

DR. TARUN GARG, PH.D.

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EDUCATION

- Ph.D. (Physics-*Materials Science*) Dec. 2014-
I. K. Gujral Punjab Technical University, Kapurthala May 2022
- M.Sc. (Hons.)-Physics (*1st Division*) 2009-2011
Department of Physics, Panjab University, Chandigarh
- B.Sc. (Hons.)-Physics (*1st Division*) 2006-2009
Department of Physics, Panjab University, Chandigarh

ACADEMIC ACHIEVEMENT

- Qualified National Eligibility Test (NET) for Lectureship in Physical Sciences conducted jointly by Council of Scientific and Industrial Research (CSIR) and University Grant Commission (UGC), Govt. of India Dec. 2010
- Online certification course on “MATLAB Programming for Numerical Computation” conducted jointly by National Programme on Technology Enhanced Learning (NPTEL) *Funded by Ministry of HRD, Govt. Of India* and Indian Institute of Technology-Madras (IITM), India Jan.-Mar. 2016

TEACHING EXPERIENCE

Assistant Professor-Physics 30.07.2011-
Yadavindra Department of Sciences Present

(Earlier Punjabi University Guru Kashi College, Damdama Sahib)

Punjabi University Guru Kashi Campus, Damdama Sahib, Bathinda PB.

(*The largest outside campus of Punjabi University, Patiala*)

http://www.punjabiuniversity.ac.in/Pages/Page.aspx?dsenc=south_campus

- Teaching (undergraduate classes), research and other Departmental activities
- National Service Scheme (NSS) Program Officer for the session 2022-24

RESEARCH EXPERIENCE

Research Scholar Dec. 2014-
Ferroelectric Materials Laboratory, Department of Physics Oct. 2021

Maharaja Ranjit Singh Punjab Technical University, Bathinda PB.

<https://www.mrsptu.ac.in/researchscholar.php?did=4>

Discipline: Physical Sciences

Area of research: Materials Science

Supervisor: Prof. (Dr.) Jasbir Singh Hundal

Co-supervisor: Dr. Navneet Dabra

Thesis title: “**STUDY OF STRUCTURAL, FERROELECTRIC AND STORAGE ENERGY DENSITY PROPERTIES OF PVDF/BCZT NANOCOMPOSITES**”

- Responsibilities: Research (Major) and assisting M.Sc. students in dissertation work
- Synthesis and characterization of various ferro/piezoelectric, multiferroic and soft-magnetic metal-oxide based thin films and nanoparticles, and their polymer nanocomposites
- Ferroelectric polymer-nanocomposites for dielectric energy storage capacitors
- Research materials sample's data collection, compilation, plotting and analysis
- Research lab record-keeping (publications, data and results, environmental record of lab, research items and purchases)
- To procure research items (equipments, chemicals, glassware), training and record-keeping, maintenance and calibrations, document issue and control

TECHNICAL PROFICIENCY

- Chemical solution derived (CSD) synthesis techniques for thin-films, nanoparticles and polymer-nanocomposites namely Spin-coater for thin-film deposition, Teflon autoclave for hydrothermal synthesis of nanoparticles, KBr press for polymer composites by melt-press technique, programmable muffle furnace, vacuum oven, magnetic stirrer, ultrasonic bath *etc.* for other sol-gel and solution-cast techniques
- Impedance analyzer with furnace, manual Sawyer-Tower circuit with Probe-station for PE loop tracing in thin-films, Automatic PE loop tracer and Poling unit with temperature controlled sample holder, and Source unit
- X-ray diffraction (XRD), Fourier transform infrared spectroscopy (FTIR), Differential scanning calorimetry (DSC), electric and magnetic properties
- Rietveld refinement softwares FULLPROF and MAUD, data plotting and analysis software ORIGIN
- Dielectric storage energy density calculations/studies using software ORIGIN
- MATLAB, FORTRAN, C++

PUBLICATIONS (*links for complete list of publications*)

- Google Scholar:
(<http://scholar.google.co.in/citations?user=https://scholar.google.com/citations?user=P8xfXj4AAAAJ&hl=en>)
- Orcid ID: <http://www.orcid.org/0000-0003-3915-566X>
- Scopus ID:
<http://www.scopus.com/inward/authorDetails.url?authorID=57209656140&partnerID=MN8TOARS>
- Researcher ID: <http://www.researcherid.com/rid/AAQ-3721-2021>
- Vidwan Portal ID: <https://vidwan.inflibnet.ac.in/profile/212236>

FULL JOURNAL PUBLICATIONS (related to thesis work only):

Year	Details	I. F.
2020	“Modulation in polymer properties in PVDF/BCZT composites with ceramic content and their energy density capabilities”, <i>Polymer Composites (peer reviewed)</i> ; Tarun Garg , Venkateswarlu Annapureddy, K. C. Sekhar, Dae-Yong Jeong, Navneet Dabra, and Jasbir S. Hundal, Volume 41 (2020), Issue 12, Pages 5305-5316. https://doi.org/10.1002/pc.25795	5.2 (2023)
2021	“Dielectric Properties and Phase Stabilization of PVDF Polymer in (1-x)PVDF/xBCZT Composite Films”, <i>Journal of Electronic Materials (peer reviewed)</i> ; Tarun Garg , Venkateswarlu Annapureddy, K. C. Sekhar, Dae-Yong Jeong, Navneet Dabra, and Jasbir S. Hundal, Volume 50 (2021), Pages 5567-5576. https://doi.org/10.1007/s11664-021-09075-4	2.1 (2023)
2022	“Dielectric Switching and Ferroelectric Properties of α , γ PVDF phases for Energy Storage Properties”, <i>Integrated Ferroelectrics (peer reviewed)</i> ; Tarun Garg , Navneet Dabra, and Jasbir S. Hundal, <i>Volume 231 (2022), Issue 1, Pages 142-152.</i>	0.7 (2023)

BOOK CHAPTER

Ferroelectric Ceramic-polymer Nanocomposites for Applications in Dielectric Energy Storage Capacitors; **Tarun Garg**, Navneet Dabra, Jasbir S Hundal, *Encyclopedia of Materials: Electronics, Volume 1, Pages 463-498, 2023.* ISBN: 978-0-12-819735-6, Imprint:Elsevier.
<https://doi.org/10.1016/B978-0-12-819728-8.00112-1>

CONFERENCES ATTENDED

NATIONAL:

“Latest Developments in Civil & Environment Engg.” 15-16 Oct. 2015 GZSCCET, Bathinda	<i>Paper</i> <ul style="list-style-type: none">• A Brief Study: Multiferroic Thin Films• An Insight to Solution Combustion Synthesis• Ferroelectric Materials & It’s Composites
“Recent Advancements in Science, Commerce & Technology” 5-6 April 2016 Mata Sahib Kaur Girls College, Talwandi Sabo	<i>Paper</i> <ul style="list-style-type: none">• BiFeO₃: A Case Study• Study of Phase Variation in Bismuth Ferrite by Bismuth Off Stoichiometry <i>Poster</i> <ul style="list-style-type: none">• Synthesis of Metal Oxide Nanomaterials via Solution Combustion Method-A Review

WORKSHOPS ATTENDED

NATIONAL:

- “X-Ray Techniques for Characterization of Materials” 11-13 Feb. 2015
Department of Sophisticated Analytical Instrumentation Facility
(SAIF)-CIL, Panjab University, Chandigarh
- “MATLAB, A Tool in Research” 24-28 Dec. 2015
Department of Mathematics
Malaviya National Institute of Technology, Jaipur
- “Selection of Nanomaterials for Energy Harvesting and Storage Applications”, NPTEL+ Workshop 16-17 July, 2022
By Prof. Kaushik Pal, IIT-Roorkee (IIT-R).

REFEREES

Prof. (Dr.) Jasbir Singh Hundal (*Supervisor*)

Campus Director

Punjabi University Guru Kashi Campus, Damdama Sahib

Talwandi Sabo-151302 (District Bathinda), Punjab, India.

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Prof. (Dr.) Dae-Yong Jeong

Department of Materials Science and Engineering

Inha University, Incheon, South Korea.

Email: dyjeong@inha.ac.kr , dqj100@gmail.com

Office: +82-32-860-7548

Dr. Navneet Dabra (*Co-supervisor*)

HoD, Department of Sciences

Mata Sahib Kaur Girls College (*Affiliated to Punjabi University Patiala*)

Talwandi Sabo-151302 (District Bathinda), Punjab, India.

Email: navneetdabra@gmail.com M: +91-98883-52889

Dr. Venkateshwarlu Annapureddy

Assistant Professor

Department of Physics

National Institute of Technology, Tiruchirappalli (NIT-T)

Tiruchirappalli-620015, Tamil Nadu, India.

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