

## CURRICULUM VITAE

**LAKHBIR SINGH**

*Assistant Professor*

**Yadavindra Department of Sciences (YDoS)**

**Punjabi University Guru Kashi Campus Damdama Sahib**

**Talwandi Sabo-151302**

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### **EDUCATIONAL QUALIFICATION:**

- Ph.D. (2019)  
Inder Kumar Gujral Punjab Technical University Jalandhar  
**Title of Ph.D. Thesis:** *Investigations on Structural, Ferroelectric, Dielectric and Switching Properties of Nitrite/ Nitrate: Polymer Composite Films*
- M.Ed. (1993)  
Punjabi University Patiala
- B.Ed. (1992)  
Punjab University Chandigarh
- M.Phil. (1990) M.Sc. (1989) in Physics  
Punjabi University Patiala  
**Title of M. Phil. Dissertation:** *AC & DC Conductivity of TMI Oxide Glasses*
- B.Sc. (Non-Medical) (1987)  
Guru Nanak Dev University Amritsar

### **TEACHING EXPERIENCE:**

- Yadavindra Department of Sciences, Punjabi University Guru Kashi Campus Talwandi Sabo  
Assistant Professor in Physics–01/09/2021 to till date
- Yadavindra College of Engineering, Punjabi University Guru Kashi Campus Talwandi Sabo  
Lecturer/Assistant Professor in Physics–20/06/2005 to 31/08/2021
- Punjab Education Department (SE)  
Lecturer (Physics) --18/10/1994 to 20/06/2005
- Kendriya Vidyalaya Sangthan (KV No. 01 Patiala)  
PGT (Physics) -- 14/02/1994 to 17/10/1994
- Government Ranbir College Sangrur  
Lecturer (Part-time)--24/8/1992 to 18/01/1993

### **TEACHING INTERESTS:**

- Punjabi University established Yadavindra College of Engineering in 2004. The motive was to play important social responsibility to help meritorious but economically unprivileged rural students to get Technical Education. It is a 6-year B.Tech. Integrated course though Golden Hearts Scholarship Scheme because otherwise it is very costly affair for them to afford). The need of students of rural background was to teach at their level and in their language. I tried my best in these years to teach Physics to this category of students.

### **SUBJECTS TAUGHT:**

- Vibration and Waves
- Electricity & Magnetism
- Optics
- Nuclear and Radiation Physics
- Nuclear and Particle Physics
- Quantum Physics/Mechanics
- Applied Physics to B.Tech. and Diploma Courses
- Physics-I, Physics-II to 10+1, 10+2 classes in Module I of 6-year B.Tech. Integrated Course

## **AWARDS:**

- Bestowed Best Teacher Award in the year 2008 by Punjab College of Technical Education (Affiliated to PTU) on the basis of survey conducted over 1000 students of first year students to assess their life's best teachers on September 5th-The Teacher's Day

## **IMPORTANT DUTIES AND RESPONSIBILITIES:**

- Holding Charge of Nodal Officer- Post-Matric Scholarship for Yadavindra Department of Sciences (2023)
- Working as 'Point of Contact' at Talwandi Sabo as required in setting-up Telepresence Classroom at Punjabi University Guru Kashi Campus Talwandi Sabo (appointed by Campus director with prior approval of Hon'ble Vice-chancellor) (2023)
- Presently holding an important charge: Public Relation Officer of Punjabi University Guru Kashi Campus Talwandi Sabo (2022). Working hard to maintain a liaison with the press media to give far and wide coverage to the academic and co-curricular activities being organized at Campus level or at any department level.
- Recently deputed by our Campus Director to record (telecasted in Yuv-Vaani Programme of All India FM Radio Station Bathinda on 05/08/2023) interview regarding various educational courses being run and facilities offered by Punjabi University Guru Kashi Campus Talwandi Sabo
- DD Punjabi produced a documentary on mission of department of YCoE and telecasted Free-to-Air in its Program-Disha on 21/05/2017. In the capacity of Convener, aroused interest and created awareness among students and general public to make the reach of this program far and wide. (Through direct interaction and social media)
- All India Radio Station Jalandhar recorded an interview on Pendu Swastha on 14/3/2017 at Jalandhar and telecasted on 17/03/2017 at 6.30pm for 15 minutes
- Remained Faculty Incharge Alumni of YCoE and Organized its First Alumni Meet in Nov 2017
- Interviewed by All India Radio Station Bathinda to broadcast live-in the role of YCoE for social upliftment through its various academic courses on 14/07/2016
- Participated in Dehati Programme (a Live-in Programme at 6.30pm) of All India Radio Station Jalandhar on 10/07/2016 to disseminate spirit and mission of YCoE and Punjabi University Patiala about its social responsibility far and wide
- Convener, Social Media Committee constituted by HOD on the orders of Hon'ble Vice Chancellor of Punjabi University to increase the admission prospects by using Facebook, twitter, WhatsApp etc.
- Created WhatsApp group named- YCoE Admissions to share the ideas to enhance admission prospective
- Admin of Facebook page- Yadavindra Engineering and Yadavindra Science Departments of Punjabi U Patiala - till date the page followers are 3419  
<https://www.facebook.com/ycoe.pupatiala?mibextid=ZbWKwL>

## **RESEARCH PUBLICATIONS IN INTERNATIONAL JOURNALS AND IN PROCEEDINGS OF NATIONAL/INTERNATIONAL CONFERENCES:**

- **L. Singh**, B. Kaur, T. Garg, V. Sharma, N. Dabra, and J. S. Hundal, "Fitting IGM, FGM and NLS switching models to  $\text{NaNO}_2$ -PVA composite transients for its microscopic parameter estimation," Mater. Today Proc., vol. 46, pp. 8340–8346, Jan. 2021.
- **L. Singh**, B. Kaur, T. Garg, V. Sharma, N. Dabra, and J. S. Hundal, "Investigation of switching dynamics by fitting FGM and NLS models to PVA based  $\text{NaNO}_2$ - $\text{CsNO}_3$  composite transients," Mater. Today Proc., vol. 46, pp. 8333–8339, Jan. 2021.
- **L. Singh**, B. Kaur, T. Garg, A. Nautiyal, N. Dabra, and J. S. Hundal, "Switching related activation field for polarization-reversal and for polarization-saturation in PVA based  $\text{NaNO}_2$ - $\text{CsNO}_3$  mixed system composite films fabricated at moderate elevated temperature," Ferroelectr.

- Lett. Sect., vol. 46, no. 4–6, pp. 73–81, Dec. 2019.
- B. Kaur, **L. Singh**, T. Garg, D.-Y. Jeong, N. Dabra, and J. S. Hundal, “A comparative investigation of structural and optical properties of annealing modified mullite bismuth ferrite,” *Ferroelectr. Lett. Sect.*, vol. 46, no. 1–3, pp. 52–63, Jun. 2019.
  - **L. Singh**, B. Kaur, T. Garg, N. Dabra, and J. S. Hundal, “Revisiting KAI theory and its application to mixed composite system ‘ $\text{Na}_{(1-x)}\text{Cs}_x\text{NO}_2\text{-PVA}$ ’ fabricated at moderate elevated temperature,” *Ferroelectrics*, vol. 540, no. 1, pp. 88–102, Feb. 2019.
  - **L. Singh**, B. Kaur, T. Garg, N. Dabra, and J. S. Hundal, “Switching related activation field for polarization-reversal and for polarization-saturation in  $\text{NaNO}_2\text{-PVA}$  thin composite films,” *Ferroelectric Letters Section*, vol. 45, no. 4–6, pp. 84–93, Nov. 2018.
  - T. Garg, B. Kaur, **L. Singh**, N. Dabra, and J. S. Hundal, “Predictive Role of  $0^\circ$ ,  $90^\circ$ ,  $180^\circ$  and non- $180^\circ$  Aligned Domains in Backswitching and Switching Kinematics of Ferroelectrics,” *Int. J. Theor. Appl. Sci.*, vol. 10, no. 1, pp. 281–284, 2018.
  - B. Kaur, T. Garg, **L. Singh**, N. Dabra, and J. S. Hundal, “Tailoring Combustion Method Synthesized Bismuth Ferrite Nanomaterials by varying Fuel and Fuel to Oxidizer Ratio,” *Int. J. Theor. Appl. Sci.*, vol. 9, no. 2, pp. 309–313, 2017,
  - **L. Singh**, B. Kaur, T. Garg, N. Dabra, and J. S. Hundal, “Effect of Annealing Conditions on the Ferroelectric Response of  $\text{NaNO}_2\text{-PVA}$  Nano-composite Films Fabricated at Elevated Temperature,” *Int. J. Surf. Eng. Mater. Technol.*, vol. 6, no. 1, pp. 8–11.
  - B. Kaur, **L. Singh**, V. A. Reddy, D.-Y. Jeong, N. Dabra, and J. S. Hundal, “AC impedance spectroscopy, conductivity and optical studies of Sr doped bismuth ferrite nanocomposite,” *Int. J. Electrochem. Sci.*, vol. 11, pp. 4120–4135, 2016,
  - **L. Singh**, B. Kaur, N. Kumar, D.-Y. Jeong, N. Dabra, and J. S. Hundal, “Structural analysis of enhanced ferroelectricity in nano-composite films of sodium nitrite in poly-vinyl alcohol matrix fabricated at moderate elevated temperature,” *Int. J. Electrochem. Sci.*, vol. 11, pp. 4037–4049, 2016.
  - B. Kaur, **L. Singh**, T. Garg, N. Dabra, and J. S. Hundal, “Effect of Different Fuels on Combustion Method Synthesized Bismuth Ferrite,” in *International Conference on Latest Developments in Materials, Manufacturing & Technology (MMQS-16)*, 2016, pp. 628–632 (ISBN 878-93-5212-858–56).
  - B. Kaur, **L. Singh**, V. A. Reddy, D.-Y. Jeong, N. Dabra, and J. S. Hundal, “Study of A-site divalent doping on multiferroic properties of BFO nanoparticles processed via combustion method,” *Adv. Mater. Lett.* vol. 7, no. 12, pp. 1015–1020, 2016.
  - B. Kaur, **L. Singh**, T. Garg, N. Dabra, and J. S. Hundal, “Effect of Fuel to Oxidizer Ratio on Metal Oxide Nanomaterials Synthesized by Combustion Method,” *Int. J. Surf. Eng. Mater. Technol.*, vol. 5, no. 2, pp. 18–21, 2015.
  - B. Kaur and **L. Singh**, “Ferroelectricity in Memory Devices,” *An Int. J. Eng. Sci.*, vol. 13, pp. 111–114, 2014.
  - B. Kaur and **L. Singh**, “Revival of Ethical Values & Humanism in Higher Education- A Challenge,” in *8th International Conference on “Challenges in Higher Education,”* 2014, pp. 244–249.
  - L. S. Dev et al., “Structural and Ferroelectric Studies on  $\text{KNO}_3\text{: Polyethylene Oxide}$  Nanocomposite Films,” *J. Nanoelectron. Optoelectron.*, vol. 9, no. 3, pp. 397–400, 2014.
  - **L. Singh**, B. Kaur, and J. S. Hundal, “Maximizing Gross Enrollment Ratio & Excellence in Higher Education,” in *8th International Conference on “Challenges in Higher Education,”* 2014, pp. 226–230.
  - **L. Singh**, B. Kaur, and N. Dabra, “Composites of Ferroelectric Ceramics and Polymers-A Potential Source of non-Volatile Memory,” *An Int. J. Eng. Sci.*, vol. 3, no. December, pp. 115–118, 2014.
  - **L. Singh**, “Concepts of Process Control & Process Analysis,” in *National conference on Futuristic and Emerging Areas in Technology: Issue and Challenges 2013 (FEAT 2013)*, 2013, pp. 138–140.
  - **L. Singh**, B. Kaur, N. Dabra, and J. S. Hundal, “Ferroelectric phenomena in oxides-Review,” in *National Conference on Global Upcomings in Environment, Science & Technology-2012*, 2012, pp. 208–215.
  - B. Kaur, **L. Singh**, N. Dabra, and J. S. Hundal, “A Model Multiferroic-  $\text{BiFeO}_3$ ,” in *National*

Conference on Recent Advancements in Science and Engineering (RAISE 2012), 2012, pp. 215-21.

- N. Dabra et al., “Ferroelectric Properties of Potassium Nitrate (KNO<sub>3</sub>): Polymer Composite Films- A Review,” in National Conference on Latest Advancements in Science, Engineering & Research, 2011, pp. 19-21.
- **L. Singh**, B. Kaur, N. Dabra, and J. S. Hundal, ‘Understanding Various Techniques & Instruments Employed for Surface Analysis-A Review,’ in National Conference on Latest Advancements in Science, Engineering & Research, 2011, pp. 27-34.
- B. Singh, P. S. Tarsikka, and **L. Singh**, “Dielectric relaxation and ac conductivity of sodium tungsten phosphate glasses,” Pramana, vol. 59, no. 4, pp. 653–661, 2002.

#### **PRESENTATIONS AND PARTICIPATION IN INTERNATIONAL CONFERENCES**

- Paper presented on “Effect of Different Fuels on Combustion Method Synthesized bismuth Ferrite (TEQIP-II Sponsored) International On Latest Developments in Materials Manufacturing & Technology (MMQS-16) organized by Dept. of Mechanical Engineering, Giani Zail Singh Campus College of Engineering & Technology, Bathinda, Punjab (India) Feb. 12-13, 2016
- Paper presentation on ‘Effect of Fuel to Oxidizer Ratio on Metal Oxide Nanomaterials’ International Conference “Advancements & Futuristic Trends in Mechanical & Materials Engineering’ 2016” held at Baba Farid College of Engineering and Technology, Bathinda on Feb 25-27, 2016.
- Paper presentation on ‘Synthesis and Characterization of Bismuth Ferrite Nanoparticles’ International Conference “Advancements & Futuristic Trends in Mechanical & Materials Engineering’ 2016” held at Baba Farid College of Engineering and Technology, Bathinda on Feb 25-27, 2016.
- Paper presentation on ‘Ferroelectricity in Sodium Nitrite: Starch Nano-Composite Films’ International Conference “Advancements & Futuristic Trends in Mechanical & Materials Engineering’ 2016” held at Baba Farid College of Engineering and Technology, Bathinda on Feb 25-27, 2016.
- Paper presentation on ‘Dielectric and hysteresis studies in Sodium Nitrite: PVA Nano-Composite Films’ International Conference “Advancements & Futuristic Trends in Mechanical & Materials Engineering’ 2016” held at Baba Farid College of Engineering and Technology, Bathinda on Feb 25-27, 2016.
- Presented a paper on Effects of Thermal Conditions on the Surface Morphology of NaNO<sub>2</sub>-PVA Composite Films in International Conference on Advancement & Futuristic Trends in Mechanical & Materials Engineering (Oct. 16-18,2014) organized by PTU, Jalandhar in collaboration with DST, CSIR, DRDO.
- Presented a paper on Managing Quality Culture in Higher Education in 8th International Conference on “Challenges in Higher Education” (Sept 26-27,2014) organized by Desh Bhagat University Mandi Gobindgarh (Punjab) (India)
- Maximizing Gross Enrollment Ratio and Excellence in Higher Education in Higher Education in 8th International Conference on “Challenges in Higher Education” (Sept 26-27,2014) organized by Desh Bhagat University Mandi Gobindgarh (Punjab)(India)
- Attended International Conference on Advancement & Futuristic Trends in Mechanical & Materials Engineering organized by PTU, Jalandhar in collaboration with DST, CSIR, DRDO (Oct. 7-8, 2011)
- Presented a paper on Computational Techniques in the Analysis of Polarization- Electric Field Loops in Ferroelectric-Polymer Composite Films in International Conference on Information and Mathematical Sciences (IMS-13) (Oct 24-26, 2013) organized by Baba Farid College of Engineering & Technology in collaboration with PTU, DST, CSIR, INSA, ISTE, ISITA.

#### **PRESENTATIONS AND PARTICIPATION IN NATIONAL CONFERENCES/SEMINARS**

- Paper presented on “Investigation of Relaxation Mechanism in NaNO<sub>2</sub>-PVA Ferroelectric Composites” in One Day ‘National Seminar on Condensed Matter Physics and Materials’ (CMPM-23) organized by Department of Physics, Punjab University Patiala on May 8, 2023.

- Paper Presented on Dielectric and ferroelectric Properties of  $\text{KNO}_3$  in SERB (of DST New Delhi) sponsored National Conference on Recent Advancements in Science, Commerce and Technology held by Mata Sahib Kaur Girls College Talwandi Sabo Dist. Bathinda, Punjab (April 5-6, 2016).
- Paper Presented on Capacitance-Voltage Characteristics in Ferroelectric  $\text{NaNO}_2$ -PVA Composite Films in SERB (of DST New Delhi) sponsored National Conference on Recent Advancements in Science, Commerce and Technology held by Mata Sahib Kaur Girls College Talwandi Sabo Dist. Bathinda, Punjab (April 5-6, 2016).
- Paper Presented on Role of Polymer Matrix in  $\text{NaNO}_2$  – PVA Ferroelectric Composite Films in SERB (of DST New Delhi) sponsored National Conference on Recent Advancements in Science, Commerce and Technology held by Mata Sahib Kaur Girls College Talwandi Sabo Dist. Bathinda, Punjab (April 5-6, 2016).
- Paper Presented on Determinants of Dielectric Constant and its Variation- A review in SERB (of DST New Delhi) sponsored National Conference on Recent Advancements in Science, Commerce and Technology held by Mata Sahib Kaur Girls College Talwandi Sabo Dist. Bathinda, Punjab (April 5-6, 2016).
- Paper Presented on Frequency dependence of dielectric constant of  $\text{NaNO}_2$ -PVA composites in thin film form in National Conference on “New Innovations in Science, Technology and Management” (NITSM-12) organized by Ratan Institute of Technology and Management, Saveli (Palwal) ( Feb 28,2012).
- Paper Presented on Dielectric dispersion in ceramic-polymer thin composite films-A review in National Conference on “New Innovations in Science, Technology and Management” (NITSM-12) organized by Ratan Institute of Technology and Management, Saveli(Palwal) ( Feb 28,2012).
- Paper Presented on Computation of relaxation times from Cole-Cole plots in  $\text{NaNO}_2$ -PVA thin composite ferroelectric films in UGC Sponsored National Conference on Advanced Mathematics & Its Applications organized by DAV College, Bathinda (Punjab) (Feb 25-26, 2011).
- Paper Presented on Mathematical Basis to understand the semi-circular behavioral dependence of imaginary Impedance upon real impedance of dielectrics in UGC Sponsored National Conference on Advanced Mathematics & Its Applications organized by DAV College, Bathinda (Punjab) (Feb 25-26, 2011)
- Paper Presented on Ferroelectric Properties of Potassium Nitrate ( $\text{KNO}_3$ ): Polymer Composite Films- A Review in PTU Sponsored National Conference on Advanced Mathematics & Its Applications organized by Baba Farid College of Engineering and Technology Deon, Bathinda (May 26-27, 2011).

#### **RESEARCH INTERESTS:**

- Initially worked on ferroelectricity in composite films of inorganic materials with organic polymers; presently working on organic ferroelectric and piezoelectric composites

#### **CONTRIBUTION TO ADMINISTRATIVE COMMITTEES AND RESPONSIBILITIES:**

- Worked in various departmental/campus committees as a representative of Registrar, FO, DAA and Campus Director from time to time

#### **VISION:**

- Aware general public to feel that educational public institutions like Punjabi University and its Talwandi Sabo Campus are their own; that it is only through these public educational institutions...the economically unprivileged section of our society can fulfill their dreams to become self-reliant, self-sufficient and self-dependent.
- Device fabrication on the basis of our research work

(Dr. Lakhbir Singh)