Name: Dr. VAISHALI SUSHIL PODDAR
(B.E. -Metallurgy, M.Tech. -Physical Metallurgy, Ph.D. Metallurgy and Materials Science)
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Educational Qualifications:

Course	Subjects	Institution, Board / University	% / CGPA	Class	Year of passing
Ph.D.	Metallurgical Engineering	College of Engineering, Pune / Savitribai Phule Pune University	Ph.D. Degree Completed: 10 June 2019		
M. Tech	Physical Metallurgy	College of Engineering, Pune	9.91	I Class with Distinction	2011
B.E.	Metallurgical Engineering	Visvesvaraya National Institute of Technology, Nagpur	77.39	I Class with Distinction	2003
HSC	Science	New English Junior College, Nagpur / Maharashtra State Board of Secondary & Higher Secondary Education	85.67	I Class with Distinction	1999
SSC	All Subjects	Sanjuba High School, Nagpur / Maharashtra State Board of Secondary & Higher Secondary Education	89.86	I Class with Distinction	1997

Academic Achievements:

1. Won the **Best Oral Presentation award** in the Technical Session VII for the paper entitled "Evaluation of Mechanical Properties of Cold Roll Bonded Mild Steel and Aluminum" in the International Conference on "Cutting-edge Research in Material Science and Chemistry (CRMSC-2021)" organized by Department of Chemistry and Biosciences, School of Basic Sciences, Manipal University Jaipur January 11-12, 2021
2. Won **1st prize** in "Suraksha : Sheeraz & Kaushik Memorial Safety Quiz" in 2nd virtual National conference on 'Advancement in Materials Processing Technology (AMPT-2020)', organized by Department of Metallurgical and Materials Engineering, NIT, Jamshedpur during 31st Oct 2020 - 2nd Nov 2020
3. Won **2nd prize** in oral presentation on 'Synthesis of p-type and n-type Beta-Iron Disilicide by Mechanical Alloying route', in International Conference 'IIM NMD ATM 2014', 12-15 Nov 2014, COEP, Pune.
4. Stood **1st** in M.Tech. (Metallurgy and Material Science) 2011 and received the Late Prof. Dr. R. D. Chaudhari Gold Medal Award.
5. Stood **2nd** in Final Year B.E., Metallugical Engineering.
6. Stood **2nd** in Second Year B.E. , Metallugical Engineering.
7. Stood **6th Merit in SSC** Examination, Maharashtra State Board Of Secondary & Higher Secondary Education.
8. Cleared **GATE-2005** Examination with **All India Ranking – 61.**
9. Cleared **GATE-2009** Examination with **All India Ranking – 59.**
10. Honored with a **contribution award** at the International Conference on Powder Metallurgy (PM 24) organized by Powder Metallurgy Association of India (PMAI) during 25th – 28th February 2024.

11. Won the **1st prize** in inter-hostel competition under Swachata Pakhwada – 2024 organized within the NIAMT campus from 18th September – 2nd October 2024.

Fellowship / Membership:

1. Life membership of
    a. Indian Institute of Metals
    b. Powder Metallurgy Association of India

Work Experience: 13.6 years

Type of Experience	No. of Years
Teaching	9.0 years
Research	1.8 years
Industry	3.8 years

Work Experience 1 (From 13-04-22 to till date):

I am currently working as an Assistant Professor at the Department of Materials and Metallurgical Engineering, National Institute of Advanced Manufacturing Technology (An Autonomous body under the Ministry of Human Resource and Development, Govt of India), Ranchi-834003, Jharkhand, India.

Teaching Responsibilities: Advanced Powder Metallurgy, Composite Materials, X-ray Crystallography, Mechanical Behavior of Materials, Materials Characterization, Electronic, Optical and Magnetic Properties of Materials

Research and Development:

- Developed in-house Powder Extruder Machine (50 ton) for ferrous and non-ferrous alloys.
- Developed in-house vacuum sealing unit for metallurgical samples.

Work Experience 2 (From 2-01-16 to 12-04-22 on Contract: in breaks):

I worked as an Adjunct Faculty at the Department of Metallurgy and Materials Science, College of Engineering, Pune-05, Maharashtra, India.

Teaching Responsibilities: Wire Drawing and Sheet Metal Forming, Forging Technology, Electronic and Magnetic Materials, Fundamentals of Metal Working, Light Metal Alloys, Material Characterization.
Laboratory Responsibility: Materials Joining, Materials Testing, Materials Characterization, Lab Practices for M.Tech. students
Laboratory In charge: Powder Metallurgy, Tribology and Cryo Engineering Laboratory
Research and Development:

1. Developed in-house
    i. Arc Melting Unit for High Entropy Alloy project: 2018
    ii. High temperature (RT to 400°C) electrical resistivity measurement set up: 2019
    iii. Double cone metal powder blender: 2021

Other Responsibilities:

2. Faculty Advisor for B.Tech. 16-17, S.Y. B.Tech. 17-18, T.Y. B.Tech. 18-19, B.Tech. 19-20, S.Y. B.Tech. 20-21, T.Y. B.Tech. 21-22.
3. Gate Coordinator for 2019-20.
4. Guided technocraft booth project titled, “Development of miniature Arc-Melting Unit”.
5. Arranged internship at VNIT, Nagpur for Dec-16, June-17, June-18 batches.
6. Compilation of Department Annual Report 2016, 2017, 2018, 2019, 2020, 2021.
7. Department Coordinator for NBA, AICTE, NAAC, etc.

8. Exit feedback analysis of B.Tech. and M.Tech. students: 2016, 2017, 2018, 2019, 2020, 2021 and 2022 batches.
9. Organized industrial visits for students: Hirschvogel India, Pune, GKN sinters, Pune, Tata Steel Global Wires Ltd., Thane.

Work Experience 3 (from 1st March 2014 to 31st Dec 2015):

I worked as a Junior Research Fellow on a BARC, Mumbai sponsored project, "Synthesis of High temperature Thermoelectric Material β – $FeSi_2$ by Mechanical Alloying of Fe and Si Powders" with Principal Investigator Prof. N. B. Dhokey, at COEP, Pune and Dr. Deep Prakash, at BARC, Mumbai.

Work Experience 4 (from 17th August 2003 to 22nd June 2007): 3 Years and 10 Months

Cummins India Limited (CIL): Company profile: CIL is an integral part of Cummins Inc., USA, the world's largest independent diesel engine manufacturer in the 200+ HP range. Cummins India Limited is India's largest manufacturer of heavy-duty Diesel, Gas and Dual Fuel engine in the 60 – 4500 HP range.

- Started my carrier as an **OMPP** Trainee (OPERATION MANAGEMENT PROGRAMME PARTICIPANT) with Cummins India Limited (CIL), Pune - August 2003 to July 2005
- Promoted as a **Manager – Manufacturing** – August 2005.
- Promoted as a **Senior Manager – Manufacturing** – August 2006, Worked as a **Senior Manager – Manufacturing**, for 'C' Series Engine Assembly line with CPD (Cummins Diesel Sales & Service Products Division), Viman Nagar, Pune.
- Undergone trainings such as Kaizen, 6 sigma, TS 16949, Young Leadership Development Programme (YLDP), Seven Habits of Highly Effective People, Common Approach to Continuous Improvement (CACI)

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Sponsored Projects:

1. Co-PI: High temperature wear study of high entropy alloy: AICTE-RPS: 2020-2022: INR 12.53 Lacs

2. Co-PI: Studies on microstructure and Mechanical Properties of En19 Steel for small arms gun barrel applications: ARDE-DRDO: 2021-2023: INR 8.5 Lacs.

3. Co-PI: Multiferroics for future electronics: COEP: 2021-2023: INR 5 Lacs

4. Co-PI: Exploring Opportunities for Utilization of Coal Wastes to Useful Products including Alternative to Calcined Petroleum Coke used as Raw Material in the Green Anode Manufacturing Process in Carbon Plant: Vedanta: 2024-2027.

Patents filed / granted:

1. 202121015521 (E-2/525/2022/MUM), 1 April 2021, V.S. Poddar, V.A. Ranawade, N.B. Dhokey, Synergy between Photovoltaic, Thermoelectric and Direct Evaporative Cooling to Develop a Novel Hybrid Energy System.

2. 457575-001, 05 May 2025, V. S. Poddar, D. Roy, A Powder Extrusion Machine.

3. 202431088457 (TEMP/E1/101563/2024-KOL), 15 November 2024, V. S. Poddar, Aluminium – Graphene Based Composite and Method for Synthesis Thereof.

4. 467348-001, 25 July 2025, V. S. Poddar, THERMAL CONDUCTIVITY TESTING EQUIPMENT

Book Chapter Publication:

1. **Poddar, V**., Dhokey, N., Gole, A., Dongare, R. (2022), "*Remarkable Effect of Graphene on the Properties of FeCoCrNi-Based High Entropy Alloy*", In: Prasad, R., Sahu, R., Sahoo, K.L., Jadhav, G.N. (eds) Advancement in Materials Processing Technology. Springer Proceedings in Materials, vol 12. Springer, Singapore. https://doi.org/10.1007/978-981-16-3297-6_22

2. **Poddar, V**., (2024), "*Thermoelectric Ceramics: Multidimensional Renewable Materials*", Book Name: Advanced Ceramics Materials - Emerging Technologies, IntechOpen, ISBN 978-1-83634-017-1

Publications in International Journals

1. **V. S. Poddar**, N. B. Dhokey, A. Kadam, R. Sangale, T. Kumar, S. Singh, *Synthesis of AlCrFeMnX- based High Entropy Alloys using Powder Metallurgy and their Investigation through Thermodynamic Perspective*, 2024, Journal of Materials Research. https://doi.org/10.1557/s43578-024-01481-8 Impact Factor: 3.0 (2023).

2. Rahul Kulkarni, **Vaishali Poddar**, *Impact of cold upset forging during heat treatment in Al-1.1Si-0.97Mg Alloy*, 2024, Engineering Research Express, https://doi.org/10.1088/2631-8695/ada3b1 Impact Factor: 1.7 (2023)

3. **V. S. Poddar**, *Eco-friendly transition metal silicide for high temperature thermoelectricity*, J Mater Sci: Mater Electron 34, 2067 (2023). https://doi.org/10.1007/s10854-023-11472-w Impact Factor: 2.8 (2023).

4. Sushil Yebaji, Ayush Saurav, Pranjal Chauhan, Bhaskar Majumdar, B. S. Murty, Baswanta Patil, Aravindha Babu, **Vaishali Poddar**, T. Shanmugasundaram, "*Phase stability of AlCoTiZn high entropy alloy prepared by mechanical* alloying", J. of Materi Eng and Perform 32, (2023), pp: 3668–3677, DOI: 10.1007/s11665-022-07332-z, Impact Factor: 2.71 (2023).

5. Y. P. Fatangade, N. B. Dhokey, **V. S. Poddar**, "*Experimental and mathematical analyses of process parameters for roll compaction of steel powder*", Materials Today: Proceedings, Vol. 67 (2), (July 2022), pp: 295-300, https://doi.org/10.1016/j.matpr.2022.06.415; Impact Factor: 2.46 (2023).

6. **V. S. Poddar**, V. A. Ranawade, N. B. Dhokey, *Study of Synergy between Photovoltaic, Thermoelectric and Direct Evaporative Cooling System for Improved Performance*, Renewable Energy, January 2022, Vol. 182, pp: 817-826, doi.org/10.1016/j.renene.2021.10.040; Impact Factor: 9.0 (2024).

7. N. B. Dhokey, **V. S. Poddar**, P. S. Kolhe, "*Evaluation of Magnetic Properties of Ceramic Coated Soft Magnetic Composite and its Simulation for Microwave Devices*", ECS Journal of Solid State Science and Technology, 2022, Vol. 11(5), Available online, doi.org/10.1149/2162-8777/ac6d10; Impact Factor: 2.2 (2023).

8. **V. S. Poddar**, N. B. Dhokey, S. P. Butee, A. N. Walimbe, P. D. Gaikwad, S. Vhora, Debanik Roy, Deep Prakash, R. D. Purohit, R. K. Sinha, "*Improved process for synthesizing n-type and p-type β-$FeSi_2$ thermoelectric material from Attritor milled powder*", Materials Today: Proceedings, Vol. 43 (5), 2021, Pages 3156-3160, https://doi.org/10.1016/j.matpr.2021.01.655; Impact Factor: 2.46 (2023).

9. **V. S. Poddar**, M. J. Rathod, "*Evaluation of Mechanical Properties of Cold Roll Bonded Mild Steel and Aluminum***",** Materials Today: Proceedings, Vol. 43 (5), 2021, pp: 3014-3022, https://doi.org/10.1016/j.matpr.2021.01.363; Impact Factor: 2.46 (2023).

10. **V. S. Poddar**, N. B. Dhokey, "*Evaluation of Thermoelectric Properties of Doped β-Iron Disilicide Prepared by the Powder Metallurgy Technique"*, Transactions of the Indian Institute of Metals, 2021, 74, pp: 399-410, DOI: 10.1007/s12666-020-02167-5; Impact Factor: 1.74(2023).

11. **V. S. Poddar**, N. B. Dhokey, "*Thermoelectric Properties of Iron Disilicide and Manganese Silicide: Synthesis and Characterization*", Transactions of the Indian Institute of Metals, 2019, 72 (10), pp: 2711–2719, DOI: 10.1007/s12666-019-01743-8, Impact Factor: 1.74(2023).

12. **V. S. Poddar,** N. B. Dhokey, R. R. Garbade, S. P. Butee, Deep Prakash, R. D. Purohit, "*Rapid production of Iron disilicide thermoelectric material by hot press sintering route*", Materials Science in Semiconductor Processing Journal, 2017,11, pp:477-481, DOI: 10.1016/j.mssp.2017.06.027; Impact Factor: 4.46(2023).

13. **V. S. Poddar**, N. B. Dhokey, S. P. Butee, N. B. Revade, M. M. Thombre, R. D. Purohit, Deep Prakash, "*Evolution of Thermoelectric β – $FeSi_2$ phase by Cryo Milling and Sintering",* Transactions of the Indian Institute of Metals, Vol. 70 (1), (2016), pp:167-174, DOI: 10.1007/s12666-016-0873-0; Impact Factor: 1.74(2023).

Publications in National Journals

1. N. B. Dhokey, **V. S. Poddar**, N.B.Revade, R.Garbade, P. Lalge, D. Prakash, R. D. Purohit, "*Development of thermoelectric β-$FeSi_2$ by mechanical alloying and its response to hot press sintering*," TRANSACTIONS OF PMAI, VOL. 42 (1), JUNE 2016.

2. R.Garbade, **V. S. Poddar**, N. B. Dhokey, D. Prakash, R. D. Purohit, "*Fabrication of Thermoelectric Generator for high temperature application using unicouples made from p-type and n-type β-Iron disilicide*", TRANSACTIONS OF PMAI, VOL. 43 (1), JUNE 2017.

3. **V. S. Poddar**, N. B. Dhokey, *The Broad Usage Spectrum of Thermoelectricity from Low Temperature Photovoltaic to High Temperature Furnaces: An Overview,* TRANSACTIONS OF PMAI, VOL. 48, JUNE 2023.

Papers published in Conference Proceedings, Popular Journals:

1. **V. S. Poddar,** A.N. Walimbe, P.D. Gaikwad, S. Vhora, N.B. Dhokey, D. Prakash, R.D. Purohit, "*Synthesis of p and n type β-$FeSi_2$ thermoelectric material by Mechanical Alloying*", **(NMD-ATM 2014- ORAL, 12-15 November 2014,** Recipient of PMAI award (Second prize) with cash price of Rs.10000/- and certificate**)**

2. N.B. Revade, M.M. Thombre, **V. S. Poddar**, N.B. Dhokey**,** "*Effect of milling condition on β-$FeSi_2$ phase formation*", (NMD-ATM 2014-POSTER).

3. N. V. Revade, **V. S. Poddar**, N. B. Dhokey, M. M. Thombre, Deep Prakash, R. D. Purohit, "*Effect of Cryo milling on Kinetics of Thermoelectric β – $FeSi_2$ Phase Formation during Sintering*", (International Conference on Powder Metallurgy and Particulate Materials, IITB 2015)

4. A. Patil, P. Kulkarni, R.Garbade, **V. S. Poddar**, N. B. Dhokey, D. Prakash, R. D. Purohit, "*Fabrication of TEG and assessment of its functionality*", (International Conference on Powder Metallurgy and Particulate Materials, Hyatt Regency Pune 2016)

5. **V. S. Poddar**, N. B. Dhokey, S. P. Naganoor, "*Fabrication of thermoelectric material-Manganese Silicide through powder metallurgy route and analysing its thermoelectric properties",* (International Conference - NMD-ATM 2017- ORAL, 11^{th} -14^{th} Nov, 2017, BITS Pilani, Goa Campus).

6. N. B. Dhokey, **V. S. Poddar**, "*Overview on Thermoelectric materials*", (International Conference on Powder Metallurgy & Particulate Materials + Exhibition, 20-22 Feb, 2018, IIT, Bombay).

7. **V. S. Poddar**, N. B. Dhokey, "*Harvesting Energy from Waste Heat by Thermoelectrics of Transition Metal Silicides: An Overview*", (5^{th} International Conference on Powder Metallurgy in Asia + Exhibitions, 19-21 Feb, 2019, JW Marriott Hotel, Pune).

8. Neha Vemula, Sayali Patil, N. B. Dhokey, **V. S. Poddar**, "*Characterization of Intrinsic n-type Thermoelectric Materials* $CoSi_2$ *and* Mg_2Si *Synthesized by Powder Metallurgy Route*", (5^{th} International Conference on Powder Metallurgy in Asia + Exhibitions, 19-21 Feb, 2019, JW Marriott Hotel, Pune).

9. S. B. Gore, N. B. Dhokey, **V. S. Poddar**, "*Development of Eutectic High Entropy Alloy* $CoCrFeNiM_x$ *synthesized from elemental powders through Arc Melting Route*", (5^{th} International Conference on Powder Metallurgy in Asia + Exhibitions, 19-21 Feb, 2019, JW Marriott Hotel, Pune).

10. **Vaishali Poddar**, Narendra Dhokey, Akshata Gole, Rutuja Dongare , "*Remarkable Effect of Graphene on the Properties of FeCoCrNi based High Entropy Alloy*", 2nd virtual conference on Advancement in Materials Processing Technology (AMPT-2020), 29 Sep, 2020 – 1 Nov, 2020 organized by NIT, Jamshedpur.

11. **Vaishali Poddar**, Narendra Dhokey, Pankaj Kolhe, "*Evaluation of Magnetic Properties of Ceramic Coated Soft Magnetic Composite and its Simulation for Microwave Devices*", International Conference on Advanced Materials and Mechanical Characterization (ICAMMC-2021), 2- 4 December 2021, organized by the Department of Physics and Nanotechnology and Department of Mechanical Engineering, SRM Institute Of Science And Technology, Chennai.

12. **Vaishali Poddar**, Akshata Kadam, Rutuja Sangale, Narendra Dhokey, "*New Scalable Synthesis Route for High Entropy Alloy and its High Temperature Wear Investigation*", International Conference on Powder Metallurgy (PM 22) organized by Powder Metallurgy Association of India (PMAI) in virtual mode during 18^{th} – 20^{th} April 2022.

13. **Vaishali Poddar**, Narendra Dhokey, "*Transition Metal based Thermoelectrics for Harvesting Waste Energy with Improved Efficiency*", at the International Conference on Powder Metallurgy (PM 22) organized by Powder Metallurgy Association of India (PMAI) in virtual mode during 18^{th} – 20^{th} April 2022.

14. **Vaishali Poddar**, Narendra Dhokey, "*The Broad Usage Spectrum of Thermoelectricity from Low Temperature Photovoltaic to High Temperature Furnaces: An Overview*" at the International Conference on Powder Metallurgy and Particulate Materials + Exhibition 2023 (PM-23) conducted during the period of 13th to 15th March 2023, at Hotel The Lalit Mumbai, India.

15. **Vaishali Poddar**, Neha Patil, Shivani Patil, Vishakha Rodge, "*Influence of Material Characteristics on the Kinetics of Sodium Ion Battery*" at the National Conference on Advanced Materials and its Applications (NCAMA-2024) organized by the Department of Applied Sciences and Humanities, NIAMT at NIAMT Ranchi during the period of 9th -10th February 2024.

Invited Talks Delivered:

1. Topic: "**PM applications in Electrical and Magnetic Materials**", delivered in POWDER METALLURGY SHORT COURSE (PMSC-18), organized by Powder Metallurgy Association of India (PMAI) in association with Dept. of Metallurgy and Materials Science, College of Engineering Pune (COEP) during 12th–15th October, 2018.
2. Topic: "**Strengthening Mechanisms of Metal**", delivered in METALLURGY FOR NON METALLURGIST , 2019, organized by ASM International in association with ARAI, Pune during 29-31 May 2019.
3. Topic: "**An overview of MPIF Standards**", delivered in POWDER METALLURGY SHORT COURSE (PMSC-19), organized by Powder Metallurgy Association of India (PMAI) in association with Dept. of Metallurgy and Materials Science, College of Engineering Pune (COEP) during 26th – 29th September, 2019.
4. Topic: "**An overview of MPIF Standards**," delivered in POWDER METALLURGY SHORT COURSE (PMSC-20), organized by Powder Metallurgy Association of India (PMAI) in association with Dept. of Metallurgy and Materials Science, College of Engineering Pune (COEP) during 26th – 29th September, 2020.
5. Topic: "**Silicon Wafers and Semiconductors**," delivered in Two Weeks STTP on "Recent Developments in Materials and Manufacturing Processes" organized by Department of Mechanical Engineering of SKNCoE, Vadgaon (Bk), Pune during 22nd February to 05th March 2021.
6. Topic: "**Thermoelectricity: A Multidimensional Renewable Technology**", delivered in International Conference PMAI PM 22 organized by Powder Metallurgy Association of India (PMAI) in virtual mode during 18th – 20th April 2022.
7. Topic: "**Powder Characterization,"** delivered in POWDER METALLURGY SHORT COURSE (PMSC-22), organized by Powder Metallurgy Association of India (PMAI) in association with Dept. of Metallurgy and Materials Science, College of Engineering Pune (COEP) and National Institute of Advanced Manufacturing Technology (NIAMT), Ranchi during 21st – 24th September, 2022.
8. Topic: "**Powder Characterization,"** delivered in POWDER METALLURGY SHORT COURSE (PMSC-23), organized by Powder Metallurgy Association of India (PMAI) in association with Dept. of Metallurgy and Materials Science, College of Engineering Pune (COEP) and National Institute of Advanced Manufacturing Technology (NIAMT), Ranchi during 3rd – 6th October, 2023.
9. Topic: "**Advanced Materials for Harvesting Energy**," delivered in Two Weeks STTP on "Recent Developments in Materials and Manufacturing Processes" organized by Department of Mechanical Engineering of SKNCoE, Vadgaon (Bk), Pune during 15th to 27th January, 2024.

10. Topic: "**X rays in Materials and Mechanical Engineering Perspective**" delivered in One Week hands-on Training Program on "X-Ray Diffraction Techniques for Material Characterization and Data Interpretation" organized by Central Instrumentation Facility (CIF), BIT Mesra in association with IR Technology Pvt. Ltd during 3rd March to 7th March 2025.

PhD Project: Registered on 10-5-16, Presynopsis given on 25-07-18, Thesis submitted on 18-01-2019, Degree Awarded on 10-06-19.

Title: Influence of Additives on Transformation Characteristics and Thermoelectric Behaviour of β-Iron Disilicide.

Introduction: Iron disilicide, β-$FeSi_2$, has strong potential for thermoelectric energy conversion devices utilizing simple temperature difference effectively at a high temperature range (227~927°C) without additional driving mechanisms. The performance of β-$FeSi_2$ is relatively low and to improve it, there is a need to give a focused approach to synthesis and characterization of p-type and n-type β- $FeSi_2$ phase by introducing suitable additives for improving the Z value. Synthesis of TE material, β-Iron disilicide (β-$FeSi_2$) through **Powder Metallurgy (PM)** route was carried out successfully. Two high energy milling routes were tried viz. cryomilling and attritor milling. The milling, compaction (hot or cold) and sintering process parameters were optimized to get maximum β-$FeSi_2$ phase in the compacts so formed. SEM-EDS, XRD, DTA analysis, Laser particle size analysis were carried out to study the transformation characteristics with respect to the processing route. After evaluating process parameters, addition of additives or dopants were carried out to study their influence on the thermoelectric behavior of the synthesized samples. Characterization of the samples with or without additives in terms of thermoelectric properties like Seebeck coefficient, electrical resistivity and thermal conductivity were carried out with respect to temperature in the range of 300K to 1200 K. From the determined thermoelectric properties, power factor, average band gap, Figure-of-Merit and working efficiency were calculated. The samples were compared with respect to these thermoelectric parameters and the best possible p-type and n-type TE samples were used to fabricate the high temperature thermoelectric generator (TEG) module.

Acknowledgement: The research work was supported by Department of Physics, Savitribai Phule Pune University, Pune, Maharashtra, India, Department of Physics, Indian Institutes of Science Education and Research, Pune, Bhabha Atomic Research Center, Vashi, Mumbai, India and Armament Research and Development Establishment (ARDE), Pune, Maharashtra, India.

Guide: Prof. N. B. Dhokey
COEP, Pune, Maharashtra, India

M.Tech. Project:

Title: Cold Roll Bonding of Mild Steel and Aluminium.
Guide: Prof. M. J. Rathod
COEP, Pune, Maharashtra, India

B.E. Project:

Title: Synthesis and Characterization of Lithium Ion Conducting Glass Ceramics
Guides: Prof. V. K. Deshpande, Prof. D.R.Peshwe
VNIT, Nagpur, Maharashtra, India

My Strengths

1. Hard and Smart Working,
2. Quick-learner,
3. Decision making ability.

Seminars/conferences organized:

1. Was a **Cummins representative** for Auto-Expo 2006 at New Delhi.
2. Was one of the organizers in the two weeks **BRNS – TEQIP-II** sponsored Faculty Development Program on **'Overview on Nuclear Engineering and its Applications'** during 16-27 June 2014.
3. Worked as **Conference Secretariat** for four day mega event '**IIM NMD ATM 2014'** from 12 – 15 November, 2014.
4. Worked as **In-charge – Exhibition** for a five day event **Eh-TACAG'17: 81st Annual session of Indian Ceramic Society and International conference** on "Expanding Horizons of Technological Applications of Ceramics and Glasses", from 12-16 December, 2017.
5. Worked as **Convener – Meta Vista 2019** held on 4th April 2019 at COEP jointly organized by Department of Metallurgy and Materials Science, COEP and IIM Pune Chapter.
6. Worked as **Convener –** in the one week TEQIP-III sponsored Faculty Development Program on **'Nanomaterials: Synthesis, Properties and Characterization'** during 16-20 December 2019 at COEP.
7. Worked as **Convener –** in two day TEQIP-III, DST-SERB and Industry sponsored National Symposium on **'Opportunities and Challenges in Materials for Energy Generation and Storage for Electric Vehicles'** during 3 – 4 January 2020.
8. Worked as **Convener–** in two day TEQIP-III sponsored workshop on "**Modelling of Engineering Materials**" in association with TRDDC during 6-7 March 2020.
9. Worked as **Convener** – in four day POWDER METALLURGY SHORT COURSE (PMSC-20), organized by Powder Metallurgy Association of India (PMAI) in association with Dept. of Metallurgy and Materials Science, College of Engineering Pune (COEP) during 26th – 29th September, 2020.
10. Worked as **Co-Convener** – in four day POWDER METALLURGY SHORT COURSE (PMSC-21), organized by Powder Metallurgy Association of India (PMAI) in association with Dept. of Metallurgy and Materials Science, College of Engineering Pune (COEP) during 25th – 28th September, 2021.
11. Worked as **Convener – Professor Brahm Prakash Memorial Materials Lecture and Quiz (BPMMQ)** held on 24th October 2021 at COEP in virtual mode and jointly organized by Department of Metallurgy and Materials Science, COEP and IIM Pune Chapter.
12. Worked as **Convener – Meta Vista 2022** held on 6th – 7th April 2022 at COEP jointly organized by Department of Metallurgy and Materials Science, COEP and IIM Pune Chapter.
13. Worked as **Conference Secretariat** for three days International Conference on "**Powder Metallurgy 2022 (PM 22)** from 18-20 April 2022 organized by Powder Metallurgy Association of India.
14. Worked as **Convener** – in four day POWDER METALLURGY SHORT COURSE (PMSC-22), organized by Powder Metallurgy Association of India (PMAI) in association with Dept. of Metallurgy and Materials Science, College of Engineering Pune (COEP) and National Institute of Advanced Manufacturing Technology, Ranchi during 21st – 24th September, 2022.
15. Chaired a session at the International Conference on Powder Metallurgy and Particulate Materials + Exhibition 2023 (PM-23) conducted during the period of 13th to 15th March 2023, at Hotel The Lalit Mumbai, India.
16. Worked as **Convener** – in four day POWDER METALLURGY SHORT COURSE (PMSC-23), organized by Powder Metallurgy Association of India (PMAI) in association with Dept. of Metallurgy and Materials Science, College of Engineering Pune (COEP) and National Institute of Advanced Manufacturing Technology, Ranchi during 3rd – 6th October, 2023.
17. .Worked as **Organizing Committee Member** in 3 day International Conference on Translational Research: Metals and Materials (TRMM 2023) organized by Department of Materials and Metallurgical Engineering (MME), National Institute of Advanced Manufacturing Technology (NIAMT) commemorating its Silver Jubilee celebration during 19th – 21st November, 2023..

NPTEL courses completed:

1. Fundamentals of Electronic Device Fabrication (73%, 2020)

2. Powder Metallurgy (66%, 2020)
3. X ray Crystallography (72%, 2023)
4. Carbon Materials and Manufacturing (64%, 2024)
5. Mechanical Behavior of Materials (Part 1) (65%, 2025)

National Initiative for Technical Teachers Training Courses on Swayam- NPTEL portal

6. MODULE 1: Orientation towards Technical Education & Curriculum Aspects (Qualified, 2024)
7. MODULE 2: Professional Values, Ethics, Ecology & Sustainable Development (Qualified, 2024)
8. MODULE 3: Communication Skills, Modes and Knowledge Dissemination (Qualified, 2024)
9. MODULE 4: Instructional Planning and Delivery (Qualified, 2024)
10. MODULE 5: Technology Enabled Learning and Lifelong Self-learning (Qualified, 2024)
11. MODULE 6: Effective Modes of Student Assessment and Evaluation (Qualified, 2024)
12. MODULE 7: Creative Problem Solving, Innovation and Meaningful R&D (Qualified, 2024)
13. MODULE 8: Miscellaneous Aspects (Institutional Management & Administrative Procedures) Qualified, 2024)

List of Research & Development / Industrial / Training experiences:

Sr. No.	Type	Title	Time Period	Venue
1	Training (workshop)	Python-Powered AI: Transforming Industries with Intelligent Solutions	16 – 20 Dec 2024	NIAMT, Ranchi
2	Training (FDP)	Carbon Materials and Manufacturing	12 weeks (Jan – Apr 24)	Online, NPTEL
3	Training (workshop)	Recent Trends in Materials Processing & NDT	21 Apr 2023	NIAMT, Ranchi
4	Training (FDP)	Advanced Remanufacturing Technology	12-23 Dec 2022	NIAMT, Ranchi
5	Training (workshop)	Remanufacturing Capability Building	15 – 18 Sep 2022	NIAMT, Ranchi
6	Training	Advances in Materials Manufacturing Processes and Properties	6-10 July2020	MNIT Jaipur, India
7	Training	Modelling of Engineering Materials	6-7 March 2020	COEP, Pune
8	Training	Opportunities and Challenges in materials for energy generation and storage for electric vehicles	3-4 Jan 2020	COEP, Pune
9	Training	Nanomaterials and Nanotechnology	16-20 Dec 2019	COEP, Pune
10	Training	PMSC 2019	26-29 Sep 2019	COEP, Pune
11	Training	Asian Powder Metallurgy Trends (APMA 2019	18-21 February 2019	JW Marriot, Pune
12	Training	PMSC 2018	12-15 Oct 2018	COEP, Pune
13	Training	Wear in Agriculture Implements and Machinery	8-9 June 2018	COEP, Pune
14	Training	Enterprenuership in Material Engineering	9-Feb-18	COEP, Pune
15	Training	Additive Manufacturing: 3D printing of metals	28-Mar-18	COEP, Pune
16	Training	Lightweighting for Defence and Transportation: Trends, New Paradigms and Strategies	11-14 Nov 2017	BITS, Pilani-K K Birla Goa
17	Training	Characterization of Micro and Nanomaterials	20-24 March 2017	COEP, Pune
18	Training	PMAI 2016	18-20 February 2016	Hotel Hyatt Pune
19	Training	Slag Design in Metallurgical Processes	22-28 August 2016	COEP, Pune

20	Training	Ancient Science and Technology: Retrospection and Aspiration	9-16 January 2016	Deccan College, Pune
21	Training	Overview on Nuclear Engineering and its Applications	16-27 June 2014	COEP, Pune
22	Training	PMSC 2010	8-11 October 2010	COEP, Pune
23	Training	PMSC 2015	24-27 September 2015	COEP, Pune
24	R and D	Synthesis of high temperature thermoelectric material β-FeSi2 by Mechanical Alloying	01 March 2014 to 30 June 2015	COEP, Pune
25	Training	Transmission Gear: Materials, Manufacturing and Quality Control	12-Mar-14	COEP, Pune
26	Training	Corrosion and Corrosion Prevention for Automobile Components	23-Oct-10	COEP, Pune
27	Industrial	Operation Management Program	17 Aug 2003 – 1 Aug 2005	CIL Pune
28	Industrial	6 sigma	Oct-06	CIL Pune
29	Industrial	TS 16949	13-15 Nov 2006	CIL Pune
30	Industrial	Seven Habits	Apr-04	CIL Pune

List of courses taught:

Sl. No.	Course Title	Level (UG/PG)	No. of times taught
01	Fundamentals of Metal Working	UG	01
02	Light Metals and Alloys	PG	01
03	Wire Drawing and Sheet Metal Forming	UG	03
04	Electronic and Magnetic Materials	UG	04
05	Forging Technology	UG	01
06	Characterization of Materials	UG	05
07	Materials Characterization	PG	01
08	Advanced Powder Metallurgy	PG	01
09	Composite Materials	UG	02
10	X-ray Crystallography	UG	04
11	Mechanical Behavior of Materials	UG	02
12	Electronic, Optical and Magnetic Properties of Materials	UG	02
13	Materials Joining Lab	UG	02
14	Transport Phenomena Lab	UG	01
15	Materials Testing Lab	UG	01

16	Characterization of Materials Lab	UG	05
17	Materials Characterization Lab	PG	01

PG Project Dissertation as a Guide:

Sr. No.	Title of Dissertation	Name of Student	Pass out Year
1	Fabrication of Thermoelectric Material Manganese Silicides (MnSi1.73) through Powder Metallurgical route and analyzing its Thermoelectric Properties	Shankar Naganoor	2017
2	Heat Transfer Coefficient at interface of Solar Salt and cylinder In an innovative Heat Exchanger	Shrikant Sabale	2018
3	Synthesis of Thermoelectric p-type and n-type beta-FeSi2 through Powder Metallurgical route	Snehal Chaudhary	2018
4	Development of High Entropy Eutectic Alloys through Arc Melting Route	Shailesh Gore	2019
5	Development of Thermoelectric Generator (TEG) circuit for industrial applications	Anjali Rajmane	2020
6	Hard facing of substrate using high entropy alloy	Shubham Dabhekar	2020
7	Application of beta-FeSi2 for harvesting solar energy	Pradnya Bhaik	2020
8	Study of synergy between photovotaic, thermoelectric and evaporative cooling system for improved performance	Vishal Ranawade	2021
9	Experimental validation of novel hybrid electrical energy generation system (Co-guide)	Mandar Ujjainkar	2022
10	Development of aluminium - graphene composite for thermal energy conservation	Akash Anand	2023
11	Design, Analysis and Development of Knuckle Boom Crane	Aravind Doss R.	2024

UG Project Dissertation as a Guide:

Sr. No.	Title of Dissertation	Name of Student	Pass out Year
1	Study of High Temperature Deformation of P91 Steel used for Power Plant Application	Siddhant Thorat	2017
2	Heat Treatment Study of P91 Steel	Akshay Vidhate	2018
3	Synthesis and Characterization of Iron Disilicide Thermoelectric Material through Conventional Powder Metallurgy Route	Gangadhar Battalwad and Akhil Patil	2018

4	Synthesis and Characterization of Thermoelectric Material Cobalt Disilicide (CoSi2) and Magnesium Disilicide (MgSi2) through Powder Metallurgical Route	Sayali Patil and Neha Vemula	2019
5	Beta Iron Disilicide Thermoelectric Material and its Photovoltaic Applications	Varun Kasat and Sopan Mutatkar	2020
6	Remarkable Influence of Additives on Properties of High Entropy Alloy	Akshata Gole and Rutuja Dongare	2020
7	Parametric Analysis of Electrode materials for Heat generation in Sodium ion battery : A material selection approach	Aishwarya Janbandhu and Neeta Kamat	2021
8	Influence of Material Characteristics on the Kinetics of Sodium Ion Battery	Neha Patil, Shivani Patil and Vishakha Rodge	2021
9	New Scalable Synthesis Route for High Entropy Alloy	Akshata Kadam and Rutuja Sangale	2022
10	Use of Cascaded Thermoelectric to Improve the Efficiency of Photovoltaic Cell	Amar Khedkar and Rahul Rajgadkar	2022
11	Application of Thermoelectric Zinc Antimonide as a Cooling System for Refrigeration	Prince Kumar and Prashant Rishu	2023
12	Synthesis of Cost-Effective High Entropy Alloy	Tathagat Kumar and Sarveshwari Singh	2023
13	Synthesis and Characterization of Aluminum Graphene Composite for High Thermal Conductivity used as Heat Exchanger Material for Electronic Devices	Akash Kumar and Arpan Singh	2024
14	Comparative Study of High Entropy Alloy Synthesized Using Vacuum Arc Melting and Conventional Powder Metallurgy Route	Astitva Tiwari and Dhananjay Kumar	2024
15	Synthesis of Novel Copper - Silver Composite for High Electrical Conductivity of 105 IACS	Ankush Raj and Sumit Kumar	2024
16	Synthesis of Mg Based Composite and Comparative Study of their Mechanical Property After Forging	A.R. Yeshwanth Raj and B.M. Praveen Babu	2025
17	Synthesis and electrical characterization of doped Bismuth vanadate for solid state batteries	Arindam Das and Shivam Kumar	2025
18	Synthesis and Characterization of Low-Cost High Entropy Alloy for Structural Applications	Ayush Pathak and Shivam Kumar	2025
19	Upgradation of Coal Waste to the Quality of Calcined Petroleum Coke for Anode Manufacturing	Piyush Raj and Rakesh Kumar	2025
20	Synthesis of Ecofriendly Zinc Antimonide Thermoelectric material for Renewable Energy	Yuvraj Anand and Thakur Vimal Manoranjan	2025