ARMY INSTITUTE OF TECHNOLOGY
DIGHI HILLS, PUNE-15
Department of Mechanical Engineering

Name	**: Dr Pritee Purohit**
Designation	: Assistant Professor
Highest Qualifications	: PhD
Experience : Teaching	: 12 Years
: Industrial	: 01 Years
: Total	: 13 Years
Date of joining AIT	: 21/07/2008

Experience

Sr. No.	Institution / Organization	Designation	Year	Main work
1.	College of Engineering Kopergaon	Lecturer	01/03/2006-30/06/2008	Teaching, Research
2.	Army Institute of Technology Pune	Lecturer	21/07/2008-30/06/2009	Teaching, Research, Industrial Projects
3.	Army Institute of Technology Pune	Assistant Professor	01/07/2009-Till date	Teaching, Research, Industrial Projects

Academic Records

Level	Exam Passed/ Degree Obtained	Class or Div. With Percentage of Marks	Year of Passing	Board/ University/ Institution
PhD	PhD (Metallurgy and Materials Science)	-	2017	SPPU Pune
Post Graduate	M.E. Mechanical (Heat Power)	62.93	2006	(VIT) Pune University
Graduate	B.E. (Mechanical)	71.14	2004	NMU
Diploma	DME	77.00	2000	Govt. Poly. Nashik

Publications:

1. **Pritee Purohit**, Shashikant Vagge, (2018). Oxidation Behavior of LTA/YSZ Intermixed Layer Coating. Production, Properties, and Applications of High Temperature Coatings. IGI Global. ISBN/ ISSN No: ISBN13: 9781522541943. ***(Book Chapter)***

2. **Pritee Purohit**, S. T. Vagge, "Evaluation of alumina incorporated combined ceramic layer thermal barrier coating", Surface and coating technology, 307A, 2016, 871-878 *http://www.sciencedirect.com/science/article/pii/S0257897216310167*

3. **Pritee Purohit**, S. T. Vagge,"Isothermal and hot corrosion behavior of thermal barrier coatings (TBC)", Proceeding of International Conference, 17th Asian Pacific Corrosion Control Conference, 27 to 30 Jan 2016, Venue: IIT Bombay.

4. **Pritee Purohit**, S. T. Vagge, "Study of alumina incorporated thermal barrier coating", Proceeding of 18th National Congress on Corrosion Control organized by National Corrosion Council of India, Karaikudi, Date: 24 to 26 February 2016, Venue: Hotel Green Park, Chennai.

5. **Pritee Purohit**, S. T. Vagge, Proceeding of 4th International Conference on Recent Trends in Engineering and Technology. 2-4 July 2015, Venue: SNJB's college of Engineering Chadwad, pp. 183-186.

6. **Pritee Purohit**, S. T. Vagge, "Experimental investigation of heat transfer enhancement on polished and unpolished (corroded) pipe", International Journal of Modern Trends in Engineering and Research, (1.711) ISSN Online: 2349-9745, ISSN Print: 2393-8161, pp. 1777-1781.

7. **Pritee Purohit**, S. T. Vagge, "Study of cyclic oxidation behavior of TBC", NMD ATM 2014, 12-15 Nov 2014, Venue: College of Engineering Pune.

8. R. B. Gurav, S. M. Gaikwad, J. D. Patil, **Pritee Purohit**, "CFD Simulation on Fluid flow in Micro channel Heat Exchanger", International Conference on Global Technology Initiatives , volume 2, March 2013, page E23 - E30. ISBN 978-93-5067-450-5.

9. R. B. Gurav, Shekhar Pandey, S. M. Gaikwad, J. D. Patil, **Pritee Purohit**, "Experimental Investigation of Heat Transfer on Dimple and Flat Plate", International Conference on Global Technology Initiatives, volume 2, March 2013, page E60 - E63. ISBN 978-93-5067-450-5.

10. R. B. Gurav, Rahul Ranjan, S. M. Gaikwad, J. D. Patil, **Pritee Purohit**, I. H. Patel, "Natural heat Convection through Dimple plates" , International Conference on Global Technology Initiatives, volume 2, March 2013, page E69 - E71. ISBN 978-93-5067-450-5.

11. **Pritee Purohit**, S. T. Vagge, "Comparative study of addition of REM, Ni and TiO_2 on hot dip zinc coatings: A Review", Annual Technical paper meet 2013, Date: 20th & 27th October 2013 Venue: The Institution of Engineers (India).

12. **Pritee Purohit**, "Comparative study of addition of REM, Ni and TiO_2 on hot dip zinc coatings: A Review", IEPLC, Technical Journal of Institute of Engineers (India) Pune Local Centre, Vol. 37, Nov 2013, ISBN No. 978-81-924990-1-7. pp. 261-265.

13. Sanjay Gaikwad, **Pritee Purohit**, Raviraj Gurav, "CFD simulation of Heat Exchanger used in Pulse tube", International Conference on Recent Technology (I-CORT), Feb 2012, IOK COE Pune.

14. **Pritee Purohit**, Raviraj Gurav, Sanjay Gaikwad, "Properties and specifications of biodiesel and their influence on performance of engine: A Review", International Conference on Recent Technology (I-CORT), Feb 2012, IOK COE Pune.

15. Raviraj Gurav, Sanjay Gaikwad, **Pritee Purohit**, "Duct Design using equal friction method & CFD", International Conference on Recent Technology (I-CORT), Feb 2012, IOK COE Pune.

16. **Pritee Purohit**, S. M. Gaikwad, I. H. Patel, "Biodiesel: At Low Temperature", International Conference on Global Technology Initiatives, volume 1, March 2012, page B26 - B29. ISBN 978-93-5067-450-5.

17. J. D. Patil, **Pritee Purohit**, S. M Gaikwad, "CFD Simulation on Heat Transfer Characteristics of Laminar Air Flow Over Flat and Dimple Plates (In-line and staggered configurations)", International Conference on Emerging Trends in Engineering, NMAM Institute of Technology, May 2012, Nitte, India.

18. **Pritee Purohit**, S. M Gaikwad, "CFD Simulation on Heat Transfer Characteristics of Laminar Air Flow over Flat and Dimple Plates (single, in-line and staggered configurations)", 2nd International Conference on Engineering, Technology and Management, Sep 2012, Tirupati, India.

19. **Pritee Purohit**, S. M Gaikwad, J. D. Patil, "AVIATION: ALTERNATE FUEL", 2nd International Conference on Engineering, Technology and Management, Sep 2012, Tirupati, India.

20. **Pritee Purohit**, Sanjay Gaikwad, "Determination of Performance and Emission Characteristics of IDI Duel Fuel Engine", First International Conference on Sunrise Technology (I-COST), 13th -15th Jan 2011 Dhule.

21. Sanjay Gaikwad, **Pritee Purohit**, "Analysis of Cyclic Flow Heat Exchangers Used in Pulse Tube Refrigerator", First International Conference on Sunrise Technology (I-COST), 13th

-15th Jan 2011 Dhule.

22. **Pritee Purohit**, "Development of indirect injection Dual fuel engine for gen-set application", TEQIP sponsored National Conference on Recent Trends in Mechanical Engineering, at JSS Mahavidyapeetha's Sri Jayachamarajendra COE Mysore, Karnataka, 17-18 Nov 2006.

23. V. V. Sonkamble, **Pritee Purohit**, "FEM analysis of spur gear tooth in contact", TEQIP sponsored National Conference on Recent Trends in Mechanical Engineering, at JSS Mahavidyapeetha's Sri Jayachamarajendra COE Mysore, Karnataka, 17-18 Nov 2006.

24. P. M. Patare, **Pritee Purohit**, "Analysis of aircraft fuselage structure", TEQIP sponsored National Conference on Recent Trends in Mechanical Engineering, at JSS Mahavidyapeetha's Sri Jayachamarajendra COE Mysore, Karnataka, 17-18 Nov 2006.

List of Patent registered:

Sr. No.	Title of Patent	Patent No.	Filing Date	Publication Date
1.	Economical multipurpose cutter	4821/MUM/2015	23/12/2015	15/01/2016
2.	Breaking system with better vehicle stability using non-uniform contact pressure for two wheeler	4822/MUM/2015	23/12/2015	15/01/2016
3.	Work bench with USB Microscope for Micro art on rice	201621002053	20/01/2016	12/02/2016
4.	Modified silencer with unique protective shield	201621002035	20/01/2016	12/02/2016
5.	Padma Heat Sink	201721024510	12/07/2017	04/08/2017

Other achievements:

Sr. No.	Name of the workshop attended	Name of organizing institute	Date
1.	Winner **Avishkar-2012** Zonal Level	BCUD & UOP	20 Dec 2012
2.	Winner **Avishkar-2012** University level	BCUD & UOP	27 Dec 2012
3.	**Best Result Award** (BE Mechanical-Subject: Computational Fluid Dynamics)	AIT Pune	24 Feb 2017

Subjects Taught In Last Five Years

Sr. No.	Class	Subjects Taught
1	FE	Basic Mechanical Engineering
2	FE	Engineering Graphics
3	SE	Fluid Mechanics
4	SE	IC Engines and automobile engineering
5	TE	Refrigeration and Air-conditioning
6	TE	Heat Transfer
7	BE	Computational Fluid Dynamics
7	BE	CAD/CAM and Automation

Membership of Societies:

1. ISTE life membership
2. IIM Life membership

Workshops attended:

Sr. No.	Name of the workshop attended	Name of organizing institute	Date
1.	One day workshop on Hyperworks Technological conference	Altair-Hyperworks	5 Aug 2011
2.	Two day National Seminar on Corrosion & Corrosion prevention for Automobile Engg.	COE, Pune	24-25 Feb 2012
3.	**Two week** workshop on CFD	COE Pune in collaboration with IIT Bombay	12-22 Jun 2012
4.	One day workshop on FE Revised syllabus EG I	MMCOE Pune	31 Jul 2012
5.	Two day workshop on CAD/CAM & Automation	PVGCOE Pune	20-21 Sept 2012
6.	**One week** TEQIP sponsored faculty Development program	COE Pune	10-15 Dec 2012
7.	One day workshop on Effective teaching techniques and Research Methodologies	AIT Pune	20 June 2013
8.	Two day workshop on Recent Advances in Corrosion Engineering	COE Pune	6-8 Jan 2014
9.	One day workshop on Thermogravimetric analysis	Department of Physics University of Pune	23 Jan 2014
10.	One day workshop on CFD and hands on training on ICEM CFD by Ansys Fluent Software	JSPM's Bhivarabai Sawant Institute of Technology & Research Wagholi, Pune	14 Mar 2015
11.	**Two week** AICTE sponsored FDP on Manufacturing Excellence	Amrutwahini College of Engg. Sangamner in collaboration	21 April – 3 May

		with AICTE	2015
12.	One day workshop on 'Recent trends and advances in forging industry'	The Indian Institute of Metals and COE Pune	12 Sept 2015
13.	Two day workshop on Patent Basics, Searching and Filing	Information Technology Department in association with AIT IEEE Student Council	28 -29 Sept 2015
14.	Two day National level workshop on, Indian patent rights and its regulations. Sponsored by SPPU Pune	Department of Mechanical Engineering, PDEA's College of Engg. Manjari (BK). Pune	8 – 9 Mar 2016
15.	**4 Week** AICTE approved FDP by IIT Bombay on - Use of ICT in Education for Online and Blended Learning	COE Pune in collaboration with IIT Bombay	2 May – 10 July 2016
16.	AICTE Approved FDP 101X-Foundation Program in ICT for Education	AIT Pune in collaboration with IIT Bombay	8 Mar-12 April 2018

PhD work :

For power generators like gas turbines and aero engines, the economical and environmental challenges are increasing day by day for producing electricity more efficiently. Efficiency of power generators can be increased by changing its' operating conditions like inlet temperature and procedures. Currently the inlet temperature to industrial gas turbine is reaching approximately 1400°C. Also, in aero engines the firing temperatures reach around 1550°C. Therefore, the coatings used in aero engine applications undergo short duration thermal cycles at very high temperature. Operating temperature of industrial gas turbines slowly reaches to maximum and ideally remains constant for thousand hours unlike aero engines (N. Padture et al., 2002).

Thin metallic coatings, are provided over the superalloys for good oxidation and hot corrosion resistance. These are having the composition and microstructures to enhance oxidation and corrosion resistance. The metallic coatings act as barriers between the superalloys and the high temperature environment. Such types of coatings are developed to meet the challenges to resist the harsh environment. These tailored coatings are called thermal barrier coatings (TBCs).

TBC system undergoes various time and cycle dependent high temperature exposures and results in the spallation failure. Gas turbines used for power generation runs continuously for longer duration of time with very few shutdowns. But, more number of thermal cycles is observed in aircraft engines. It operates at highest temperature for few minutes at the time of take-off and landing. In these conditions the failure of TBC starts.

In the last decade a number of alternative ceramic materials were suggested for TBCs. It covers aluminates, doped zirconia, perovskites, pyrochlores, and fluorite (X. Xie et al., 2011). Recently, lanthanum-titanium-aluminium oxide that is $LaTi_2Al_9O_{19}$ (LTA) is proposed as TBC material,

which is having excellent phase stability from ambient to 1600°C. Studies revealed that alumina incorporated coatings give excellent performance and LTA/YSZ combination have an excellent hot corrosion resistance. Use of Al_2O_3 and rare earth oxide that is lanthanum-titanium-aluminium oxide (LTA) as a top coat material with YSZ is a novel approach. Hence the isothermal and cyclic oxidation and hot corrosion behavior of the LTA/YSZ/Al_2O_3 ceramic top layer plasma sprayed coatings were evaluated. It was concluded that this combination can be used as an alternative to existing TBC materials upto 1200°C.

Dr Pritee Purohit.