Dr. Afzaal Ahmed
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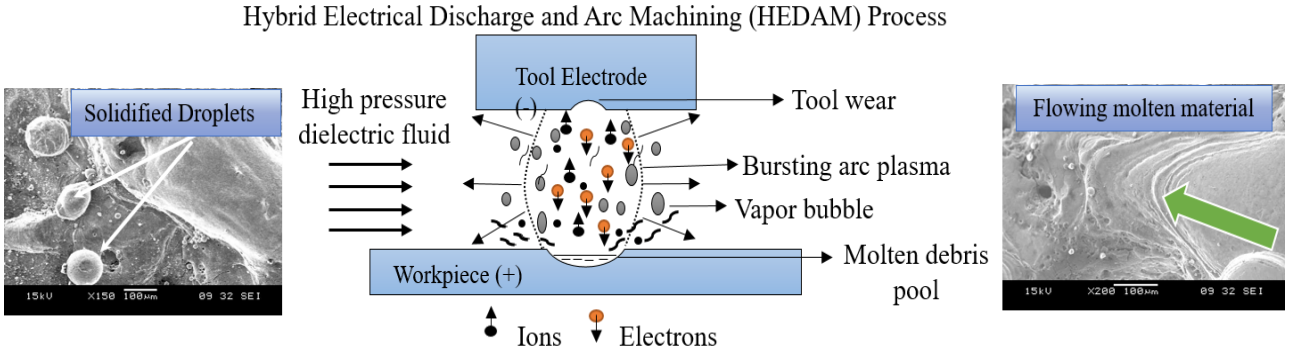
Research Interests

- Non-conventional machining processes
- Hybrid machining methods
- Micro and nano machining
- Deep hole drilling
- Laser surface alloying
- Laser based additive manufacturing processes
- Wear and tribology study of surfaces

Brief Summary of Research

Afzaal Ahmed's research interests broadly centres on the non-conventional machining, hybrid machining, deep hole drilling, laser based surface alloying and metal additive manufacturing (AM). Dr. Ahmed has been involved in multiple projects funded by Agency of Science Technology and Research (A*Star), Singapore and Singapore Institute of Manufacturing & Technology (SIMTech) that focussed on development and implementation of hybrid processing techniques for Large Format Machining of Nickel based superalloys. During the PhD, he developed a novel hybrid electrical discharge and arc machining process (HEDAM) for the efficient and ultrafast machining of difficult-to-cut superalloys such as Inconel 718, Ti-6Al-4V etc. His research expertise also include evaluation of machined surfaces via roughness, microhardness, microstructure with various microscopic and spectroscopic techniques like SEM, EDS, XRD, AFM, TEM and XPS.



Projects

- Large format machining of Nickel based superalloys (completed)
- SIMTech-NUS Joint lab for deep hole drilling of Inconel 718 (completed)

Recent Publications (Full list of publications: https://iitpkd.ac.in/people/afzaal)

Ahmed, A., Lew, M. T., Diwakar, P., Kumar, A. S., & Rahman, M. (2019). A novel approach in high performance deep hole drilling of Inconel 718. International Journal of Precision Engineering.

Ahmed, A., Fardin, A., Tanjilul, M., Wong, Y. S., Rahman, M., & Kumar, A. S. (2017). A comparative study on the modelling of EDM and hybrid electrical discharge and arc machining considering latent heat and temperature-dependent properties of Inconel 718. The International Journal of Advanced Manufacturing Technology, 1-9.