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<https://publons.com/researcher/1515368/dr-kaleem-ahmad-najar/>



Research Expertise: *Surface Engineering & Material's Characterization, Thin Film Deposition Techniques (HFCVD) Surface Coatings (Nanocrystalline/Microcrystalline), Industrial Tribology (Friction & Wear), Tool life Performance and Smart Machining (NC & CNC Programming).*

EDUCATION DETAILS:

1. **PhD in Surface Engineering and Industrial Tribology**, Department of Mechanical Engineering, National Institute of Technology Srinagar, Jammu & Kashmir, India in 16th-Dec-2017.
Thesis Title: Tribological and Mechanical Characteristics of CVD Diamond Coatings Deposited on Cemented Tungsten Carbide Substrates.
2. **M-Tech in Mechanical System Design (MSD)**, Department of Mechanical Engineering, National Institute of Technology Srinagar, Jammu & Kashmir, India in Jan-2011.
3. **BE in Mechanical Engineering**, University of Kashmir, Jammu & Kashmir, India in Feb- 2007.

EXPERIENCE:

1. Presently working as **Lecturer (Contractual)** in IOT Zakura, University of Kashmir from 09-June 2021.
2. One year of Experience as **Assistant Professor (Contractual)** in IUST Awantipura, Jammu & Kashmir, India from 24-Feb 2020 to 31-December 2020.
3. Two years of Experience as **Assistant Professor (Contractual)** in NIT Srinagar, Jammu & Kashmir, India from 05-March 2018 to 31-December 2019.
4. Two years of Experience as **Lecturer (Contractual)** in Govt. Polytechnic College Budgam, Jammu & Kashmir, India from 14-Aug-2012.
5. Two years of Industrial Experience as **Maintenance Engineer** in Comfort Polymers Pvt. Ltd., Rangreth (Budgam), Jammu & Kashmir, India from Jun-2007.

RESEARCH INTERNSHIPS:

- ❖ Worked in collaboration with **Indian Institute of Technology Madras** (2014, 2015 & 2016).
- ❖ Worked in collaboration with **Indian Institute of Technology Kanpur** (2016).
- ❖ Worked in collaboration with **National Aerospace Laboratories Bangalore, India** (2015).

RESEARCH SKILLS:

- ❖ Expert in the deposition of synthetic diamond coatings using **hot filament chemical vapor deposition (HFCVD)** technique.
- ❖ Ability to study the Surface Characteristics of materials/coatings using **X-ray diffraction (XRD), Raman spectroscopy, Scanning electron microscopy (SEM), Energy dispersive spectroscopy (EDS) and Atomic force microscopy (AFM)** techniques.
- ❖ Ability to study Mechanical and Tribological Characteristics of materials/coatings using **Berkovich nanoindenter and ball-on-disc/pin-on-disc type linear reciprocating micro-tribometer, respectively**.
- ❖ Ability to write a manual CNC part program (with description and proper sketch) for any Milling/Turning process.
- ❖ Working as **Reviewer** with the international journal of '**Materials Research Express**' (IOP Publishing) from 2018 (**Outstanding Reviewer Award**).
- ❖ Working as **Reviewer** with the international journal of '**Applied Ceramic Technology**' (Wiley Publishing) from 2018.
- ❖ Working as **Reviewer** with the international journal of '**Advanced Manufacturing Technology**' (Springer Nature Publishing) from 2019.
- ❖ Working as **Reviewer** with the international journal of '**Industrial Lubrication and Tribology**' (Emerald Publishing) from 2019.
- ❖ Working as Reviewer with the international journal of '**Jurnal Tribologi**' (Malaysian Tribology Society) from 2020.
- ❖ Working as Reviewer with the international journal of '**Journal of Materials Engineering and Performance**' (Springer) from 2022.

COURSES TAUGHT:

- i. *Fundamentals of Tribology (M-Tech)*
- ii. *Wear Analysis & Control (M-Tech/Ph.D.)*
- iii. *Material's Engineering (B-Tech)*
- iv. *Computer Applications in Maintenance (M-Tech/Ph.D.)*

- v. *Advanced Manufacturing Processes (B-Tech)*
- vi. *Automation in Manufacturing (B-Tech)*
- vii. *Basic Engineering Thermodynamics (B-Tech)*
- viii. *Power Plant Engineering (B-Tech)*
- ix. *Fluid Mechanics (B-Tech)*
- x. *Machine Design-I & -II (B-Tech)*
- xi. *Value Engineering (B-Tech)*
- xii. *Workshop Technology-II (B-Tech)*
- xiii. *Engineering Graphics (B-Tech)*

PUBLICATIONS BASED ON MY RESEARCH:

1. **Kaleem Ahmad Najar**, N. A. Sheikh, M. A. Shah and Mohammad Mursaleen Butt. *Enhancing the Wear Resistance of WC–Co Cutting Inserts using Synthetic Diamond Coatings. Industrial Lubrication and Tribology, Emerald, 70 (2018) 1224–1233.*
2. **Kaleem Ahmad Najar** and Mohammad Mursaleen Butt, *Development of a Dual Layered Diamond Coated-WC–Co Cutting Tool for Enhancing Tool Life in the Dry Machining of Mild-steel Alloy. Proc IMechE Part B: J Engineering Manufacture, Sage Publications, 233(5) (2019) 1515–1528.*
3. **Kaleem. Ahmad Najar**, N. A. Sheikh and M. A. Shah. *Enhancement in Tribological and Mechanical Properties of Cemented Tungsten Carbide Substrates using CVD-diamond Coatings. Tribology in Industry, 39 (2017) 20-30.*
4. **Kaleem Ahmad Najar**, Nazir Ahmad Sheikh, Sajad Din and Mohammad Ashraf Shah. *Effect of CVD-diamond coatings on the tribological performance of cemented tungsten carbide substrates. Jurnal Tribologi, Malaysian Tribology Society, 9 (2016) 1-17.*
5. **Kaleem Ahmad Najar**, Nazir Ahmad Sheikh and M. A. Shah. *A comparative investigation of mechanical and tribological properties of multilayered CVD-diamond coatings: effect of boron doping. Advanced Materials Letters, 8 (2017) 932-938.*
6. **Kaleem Ahmad Najar**, N. A. Sheikh, M. Mursaleen Butt and M. A. Shah. *Engineered Synthetic Diamond Coating as a Protective Layer for Tribological and Machining Applications: A Review. Journal of Bio- and Tribo-Corrosion, Springer, 59 (2019) 1-16.*
7. Sajad Hussain Din, M. A. Shah, N. A. Sheikh, **K. A. Najar**, K. Ramasubramanian, S. Balaji and M. S. Ramachandra Rao. *Influence of boron doping on mechanical and tribological properties in multilayer CVD diamond coating system. Bulletin of Material Science, Springer, 39 (2016) 1753-1761.*
8. S MUSHTAQ, M F WANI, M NADEEM, **K A NAJAR** and M MURSALEEN. *A study on friction and wear characteristics of Fe-Sn-Cu alloy with MoS₂ as solid lubricant under dry conditions. Indian Academy of Sciences, Sādhanā, 240 (2019) 1-7.*
9. Mohammad Mursaleen Butt, **Kaleem Ahmad Najar** and Towseef Hussain Dar. *Experimental Evaluation of Multilayered CVD- and PVD-coated Carbide Turning Inserts in Severe Machining of AISI-4340 Steel Alloy. Jurnal Tribologi, Malaysian Tribology Society, 29 (2021) 117-143.*

10. **Kaleem Ahmad Najar**, Sheikh Nazir, M.A. Shah and Zahid Mushtaq. A dual-layer approach for enhancing the tribological and machining performance of carbide tools in dry turning of mild-steel alloy. *Int. J. Machining and Machinability of Materials, Inderscience*, Vol. 24, Nos. 1/2 (2022).
11. **Kaleem Ahmad Najar**, N. A. Sheikh, M. Mursaleen Butt and M. A. Shah. Mathematical Analysis carried out on the Study of Compatibility, De-lamination and Load-bearing Capacity of Synthetic Diamond Coatings Deposited on Tungsten Carbide Composites. *Journal of Nanotechnology and Materials Science, OMEGA Publishers*, 6 (2019) 10-16.
12. **Kaleem Ahmad Najar**, M. A. Shah and N. A. Sheikh. Integrity of CVD-Diamond Coatings on Cemented Tungsten Carbide Substrate: Mathematical Analysis carried out for Calculating the Force of De-lamination and Load Bearing Capacity of Coating-substrate System. *Elixir, Nanotechnology*, 90 (2016) 37463-37467.
13. Aqib Hussain Mir, S. Qadri, Yunis Ahmad Dar and **Kaleem Ahmad Najar**. Study of Fluid Flow Characteristics for the Flow of Air over a Heated Diamond Shaped Tube. *International Research Journal of Engineering and Technology (IRJET)*, 6 (2019) 3792- 3794.
14. Aqib Hussain Mir, S. Qadri, Yunis Ahmad Dar and **Kaleem Ahmad Najar**. Study of Heat Transfer Characteristics for the Flow of Air over a Heated Diamond Shaped Tube. *International Research Journal of Engineering and Technology (IRJET)*, 6 (2019) 1- 3.
15. Aqib Hussain Mir, S. Qadri, Yunis Ahmad Dar, **Kaleem Ahmad Najar**. Investigation of Fluid Flow Characteristics for the Forced Convection of Air over Heated Elliptical Shaped Tube. *International Research Journal of Engineering and Technology (IRJET)*, 6 (2019) 91- 93.
16. **Kaleem Ahmad Najar**, M. A. Shah and N. A. Sheikh. Development of CVD Diamond-coated WC-Co Tools for Enhancing Tool Life in the Machining of Hard Metallic Alloys or Ceramics. *Proc. of the Intl. Conf. on Nanotechnology for Better Living*, 2016. DOI: 10.3850/978-981-09-7519-7nbl16-rps-72.
17. **Kaleem Ahmad Najar and M. Mursaleen Butt**. Influence on temperature variation, tool wear and tool life with respect cutting speed on diamond-coated WC-Co inserts in the machining of Al-15% SiC alloy. *5th International Conference on Nanotechnology for Better Living (NBL-2019)*, ISBN: 978-81-939516-0-6, Applied Science Innovations Pvt. Ltd., Pune, Maharashtra, India, Page-114 (***Best Oral Presentation**).
18. N. A. Sheikh, M. Mursaleen Butt and **Kaleem Ahmad Najar**. Mathematical analysis carried out on the study of compatibility, delamination and load bearing capacity of synthetic diamond coatings deposited on tungsten carbide composites. *5th International Conference on Nanotechnology for Better Living (NBL-2019)*, ISBN: 978-81-939516-0-6, Applied Science Innovations Pvt. Ltd., Pune, Maharashtra, India, Page-93 (***Best Poster Presentation**).
19. Aqib Hussain Mir, **Kaleem Ahmad Najar** and S. Qadri. Structural analysis of three different truss bridges subjected to standard IRC class-A loading using FEM tool. *5th International Conference on Nanotechnology for Better Living (NBL-2019)*, ISBN: 978-81-939516-0-6, Applied Science Innovations Pvt. Ltd., Pune, Maharashtra, India, Page-512.

Books and Chapters Published:

1. **Kaleem Ahmad Najar**, Mohammad Mursaleen Butt and M. A. Shah. A Book, entitled, 'Tribological and Mechanical Properties of Synthetic Diamond Coatings'. LAMBERT Academic Publishing, ISBN: 978-3-659-96594-4 (2019).
2. **Kaleem Ahmad Najar**, Shah Aarif Ul Islam and N. A. Sheikh. A Book Chapter, entitled, 'Surface Engineering of Tungsten Carbide Tool Material by Nano and Microcrystalline Diamond Coatings' in the Book published as 'Surface Engineering of Modern Materials', Springer's Book Series, Editor: Prof. Kapil Gupta, ISBN: 978-3-030-43231-7 (2020).
3. S. Rouf, S. Altaf, S. Malik, **K. A. Najar** and M. A. Shah. A Book Chapter, entitled, 'Comparative Analysis carried out on Modern Indentation Techniques for the Measurement of Mechanical Properties: A Review' in the Book published as 'Post Transition Metals', Intechopen International Book Series, Thames Street London, UK ISBN: 978-1-83968-261-2 (2020).
4. Zahid Mushtaq, M. Hanief and **Kaleem Ahmad Najar**. A Book Chapter, entitled, 'Non-Edible Biodegradable Plant Oils' published in the Book published as 'Industrial Tribology', Taylor & Francis group, Boca Raton, ISBN: 9781003243205 (2022).

PROJECTS GUIDED:

1. B-tech Project entitled, 'Case Study on Ethiopian Airline Crash Boeing 737-260' Batch 2016, Mechanical Engineering Department, IUST Awantipura, Jammu and Kashmir (2020).
2. B-tech Project entitled, 'Smart Dustbin' Batch 2016, Mechanical Engineering Department, IUST Awantipura, Jammu and Kashmir (2020).
3. B-tech Project entitled, 'Design and Fabrication of Electric Vehicle' Batch 2018, Mechanical Engineering Department, IOT Zakura, University of Kashmir (2022).
4. B-tech Project entitled, 'A Study on the Tribological Properties of Al-SiC based Ceramic using Pin-on-Disc Tribometer' Batch 2019, Mechanical Engineering Department, IOT Zakura, University of Kashmir (2023).

TRAININGS AND WORKSHOPS ATTENDED/PARTICIPATED:

S. No.	Name of Workshop/Training	Month-Year	International/National	Source of Funding	Outcome
1.	5 Days online Virtual Short Term Course on 'Tribology & Sustainability'	Aug-2020	International	SRM Institute of Science & Technology, Kattankulathur, India	Certificate of Participation

2.	1 Week online Short Term Course on 'Tribology for Sustainable Development'	July-2020	National	School of Mechanical Engineering, SMVDU, India	Certificate of Participation
3.	1 Week online Short Term Course on 'Recent Progress in Material Science & Engineering'	Aug-2019	National	Department of Applied Physics, Jabalpur Engineering College, India	Certificate of Participation
4.	6 Days online Virtual Short Term Course on 'Recent Advances in Tribology and Surface Engineering: Series 2-4'	Sep-2020	National	Department of Mechanical Engineering, Saintgits College of Engineering, Kottayam	Certificate of Participation
5.	6 Days online Virtual Short Term Course on 'Recent Advances in Tribology and Surface Engineering: Series 3-4'	Oct-2020	National	Department of Mechanical Engineering, Saintgits College of Engineering, Kottayam	Certificate of Participation
6.	1 Week online Short Term Course on 'Material Characterization'	June-2019	National	Mechanical Engineering Department, NIT Srinagar, India	Certificate of Participation
7.	1 Day online Short Term Course on 'Frontiers of Scanning Probe Microscopy'	Sep-2020	National	Department of Applied Physics, Jabalpur Engineering College, Jabalpur, Madhya Pradesh	Certificate of Participation
8.	1 Day online Short Term Course on 'Refrigeration & Air Conditioning using Flownex Simulation Software'	July-2020	National	IndiaSoft Technologies Pvt., Ltd., India	Certificate of Participation

9.	1 Day online Short Term Course on 'Power Plant Engineering using Flownex Simulation Software'	Aug-2020	National	IndiaSoft Technologies Pvt., Ltd., India	Certificate of Participation
10.	1 Day online Short Term Course on 'Virtual CNC Machine Simulation Software' on Webinar	Aug-2020	National	IndiaSoft Technologies Pvt., Ltd., India	Certificate of Participation
11.	7 Days Inspire Science Programme	Nov-2013	National	NIT Srinagar, India	Coordinator
12.	7 Days Inspire Science Programme	Nov-2015	National	NIT Srinagar, India	Coordinator
13.	7 Days Inspire Science Programme	Dec-2017	National	NIT Srinagar, India	Coordinator
14.	7 Days Training Program on Advanced Experimental Techniques for Material Science	May-2022	National	NIT Srinagar, India	Certificate of Participation

FUTURE RESEARCH PLAN:

- ❖ *To study on the influence of transition-layer on the integrity of the coatings by model the composite multilayer diamond coating system using finite-element analysis (FEA) tools.*
- ❖ *To enhance the adhesion strength between the interfaces of coating and substrate by incorporating boron doping or adding a layer of transition metal between them.*
- ❖ *To study the tribological characteristics on deposited surface coatings by sliding against many ceramic counter bodies under severe experimental conditions.*
- ❖ *To study the machining performance on advanced cutting tools by measuring the cutting force and surface roughness of the coatings in order to evaluate the coating-performance. Detailed tool wear and coating delamination studies can be carried out by using HRSEM and Raman spectroscopy to study the integrity between coating and substrate.*

- ❖ *To conduct the machining experiments by comparing tool life, maximum bearable load, temperature variation and velocity limit by depositing different surface coatings on carbide or ceramic cutting tools.*
- ❖ *Further, turning tests can be conducted on many Al-SiC ceramics and metallic alloys under high load/velocity parameters to find out a better coating-substrate architecture for the design of cutting tools.*

FUTURE WORK PLAN:

- ❖ *To work as full time Faculty Member/Research Associate in any reputed Technical University/Company.*

CONTACT REFRESENCES:

1. Prof. Sheikh Nazir

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2. Dr. M. A. Shah

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3. Dr. Farooq Najar

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Thanks & Regards,

Dr. Kaleem Ahmad Najar

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