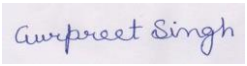
Dr. Gurpreet Singh; Ph.D.



PERSONAL INFORMATION

Date of Birth: 04/02/1994

Address: V.P.O. Bhogiwal, Distt. Malerkotla, Punjab, India, 148019

Nationality: Indian

Status: Single

Phone No. 7009001830

E-mail id: gurpreetsinghc9@gmail.com

Google Scholar profile: https://scholar.google.co.in/citations?user=ukDYUlAAAAAJ&hl=en

Scopus ID: 57226629033

ORCID: 0000-0002-4136-7525

EDUCATION

2021	Ph.D. in Materials Engineering; School of Engineering, Indian Institute of Technology, Mandi, Himachal Pradesh, India, 175005. *Thesis Title*: Photocatalysis and Piezocatalysis Induced Water-Cleaning Using Ferroelectric LithiumNiobate-Based Ceramics/Glass-Ceramics. *Thesis Supervisor*: Prof. Rahul Vaish (rahul@iitmandi.ac.in); School of Engineering, Indian Institute of Technology, Mandi, Himachal Pradesh, India, 175005. *Courses credited during Ph.D.*: Functional materials, Nanomanufacturing, Structure-Property correlation in materials for energy applications, Energy storage technologies. *Obtained CGPA*: 9.5
2017	M.E. in Production Engineering; Mechanical Engineering Department, Thapar Institute of Engineering & Technology, Patiala, Punjab, India, 147004. *Thesis Title*: The Synergistic Influence of Chemical Composition and Industrial Annealing Processeson Lüders Bands Formation in Interstitial Free High Strength Steels. *Thesis Supervisor*: Associate Prof. Tarun Nanda (tarunnanda@thapar.edu); Mechanical Engineering Department, Thapar Institute of Engineering & Technology, Patiala, Punjab, India, 147004. *Courses credited during M.E.*: Computer Aided Manufacturing, Geometric Modeling and analysis, Machine Tool Design, Statistical Methods and Algorithms, Metal Forming, Computer Integrated Manufacturing Systems, Rapid Prototyping, Quality Engineering, Advanced Manufacturing Processes, Operation Management, Industrial automation, Metal Casting and Joining. *Obtained CGPA*: 9.23
2015	B.Tech. in Mechanical Engineering; Department of Mechanical Engineering, Baba Banda Singh Bahadur Engineering College, Fatehgarh Sahib, Punjab, India, 140407 (Punjab Technical University, Jalandhar). *Major Project Title*: Flat Surface Finishing with Magnetic Abrasive Material. *Major Project Supervisor*: Professor Lakhvir Singh, Department of Mechanical Engineering, Baba Banda Singh Bahadur Engineering College, Fatehgarh Sahib, Punjab, India, 140407. *Courses credited during B.Tech.*: Engineering Mathematics, Basic Electrical and

	Electronics Engineering, Communicative English, Manufacturing Practice, Engineering Physics, Human Values and Professional Ethics, Engineering Chemistry, Fundamentals of Computer Programming and IT, Engineering Drawing, Engineering Computer Graphics, Environmental Science, General Fitness, Strength of Materials, Theory of Machines, Machine Drawing, Applied Thermodynamics, Manufacturing Processes, Engineering Materials & Metallurgy, Workshop Training, Fluid Machines, Design of Machine Elements, Computer Aided Design and Manufacturing, Mechanical Measurement and Metrology, Industrial Automation and Robotics, Automobile Engineering, Industrial Training, Heat Transfer, Fluid Machinery, Statistical and Numerical Methods Engineering, Operation Management, Minor Project, Industrial training, Software Training, Industrial Engineering and Management, Refrigeration & Air Conditioning, Mechanical Vibrations, Human Resources and Management. *Obtained Percentage*: 79.25%
2011	Senior Secondary (12th class) from Government Senior Secondary School, Bhogiwal, Punjab, India (Punjab School Education Board). Subjects: General English, General Punjabi, Mathematics, Chemistry, Physics, Environmental Education, Computer Science. *Obtained Percentage*: 86.70% ***Merit position holder, Rank*: 255**
2009	Matriculation (10th class) from Desh Bhagat Senior Secondary School, Sohian, Punjab, India (Punjab School Education Board). Subjects: English, Punjabi, Mathematics, Hindi, Science, Social Studies, Health & Physical Education, Mechanical Drawing & Painting. *Obtained Percentage*: 85.53%

NATIONAL ENTRANCE EXAM

Qualified GATE 2017 in Mechanical Engineering
Obtained Score: 455/1000
All India rank: 16521.

ACADEMIC EXPERIENCE

- 25 March, 2022 to Till now: Worked as Adhoc Faculty, Department of Mechanical Engineering, National Institute of Technology, Calicut, Kattangal, Kerala, India, 673601.

- 3 January, 2022 to 11 February, 2022: Woking as an Assistant Director-WILP (Work Integrated Learning Programme), Shri Venkateshwara University, Gajraula, Uttar Pradesh, 244236.
  Duties: Teaching and complete management of WILP courses.

- 27 September, 2021 to 31 December, 2021: Worked as Temporary Faculty, Department of Mechanical Engineering, Motilal Nehru National Institute of Technology, Prayagraj (Allahabad), Uttar Pradesh, India, 211004.
  Subject Taught: Reverse Engineering (B-Tech 7th Sem), Mechanical Workshop practical (B-Tech Ist Sem).
  Other duties: Updatation of mechanical laboratories and their manuals.

- 21 July, 2017 to 30 November, 2017: Worked as Assistant Professor at Department of Automobile Engineering, Lovely Professional University, Jalandhar, Punjab, India, 144402.
  Theory subjects taught: Alternate fuels (B-Tech 4th year and Automobile Engineering (B-Tech 2nd year).
  Laboratory courses taught: Internal Combustion engine, Refrigeration & Air Conditioning, Heat Transfer.

RESEARCH EXPERIENCE

- 15 July, 2016 to 15 June, 2017: Carried out M.E. dissertation work on the topic of 'The synergistic influence of chemical composition and industrial annealing processes on Luders' bands formation in Interstitial Free High Strength Steels' at CSIR-NML (National Metallurgical Laboratory), Jamshedpur, Jharkhand, India under the guidance of Dr. B. Ravi Kumar (ravik@nmlindia.org), Senior Principal Scientist, CSIR-NML (National Metallurgical Laboratory), Jamshedpur, Jharkhand, India.
- 16 March, 2020 to 1 January, 2021: Worked as Project Engineer (SRF) at Indian Institute of Technology, Mandi, Himachal Pradesh, India, under the project entitled '**Solar light driven waste water remediation using graphene ferroelectric composites**'.

OTHER EXPERIENCE

- 6 weeks training in **Punjab Roadways, Chandigarh**.
- 6 Months Industrial training in **HMT, Machine Tool Division, Pinjore**.
- 40 hrs. Software training of Solidworks.

SOFTWARES SKILLS

- Pro-E (Creo)
- Solidworks

STRENGTHS

- Willingness to learn
- Positive Attitude
- Hardworking
- Honest
- Team Leader and supporter
- Punctual

JOURNAL PUBLICATIONS

1. **Singh G**, Sharma M, Vaish R. Emerging Trends in Glass-ceramic Photocatalysts. ***Chemical Engineering Journal***. 2020; 407:126971.

2. **Singh G**, Sharma M, Vaish R. Flexible Ag@$LiNbO_3$/PVDF Composite Film for Piezocatalytic Dye/Pharmaceutical Degradation and Bacterial Disinfection. ***ACS Applied Materials & Interfaces***. 2021; 13(19):22914–22925

3. **Singh G**, Sharma M, Vaish R. Transparent ferroelectric glass–ceramics for wastewater treatment by piezocatalysis. ***Communications Materials***. 2020;1(1):1-8. (https://www.nature.com/articles/s43246-020-00101-2.pdf).

4. **Singh G**, Kumar M, Singh M, Vaish R. Surface plasmon resonance triggered promising visible light photocatalysis of $LiNbO_3$ ceramic supported Ag nanoparticles. ***Journal of the American Ceramic Society***. 2020; 104(3):1237–1246

5. **Singh G**, Sharma M, Vaish R. Influence of $LiNbO_3$ crystallization on the optical, dielectric and nanoindentation properties of the $30SiO_2–35Li_2O–35Nb_2O_5$ glass. ***Journal of Applied Physics***. 2019;126(21):214101.

6. **Singh G**, Sharma M, Vaish R. Exploring the piezocatalytic dye degradation capability of lithium niobate. ***Advanced Powder Technology***. 2020;31(4):1771–1775.

7. **Singh G**, Vaish R. Melt quenched V_2O_5/$BiVO_4$ composite: A novel and promising adsorbent and photocatalyst. ***Materials Chemistry and Physics***. 2020;240:122238.

8. **Singh G**, Kumar M, Vaish R. Promising multicatalytic and adsorption capabilities in V_2O_5/$BiVO_4$ composite pellets for water-cleaning application. ***Surfaces and Interfaces***. 2021;23:100924.

9. **Singh G**, Singh V, Vaish R. Controlled crystallization of BiOCl/BiF_3 on $ZnO–Bi_2O_3–B_2O3$ glass surfaces for photocatalytic and self-cleaning applications. ***Materialia***.2019;5:100196.

10. **Singh G**, Sharma M, Vaish R. Tunable surface adsorption and wettability of candle soot coated on ferroelectric ceramics. ***Journal of Advanced Research***.2018;16:35-42. (https://www.sciencedirect.com/science/article/pii/S2090123218301309)

11. **Singh G**, Kumar S, Sharma SK, Sharma M, Singh VP, Vaish R. Antibacterial and photocatalytic active transparent TiO_2 crystallized $CaO–BaO–B_2O_3–Al_2O_3–TiO_2–ZnO$ glass nanocomposites. ***Journal of the American Ceramic Society***. 2019;102(6):3378-90.

12. **Singh G**, Sandeep K, Sharma M, Vaish R. Transparent CaF_2 surface crystallized $CaO–2B_2O_3$ glass possessing efficient photocatalytic and antibacterial properties. ***Journal of the American Ceramic Society***. 2019;102(9):5127-5137.

13. **Singh G**, Sandeep K, Singh VP, Vaish R. Transparent ZnO crystallized glass ceramics for photocatalytic and antibacterial properties. ***Journal of Applied Physics***. 2019;127(17):175102.

14. Singh G, Sharma M, Mathur A, Halder A, Vaish R. Diesel Soot as a Supercapacitor Electrode Material. ***Journal of The Electrochemical Society***. 2021;168(5): 050551.

15. Moolchand Sharma, **Singh G**, Vaish R. Diesel soot coated non-woven fabric for oil-water separation and adsorption applications. ***Scientific Reports***.2019;9(1):8503. (https://www.nature.com/articles/s41598-019-44920-x.pdf)

16. Sharma M, **Singh G**, Vaish R. Dye degradation and bacterial disinfection using multicatalytic $BaZr_{0.02}Ti_{0.98}O_3$ ceramics. ***Journal of the American Ceramic Society***. 2020;103(9): 4774-4784.

17. Singh, K.P., **Singh, G**. and Vaish, R. Utilizing the localized surface piezoelectricity of centrosymmetric $Sr_{1-x}Fe_xTiO_3$ ($x \leq 0.2$) ceramics for piezocatalytic dye degradation. ***Journal of the European Ceramic Society***. 2020;41(1):326-334.

18. Sharma M, **Singh G**, Vaish R. Ag nanoparticles loaded $Ba_{0.85}Ca_{0.15}Ti_{0.9}Zr_{0.1}O_3$ for multicatalytic dye degradation. ***Nanotechnology***. 2020;32:145716.

19. Kumar M, **Singh G**, Vaish R. Reduced graphene oxide/bismuth vanadate composite as an efficient piezocatalyst for degradation of organic dye. ***Materials Advances***. 2021; 2:4093– 4101 (https://pubs.rsc.org/en/content/articlepdf/2021/ma/d1ma00284h).

20. **Singh G**, Nanda T, Miadad SJ, Gorain NC, Venugopalan T, Kumar BR. Correlation between Lüders band formation and precipitation kinetics behaviour during the industrial processing of interstitial free high strength steels. ***Archives of Civil and Mechanical Engineering***. 2019;19(2):469-83.

21. **Singh G**, Vaish R. Efficient dye removal using adsorption and photocatalytic capabilities of titania-supported vanadia. ***Materials Technology***. 2020; 36(8):504–512. (https://pubs.rsc.org/en/content/articlepdf/2021/ma/d1ma00284h)

22. Nanda T, Singh V, **Singh G**, Singh M, Kumar BR. Processing routes, resulting microstructures, and strain rate dependent deformation behaviour of advanced high strength steels for automotive applications. ***Archives of Civil and Mechanical Engineering***. 2021;21(1):1-24.

23. **Singh G**, Sharma M, Vaish R. Polar glass-ceramics for piezocatalytic applications. ***Journal of Applied Physics***. 2021;130(12):125101.

24. Sharma M, **Singh G**, Vaish R. Piezocatalysis in ferroelectric $Ba_{0.85}Ca_{0.15}Ti_{0.9}Zr_{0.1}O_3$ /polyvinylidene difluoride (PVDF) composite film. ***Journal of Applied Physics***. 2021;130(8):085107.

INDIAN PATENTS FILED

- **Gurpreet Singh,** Moolchand Sharma, and Rahul Vaish. Vibration induced waste-water cleaning and bacterial disinfection using glass-ceramics containing piezoelectric crystals. Patentapplication No. 201911045685
- Moolchand Sharma, **Gurpreet Singh**, and Rahul Vaish. A rapid and efficient strategy for creating economical antibacterial surfaces on portland cement based structures. Patent application No. 202011006402

BOOK CHAPTER

Book Name: **Ceramic Engineering: Fundamentals to Recent Advancements**, Chapter 12: **Ferroelectric ceramics and glass ceramics for photocatalysis, Editor(s):** Misra, K., Misra, R. ***(Accepted for publication)***

SCIENTIFIC METRIC

Source: Google Scholar

Citations: 189 h-index: 8 i10-index:7