
Radiation Physics and Chemistry 75 (2006) 737-740

(b) In Symposiums/Conferences:

1. Physical, Structural and Radiation Shielding characteristics of xNb_2O_5- $0.20Bi_2O_3$ - 0.20CdO-0.10ZnO-$(0.50-x)B_2O_3$ Glass matrix

   Sukhpal Singh

   International conference on frontiers in Physics, Materials Science & Nanotechnology (FPMSN-2022) , March 25-26, 2022, Department of Physics, CDLU, Sirsa, Haryana
2. Green concrete composite: As nuclear radiation shielding material

   Sukhpal Singh, Kanwaldeep Singh

   International conference on recent advances in applied sciences (ICRAAS-2022) March 23-24, 2022, M.M. (Deemed to be University) Mullana, Haryana, India
3. Structural and Nuclear Radiation Shielding Properties of Barium-Sodium-Alumina-Borate Glass System

   Sukhpal Singh

   65thDAE Solid State Physics Symposium, Bhaba Atomic Research Center, Mumbai, Dec, 15-19, 2021
4. Investigations on gamma Radiation and Neutron Shielding properties of xBi_2O_3+$0.15Na_2O$+$0.15Al_2O_3$+ $(0.70-x)$ B_2O_3 Glass Matrix

   Sukhpal Singh

   1st International Symposium on recent advances in fundamental and applied sciences (ISFAS-2021) , Sept, 10-12, 2021. Ataurk University, Erzurum, Turkey.
5. Molar Volume, elastic and gamma radiation shielding parameters of Bismuth-Niobium-Alumina-Silicate glasses

   Sukhpal Singh

   5th National e-Conference on Advanced Materials and Radiation Physics (AMRP-2020), SLIET, Sangrur, Punjab
6. Variation of exposure buildup factores of HVFC with incident gamma photon energy.

   Sukhpal Singh

   8thInternational Conference on Advancements in Engineering and Technology, March 20-21, 2020, BGIET, Sangrur (Punjab)
7. Molar extinction coefficient of some commonly used solvents

   Sukhpal Singh

   12th National conference on Chemical and Environmental Sciences: Advanced innovations-2020 (CESAI-2020) Feb, 19-20, 2020. Department of Chemistry, Punjabi University, Patiala, during Feb. 19-20, 2020.
8. High-Z borate glass: Potential radiation shielding material

   Sukhpal Singh

   10th National conference on Recent Advances in Chemical and Environmental Sciences (RACES-2019), April 11-12, 2019, Multani Mal Modi College, Patiala
9. Experimental measurement of molar extinction coefficients of some solvents

   Sukhpal Singh

   Recent advances in Chemical, Biological & Environmental Sciences (RACES-2018) , Feb, 9-10, 2018, Modi College, Patiala.
10. Computation of exposure buildup factors for mortars using geometrical progression fitting formula.

    Kanwaldeep singh, G. S. Mudahar, **Sukhpal Singh**

    International conference on emerging areas of mathematics for science and technology (Patiala) 2015.

11. Studies of effective atomic numbers in high volume flyash concretes

    Sukhpal Singh, G. S. Mudahar

    National Symposium on emerging trends in physics and ionizing radiations and material science (ETPRAM-

13) Dec, 13-14, 2013, Dept. of Physics, Punjabi University, Patiala-147002

12. Study of effective atomic numbers in flyash glasses

Sukhpal Singh, G. S. Mudahar

3rd National conference on Advance Materials and Radiation Physics (AMRP-2013), Nov 22-23, 2013, SLIET, Longowal, Sangrur, Punjab-148106

13. High Volume Flyash Concrete: A resourceful material for radiation shielding

Kanwaldeep singh, **Sukhpal Singh**, G. S. Mudahar

International conference on emerging trends in physics for environmental monitoring and management (Patiala) 2012.

14. Experimental verification of Two Media Method for the measurements of attenuation coefficients of irregular shaped samples.

Sukhpal Singh, G. S. Mudahar

International conference on emerging trends in physics for environmental monitoring and management (Patiala) 2012.

15. Gamma ray exposure buildup factors for flyash concretes.**Sukhpal Singh**, G. S. Mudahar, Kulwant S Thind

National Symposium on Radiation Physics & Nano Materials (Patiala) (2011)

16. Experimental measurements of attenuation coefficients of irregular shaped samples.

Sukhpal Singh, G. S. Mudahar, Kulwant S Thind

National Symposium on Radiation Physics & Nano Materials (Patiala) (2011)

17. CSDA and extrapolated ranges of electrons in some commonly used solvents Ashok Kumar, **Sukhpal Singh** and G. S. Mudahar

11th Punjab Science Congress (Patiala) (2008).

18. Measurement of gamma ray attenuation coefficients of irregular shaped samples of flyash materials by two media method.

Sukhpal Singh, Ashok Kumar, Kulwant S Thind & G. S. Mudahar

11th Punjab Science Congress (Patiala) (2008).

19. Attenuation coefficient measurements of aqueous solutions of some inorganic compounds Ashok Kumar, **Sukhpal Singh**, Kulwant S Thind & G. S. Mudahar Symposium on Radiation Source detection & Application (Patiala) (2007)

20. An alternative methodology for the measurements of attenuation coefficients of irregular shapedsamples

Sukhpal Singh, Ashok Kumar, Kulwant S Thind & G. S. Mudahar

Symposium on Radiation Source detection & Application (Patiala) (2007)

21. Energy and chemical composition dependence of gamma ray absorption parameters in someceramics materials

Ashok Kumar, **Sukhpal Singh**, Kulwant S Thind and G. S. Mudahar

10th Punjab Science Congress (Jallandhar) (2007).

22. Variation of transmitted gamma photon intensity through single and double layers of high volume flyash concrete (hvfc) and water

Sukhpal Singh, Ashok Kumar, Kulwant S Thind & G. S. Mudahar

10th Punjab Science Congress (Jalandhar) (2007).

23. Simultaneous variation of mass attenuation coefficient and buildup factor with gamma rayenergy. Charanjeet Singh, **Sukhpal Singh**, Parjit S. Singh & G. S. Mudahar

10th Punjab Science Congress (Jalandhar) (2007).

24. Elemental analysis of flyash with EDXRF technique

Jarnail Singh, **Sukhpal Singh**, Ashok Kumar, K. S. Thind & G. S. Mudahar

National Conference on Lasers, Smart Materials Radiation Physics (Longowal) (2006) 51.

25. Study of absorption of 279 keV gamma rays in some commonly used solvents
    Ashok Kumar, **Sukhpal Singh**, G. S. Mudaharand K. S. Thind
    16th National Symposium on Radiation Physics (Chennai) (2006) 254.
26. Variation of exposure buildup factors of building materials with effective atomic number
    Charanjeet Singh, Tejbir Singh, **Sukhpal Singh**, Parjit S. Singh & G. S. Mudahar
    16th National Symposium on Radiation Physics (Chennai) (2006) 251.
27. Mass attenuation coefficient studies of the mixture of flyash and soil.
    Jarnail Singh, Tejbir Ingh,**Sukhpal Singh**, Parjit S. Singh & G. S. Mudahar
    National Symposium on Radiation Measurement & Application (Patiala) (2004)
    Transmitted photon spectra of ^{137}Cs through single and double layer of soil and water Charanjeet Singh, **Sukhpal Singh**, Ashok Kumar , Parjit S. Singh & G. S. Mudahar
    National Symposium on Radiation Measurement & Application (Patiala) (2004)

(Signature of the Teacher)