

# DR. FARAZ AKBAR

(HEC Approved PhD Supervisor)

B-2, Automotive and Marine Engineering Department, NED University of Engineering and Technology, Karachi-75270, Pakistan

E-mail: [faraz.akbar@neduet.edu.pk](mailto:faraz.akbar@neduet.edu.pk)

Telephone: 99261261-8 [Ext.: 2473]

## Work Experience in Higher Education

February 2011 – Present **Associate Professor, Automotive and Marine Engineering Department, NED University of Engineering and Technology, Karachi, Pakistan**

Teaching and Research & Development (R&D) work with undergraduate and postgraduate students in the department of Automotive and Marine Engineering. In addition, major academic and administrative responsibilities are:

- Certified Internal Auditor (University Level)
- Area Co-ordinator (ATD)
- Involved in revision and development of Automotive Engineering Curricula under OBE guidelines

September 2010 – February 2011 **Post-Doctoral Fellow (PDF), University of Ontario Institute of Technology (UOIT), Ontario, Canada**

December 2009 – June 2010 **Post-Doctoral Researcher, School of Materials, The University of Manchester, UK**

September 2009 – March 2010 **Mentor, Young Gifted & Talented (YG&T) City GATES, UK**

September 2006 – August 2009 **Part-Time Teaching Assistant, The University of Manchester, UK**

September 2008 – August 2009 **Part-Time Academic Tutor, The University of Manchester, UK**

September 2008 – August 2009 **Student Mentor, Manchester Access Programme (MAP), UK**

September 2008 – August 2009 **Student Ambassador, The University of Manchester, UK**

December 2005 – June 2006 **Lecturer, Automotive and Marine Engineering Department, NED University of Engineering and Technology, Karachi, Pakistan**

## Voluntary Work Experience

September 2006 – August 2009 **Project Assistant, The University of Manchester, UK**  
Provided support and assistance to undergraduate and postgraduate research projects with the design and implementation of experiments and software methodologies.

August 2008 **CIRP Conference Assistant, The University of Manchester, UK**  
Responsibilities and duties included the collection of presentation files from speakers, the loading of these files on to the computer in the lecture room, manning the cloakroom, manning the computer room and providing general assistance.

## **Education**

- 2006 – 2009      **PhD “Mechanical Engineering”, School of Mechanical, Aerospace and Civil Engineering (MACE), *The University of Manchester, UK***
- 2002 – 2005      **BEng. “Mechanical Engineering”, *NED University of Engineering and Technology, Karachi, Pakistan, 2<sup>nd</sup> Position in the department of Mechanical Engineering, 84% achieved***
- 2000 – 2001      **Intermediate (Higher Secondary Certificate), *Government Degree Science and Commerce College, Karachi, Pakistan, 73% achieved***  
Overall Grade (A): Physics (A+), Mathematics (A+), Chemistry (A), General Studies (B).
- 1995 – 1999      **Matriculation (Secondary School Certificate), *Agro-Technical Government Boys Secondary School, Karachi, Pakistan, 78% achieved***  
Overall Grade (A): Physics (A+), Mathematics (A+), Chemistry (A), Biology (A), General Studies (B).

## **Research Interests**

Principal research interests are in the field of manufacturing and fracture mechanics, in particular:

- Automotive Materials and Manufacturing
- Materials Characterisation
- High-Speed Machining (HSM)
- Finite Element Modelling and its application in Automotive Engineering
- Tribological properties of single and multilayer coatings
- Finite Element Modelling of residual stresses
- Computer-aided design (CAD) and Computer-aided manufacturing (CAM)
- Renewable Energy
- Reliability Engineering
- Project management and processes
- Risk Management System
- Operations Research

## **Reviewer in International Journals**

- Reviewer for International Journal of Arabian Journal for Science and Engineering, King Fahd University of Petroleum & Minerals, Springer Publisher, Switzerland.
- Reviewer for International Journal of Machining and Machinability of Materials (IJMMM), Inderscience Publisher, *Switzerland*.
- Reviewer for International Journal of Automotive and Mechanical Engineering (IJAME), Pahang, *Malaysia*.
- Reviewer for Proceedings of the Institution of Mechanical Engineers, Part D: Journal of Automobile Engineering, SAGE Publisher, UK.
- Reviewer for Advances in Mechanical Engineering, SAGE Publisher, UK.

## **Key Skills**

- Computer Skills
- Proficient in ABAQUS, ANSYS, Pro/Engineer, SolidWorks, MATLAB, AutoCAD and Forging Simulation software.
  - High-Performance Computing (HPC) – Parallel processing, focusing the ABAQUS finite element modelling software, with shared memory multi-processors.
  - Experienced with high-speed data acquisition.
  - Experienced in the implementation of flow stress constitutive models in FE software.

	<ul style="list-style-type: none"> <li>• Competent user of Microsoft packages (Word, Excel, PowerPoint etc.) and Windows operating systems.</li> </ul>
Material Characterisation, Imaging and Experimentation Skills	Experienced user of Scanning Electron Microscope (SEM), Energy-Dispersive X-ray Analysis (EDXA), optical microscopy, micro hardness testing machine, white-light interferometer, high-speed infrared (IR) thermal imaging camera, dynamometer, grinding and polishing machines.
Communication Skills	Developed good communication skills through interacting with other students and tutors from different cultures during my degree course.
Team Working Skills	Worked both on my own during my academic projects and as part of a team through undertaking group work with my peers and by being a member of a local football team.
Problem Solving Skills	Ability to analyse a problem, develop suitable strategies and display independent thought has allowed me to successfully work in areas of mechanical engineering. Through my own personal initiative I have developed new techniques which have been accepted for publications and have also been presented to my colleagues and other students in a series of seminars.
Languages	Fluent in English and Urdu.

### **Interests and Activities**

- I enjoy sports, especially football and cricket.
- I find playing and listening to music enjoyable.
- I also enjoy reading, particularly about science and technology.

### **List of Research Publications**

#### ***Selected Journal Papers (Published)***

1. Akbar, F. and Arsalan, M. (2023) 'Experimental Investigation of Uncoated, Single Layer and Multilayer-Coated TiAlN/TiN Tool Inserts in Dry Orthogonal Cutting of AISI/SAE 4140 Alloy Steel', Proceedings of the Institution of Mechanical Engineers, Part B: Journal of Engineering Manufacture, Accepted for International Publication.
2. Akbar, F. and Shahid, R. (2023) 'Risk management (RM) and project success (PS) of electrical power transmission and distribution systems: the moderation role of human resource management', International Journal of Energy Sector Management (IJESM), Vol. 17 No. 1, pp. 167-186.
3. Arsalan, M. and Akbar, F. (2022) 'Infrared sensor-based remote controlled driving system for people with lower body disability and leg impairment', International Journal of Mechanical Engineering for Society and Industry (MESI), Vol. 3, No. (1), 12-21, Publisher: Universitas Muhammadiyah Magelang, ISSN (e): 2798-5245.
4. Arsalan, M. and Akbar, F. (2021) 'An Ultrasonic Sensor Based Automatic Braking System to Mitigate Driving Exhaustion during Traffic Congestion'. Proceedings of the Institution of Mechanical Engineers, Part D: Journal of Automobile Engineering, Online-First, 9th April 2021, (Impact Factor: 1.384).
5. Akbar, F. and Arsalan, M. (2021) 'Thermal modelling of cutting tool temperatures and heat partition in orthogonal machining of high-strength alloy steel'. Proceedings of the Institution of Mechanical Engineers, Part B: Journal of Engineering Manufacture, Online-First, 12th January 2021, (Impact Factor: 1.982).
6. Akbar, F. (2020) 'Weight Optimization of Electric Vehicle through Hybrid Structural Batteries'. International Journal of Automotive and Mechanical Engineering (IJAME), University Malaysia, Pahang, Malaysia, 17 (4), 8310-8325. ISSN: 2229-8649 and e-ISSN: 2180-1606. This journal is listed in the X-category of HEC's approved journals.
7. Akbar, F., Mativenga, P. T., and Sheikh, M. A. (2013) 'Heat partition based design of hard coatings in high-speed machining', International Journal of Machining and Machinability of Materials (IJMMM), 14 (4), 363-386.

8. Akbar, F., Mativenga, P., and Sheikh, M. (2010) 'An experimental and coupled thermo-mechanical finite element study of heat partition effects in machining', *The International Journal of Advanced Manufacturing Technology*, 46 (5), 491-507.
9. Akbar, F., Mativenga, P. T., and Sheikh, M. A. (2009) 'On the heat partition properties of TiAlN compared to TiN coating in high-speed machining', *Proceedings of the Institution of Mechanical Engineers, Part B: Journal of Engineering Manufacture*, 223 (B4), 363-375.
10. Akbar, F., Mativenga, P. T., and Sheikh, M. A. (2009) 'Predictive modelling of average heat partition in high-speed machining of AISI/SAE 4140 steel', *International Journal of Machining and Machinability of Materials*, 5 (2/3), 135-154.
11. Akbar, F., Mativenga, P. T., and Sheikh, M. A. (2008) 'An evaluation of heat partition in high-speed turning of AISI/SAE 4140 steel with uncoated and TiN-coated tools', *Proceedings of the Institution of Mechanical Engineers, Part B: Journal of Engineering Manufacture*, 222, 759-771.

**Conference Research Papers**

12. Akbar, F., Fozan, M., Anwar, N., Habib, Z., Khalid, M., and Nadeem, S. (2017) 'Comparative Study of Three Vehicle Bodies by Using Computer Aided Design (CAD): Part-I', *Conference on Emerging Trends in Automotive Engineering*, Organized by the Department of Automotive and Marine Engineering, NED University of Engineering and Technology, Karachi, Pakistan. (National Conference Paper).
13. Akbar, F., Fozan, M., Anwar, N., Habib, Z., Khalid, M., and Nadeem, S. (2017) 'Comparative Study of Aerodynamic Characteristics of Three Hatchback Vehicles by Using Computational Fluid Dynamics (CFD): Part-II', *Conference on Emerging Trends in Automotive Engineering*, Organized by the Department of Automotive and Marine Engineering, NED University of Engineering and Technology, Karachi, Pakistan. (National Conference Paper).
14. Akbar, F., Mativenga, P. T., and Sheikh, M. A. (2008) 'An evaluation of heat partition models in high-speed machining of AISI/SAE 4140 steel', *The 6th International Conference on Manufacturing Research (ICMR-08)*, 1, 13-21. (International Conference Paper)
15. Akbar, F., Mativenga, P. T., and Sheikh, M. A. (2007) 'An investigation of the tool-chip interface temperature and heat partition in high-speed machining of AISI/SAE 4140 steel with TiN coated tool', *Proceedings of the 35th International MATADOR Conference*, 1, 215-218. (International Conference Paper)

**Book Chapter**

16. Akbar F, Mativenga P T, Sheikh M A. (2010) 'Prediction of Heat Partition in Metal Cutting - A State of-the-Art Review of Conventional to High Speed Machining', "Metal Cutting – Recent Advances", NOVA SCIENCE PUBLISHERS (USA) – Research Book: "Metal Cutting – Research Advances" (ISBN: 978-1-61122-573-0), 23-75. (Book Chapter Contribution).