



AAKIF ANJUM SHAIKH USMAN

Ph. D. · Mechanical Engineering

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SHORT BIOGRAPHY

Dr. Aakif Anjum is working as an Assistant Professor at the Department of Mechanical Engineering of MMANTC. Earlier, he has worked as a Doctoral Research scholar at the Department of Mechanical Engineering of S. V. National Institute of Technology (SVNIT), Surat. He is actively involved in various research work that are mainly focused on the **Laser beam machining of polymers, functionalized nanocomposites and shape memory polymers, 3D printing, machine learning and numerical simulation** and actively working in the computer aided design and reverse engineering lab. Dr. Aakif Anjum has successfully worked on different projects in collaboration with Government college of engineering, karad (India) to publish scientific research journals in the field of **RF-NEMS, MEMS switches based on Graphene and MOS₂**. Moreover, he has published several high-impact scientific papers in leading journals. He has attended international and national conferences.

ACADEMIC PROFILE

QUALIFICATIONS	BOARD/UNIVERSITY	PERIOD	DISCIPLINE	RESULT
Ph.D.	SV. National Institute of Technology, Surat	2019-24	Mechanical	————
M.TECH	(Government College of Eng., karad)	2016-18	Mechanical	8.35 (C.G.P.A)
B.E	PUNE	2012-16	Mechanical	67.20 %
HSC (12 th)	PUNE	2011-12	Science	79.83 %
SSC (10 th)	PUNE	2009-10	—————	89.45 %

WORK EXPERIENCE

- Asst. Professor at College of Engineering Mansoor (MMANTC), Malegaon from December 2017 to 2019.
- Doctoral Research Scholar at Sardar Vallabhbhai National Institute of Technology from July 2019 to March 2024.

DOCTORAL RESEARCH TOPIC

- Experimental Investigations and Analytical Modeling on Creating Complex 3D Cavity with CO₂ Laser Machining

DISSERTATION

M. Tech (Government College of Engineering, karad)

M. Tech Research Title

- Graphene as a contact material for fabrication of low contact resistance RF-MEMS Switch

INDUSTRIAL DEFINED PROJECT

B.E (College of Engineering, Pravaranagar, Loni)

B.E Project Title

- Design and fabrication of wireless pipe inspecting smart robot

JOURNALS

1. **Aakif Anjum**, Md Azharuddin Ali, A.A. Shaikh, S.S. Akhtar, "A numerical and experimental analysis of CO₂ laser micro-milling on PMMA sheet considering a multipass approach for microfluidic devices" Optics & Laser Technology, Volume 176, 2024, 110860, ISSN 0030-3992, <https://doi.org/10.1016/j.optlastec.2024.110860>. (IF-5, Elsevier)
2. **Aakif Anjum**, A.A. Shaikh, N. Tiwari, "Comparative assessment of the developed algorithm with the soft computing algorithm for the laser machined depth" **Infrared**

- Phys. Technol.** 129 (2023) 104545. <https://doi.org/10.1016/j.infrared.2023.104545>. (IF-3.3, Elsevier)
3. **Aakif Anjum**, A. A. Shaikh, and N. Tiwari, (2023) “Experimental investigations and predictive modeling for multi-pass laser micro-milling by soft computing-physics informed machine learning approach on PMMA sheet using 100 W CO₂ laser” **Optics and Laser technology**, <https://doi.org/10.1016/j.optlastec.2022.108922> (IF-5).
 4. **Aakif Anjum**, A. A. Shaikh, and N. Tiwari, (2022) “Experimental investigations of channel profile and surface roughness on PMMA substrate for microfluidic devices with mathematical modelling,” **Optik**, vol. 261, no. January, p. 169154, 2022, <https://doi.org/10.1016/j.ijleo.2022.169154>. (IF-3.1, Elsevier).
 5. **Aakif Anjum**, A. A. Shaikh, (2023) “Experimental and analytical modeling for channel profile using CO₂ laser considering gaussian beam distribution. **J. Eng. Res.** 1–17. <https://doi.org/10.36909/jer.19081> (IF-1.325, Elsevier)
 6. Shaikh, A. A., Ali Md Azharuddin, **Aakif Anjum** (2022). Comparative Assessment Of Experimental And Numerical Simulation Of Ablation Depth In Laser Cutting Using Multipass Approach, **acta technica napocensis series-applied mathematics mechanics and engineering**, Vol 65, No 4S (2022) ISSN 2393–2988. (ESCI)
 7. **Aakif Anjum**, A. A. Shaikh. (2020). Experimental and Analytical Modeling for Depth and Width of Cut Based on Regression Analysis using CO₂ Laser Process Parameters. **International Journal of Advanced Science and Technology**, 29(8s), 5201 - 5213. <http://sersc.org/journals/index.php/IJAST/article/view/27399> (Scopus)
 8. **Aakif Anjum**, S. S. Mohite, V. B. Sawant, (2019) “Graphene/MoS₂ based fix-fix type RF-NEMS switches-A simulation study” **Advances in Engineering Design**, Lecture Notes in Mechanical Engineering, ISBN: 978-981-13-6468-6, https://doi.org/10.1007/978-981-13-6469-3_11
 9. Noorul Ameen, **Aakif Anjum**, A. A. Shaikh, Sharique Ather (2019). “A Review on Tribological properties of Metal Matrix Nano Composite” **IOSR Journal of Engineering (IOSR JEN)**, Volume-4, ISSN (e): 2250-3021, ISSN (p): 2278-8719 PP 17-22
 10. **Aakif Anjum**, AhireTushar B., Upadhye Vishal S., DeoreAkash D., Bhamre Sameer A., BramhankarDevendra S. (2019). “Metal Matrix Nano-Composite Reinforced by Graphene- A Review” **IOSR Journal of Engineering (IOSR JEN)**, Volume-4, ISSN (e): 2250-3021, ISSN (p): 2278-8719 PP 18-22

11. **Aakif Anjum**, A. A. Shaikh, Ozair Shaikh, Noorul ameen, Sharique (2019). “Design and Analysis of Zero Turning Radius Robotic Vehicle” **IOSR Journal of Engineering (IOSR JEN)**, Volume-4, ISSN (e): 2250-3021, ISSN (p): 2278-8719 PP 05-10
12. Tauqueer Azhar, **Aakif Anjum**, Faisal Ansari, Ansari (2019). “Reduction of Carbon Di Oxide (Co₂) In Specific Area” **IOSR Journal of Engineering (IOSR JEN)**, Volume-5, ISSN (e): 2250-3021, ISSN (p): 2278-8719 PP 57-61
13. Mohd Sharique Ather, M. R. Dhawade, **Aakif Anjum**, Noorul Ameen, (2019). “Production of diesel like Fuel from Waste Lube Oil Used in Microwave Flashed Pyrolysis” **IOSR Journal of Engineering (IOSR JEN)**, Volume-6, ISSN (e): 2250-3021, ISSN (p): 2278-8719 PP 32-35
14. Mankar N.A, Shaikh, **Aakif Anjum**, Md Kamran, Mo Abdullah Anis Ahmad, Patel Arbaj Younnus, (2016) “Design and fabrication of wireless pipe inspecting smart robot”. **International Journal for Scientific Research & Development IJSRD**, Vol. 4, Issue 02, ISSN (online): 2321-0613

INTERNATIONAL CONFERENCE

1. **Aakif Anjum**, & Shaikh, A. A. (2022). Numerical Simulation Of Laser Beam Machining Of Polymethyl Methacrylate, *The International Conference on Science, Technology, Sustainability (ICSTS 2022) Malegaon, India*.
2. **Aakif Anjum**, S. S. Mohite, V. B. Sawant, (2018) “Graphene/MoS₂ based RF-NEMS switches for Low Actuation Voltage and Enhanced RF-Performance, *IEEE Xplore*, Oct 2018, [doi:10.1109/ICCCNT.2018.8494166](https://doi.org/10.1109/ICCCNT.2018.8494166)
3. V. B. Sawant and Mukesh Madhewar, **Aakif Anjum**, S. S. Mohite, “Modeling and Analysis of Low Voltage, High Isolation Capacitive type RF-MEMS Switches” *IEEE Xplore*, [doi:10.1109/ICCCNT.2018.8493891](https://doi.org/10.1109/ICCCNT.2018.8493891)
4. **Aakif Anjum**, S. S. Mohite, V. B. Sawant, (2018) “Analytical and Numerical Modeling of Graphene based RF-NEMS switch” *IOP Conf. Series: Materials Science and Engineering* **455** 012110, [doi:10.1088/1757-899X/455/1/012110](https://doi.org/10.1088/1757-899X/455/1/012110)

JOURNAL REVIEWER

- **The international journal of advanced manufacturing technology (SCI-Q1)**
- **AIP Advances (American Institute of Physics-SCI)**

- **Engineering Research Express (iopscience-SCI)**

COLLABORATION WITH INTERNATIONAL INSTITUTE

- International Research collaboration with the faculty of reputed institute- **National University of Singapore (NUS)- QS World Ranking 2023-11**
- International Research collaboration with the faculty of reputed institute- **King Fahd University of Petroleum & Minerals, Saudi Arabia - QS World Ranking 2023-160**
- International Research collaboration with the faculty of reputed institute- **Khalifa University, United Arab Emirates - QS World Ranking 2023-181**

INVENTIONS

PATENT

Patent Title: Multi Table Laser Cutting Machine, Design Application No. 395057-001 (FER Generated)

FELLOWSHIPS, GRANTS, RESEARCH & PROJECT FUNDING

- **2023- 'Design and Development of Portable Dual-Head Diode Laser Cutting and Engraving machine'** supported by ASHINE, SSIP 2.0 INR approval no: SVNIT/ASHINE/SSIP 2.0/IGNITION 2.0/2022-23/126, 1,83,850/-.
- **'Design of Multi Table Laser Cutting Machine using Single Driving Shaft'** supported by ASHINE, SSIP 2.0 INR approval no: SVNIT/ASHINE/SSIP 2.0/IGNITION 3.0/2023-24/113, 2,20,000/-.
- **2019-2024, PhD Fellowship, from MHRD, India**

OUTREACH AND PROFESSIONAL DEVELOPMENT

- Workshop on “Data Science Noob to Pro Max Batch 2” Organized by five Minutes Engineering, (By Shridhar Mankar) on (01 Jan 2024-29 Feb 2024).
- Workshop on “**Research & Development Projects and Opportunities in Armament Field**” Jointly Organized by **Armament Research Board, DRDO & S. V. National Institute of Technology, Surat** on 24/01/2024.
- Online workshop on “Intellectual Property Rights (IPR) & Patents and Design filling” under the special mission called “National Intellectual Property Awareness Mission (NIPAM)” at Sardar Vallabhbhai National Institute of Technology on 06/06/2023.

- Webinar on “**Introduction to Ansys Explicit Solutions**” ARK Infosolutions Pvt. Ltd (2023)
- STTP on “**Laser based Manufacturing and precision Engineering**” Sponsored workshop under Accelerate Vigyan Scheme by **SERB** (2021)
- Webinar on “**Popular Science Writing**” by **Department of Science and Technology (DST), Government of India** (2021)
- STTP on “**Reverse Engineering for product design**” SV National Institute of Technology, Surat, Sponsored workshop under ATAL by **AICTE** (2020)
- STTP on “**Design of Experiment and Artificial Neural Network**” SV National Institute of Technology, Surat, Sponsored workshop under ATAL by **AICTE** (2019)
- STTP on “**Advanced Engineering Optimization Through Intelligent Techniques**” SV National Institute of Technology, Surat (2019)
- **Indian Nanoelectronics Users Program (INUP)** - Hands on training workshop at IIT-BOMBAY. (2017)
- **ANSYS HFSS**- Hands on training at ARK Infosolution Pune. (2017)
- **M.TECH-I year topper** in Government college of Engg. Karad.
- Organizing committee member in National level conference in Government college of Engg. Karad.
- Participated in Paper Presentation, Quiz competition, Project Exhibition in various national level competitions.
- Attended workshops on AUTOMATIC ROBOTICS and visited manufacturing industry.

SOFTWARE PROFICIENCY

- Design and analysis of Thermal Simulation of Laser Cutting-**ABAQUS**.
- Machine Learning in **Python**.
- High Frequency Simulation in **ANSYS HFSS**
- Design experience in **CATIA** and **AUTOCAD**.

AREA OF RESEARCH AND INTEREST

- Laser beam machining of **polymers, functionalized nanocomposites and shape memory polymers**.
- The Area of research mainly focuses on **physics informed machine**

learning algorithms on laser machining. The different machine learning algorithms have been deployed such as **random forest, gradient boost, ridge regression, linear regression, support vector regression and gaussian process regression** to evaluate the depth, surface roughness, and kerf width of the microchannel. The study covers the important research area of **soft computing, machine learning Artificial Intelligence.**

- **Numerical Simulation of laser machining** of polymers and functionalized nanocomposites
- Laser machining of **complex 3D cavity** with analytical support.
- **3D and 4D printings.**
- Optimization and curve fitting techniques.

STRENGTHS

- Hard working and disciplined
- Enthusiastic, goal oriented and ability to work under pressure.
- Ability to adapt to various situations and take initiative when needed.
- A good team player.

ACHIEVEMENTS AND EXTRACURRICULARS

- Participated in various quizzes at Inter School Level.
- Participated in debates at Inter School Level.

HIGHLIGHTS (By 2024)

- Google Scholar Citations = 82
- Google Scholar h-Index = 6
- Google Scholar i-10 Index = 2
- Number of Q1/Q2 Journals = 4
- Number of granted/Submitted Patents = 01

DECLARATION

I hereby declare that the information furnished above is true to best of my knowledge.

Yours sincerely,

Aakif Anjum