

Editorial Board

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-Assoc. Prof. Ir. Dr.
Ahmad Baharuddin
Abdullah

Secretary

-Zarirah Karrim Wani

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Active Grants

FRGS Grant

Title: Investigation on the effect of hot forging on the deformation behavior and microstructural response of Wire Arc Additive Manufacturing (WAAM) of high strength low alloy (HSLA) steel components.

ASEAN-India

Collaborative Project

Title: Development of Titanium-steel and Nickel-titanium bimetallic structures through additive manufacturing for structural and aerospace applications

Preface

Year 2025 remains to be among the most productive years for the group. Not just numbers of papers, but also quality and more importantly international collaboration is becoming one of the strengths of the group.

In total 11 out of 15 publications are closely related to the group and 8 or more than 50% produced by the group's members. Interestingly, 6 of the papers was produced by our collaborators, local as well as international.

The MFRL plans several events in 2026. The closest is the 3rd MFRL Research Seminar by focusing on the bi-metallic research in additive manufacturing. This event is in conjunction with the visit by Prof. D. Rajamani under the ASEAN-India Collaborative R&D Project from 16th to 30th of February 2026.

There are also on-going projects between MFRL and other institutions, recently on the use of AFDEX software (MFRC, Korea) on the cold forged additively manufactured low carbon steel. This project is under initiative of Assoc. Prof. Dr. Noor Azlina from UiTM Shah Alam. Another project is an industrial based FYP project with Dr Boey Kok Hong (Solid Precision Engineering, Sungai Petani, Kedah) on stamping die health monitoring.

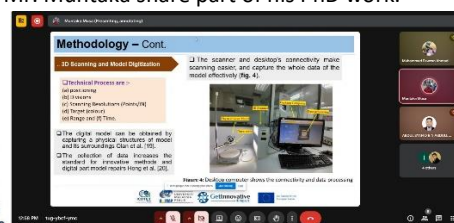
List of Publication 2024

1. Rizlan, M.Z., Abdullah, A.B. & Hussain, Z. (2025). The effect of post-weld heat treatment on the formability of aluminum to steel friction stir welded blanks. *Int J Mater Form* 18, 38.
2. Kamarul Al-Hafiz Abdul Razak, Ahmad Baharuddin Abdullah & Norzalilah Mohamad Nor. (2025). Effect of Single Point Incremental Forming (SPIF) Process Parameters on Surface Roughness of Dissimilar Tailor Welded Blanks using the Taguchi Method, *Jurnal Kejuruteraan* 37(1), pp. 299-308
3. Jamaludin, Mohd Fadzil and Abdullah, Ahmad Baharuddin et al., (2025). Formability analysis of dissimilar aluminium tailor welded blanks by low-powered fibre laser for lightweight automotive application *Journal of Applied Engineering Design & Simulation (JAEDS)*, 5 (1): 6. pp. 57-65.
4. Saravanamuthukumar, P., Abdullah, A.B. & Wani, Z.K. Machine learning-based prediction and optimization of WAAM process parameters for enhanced deposition efficiency. *Prog Addit Manuf* 10, 11093–11107 (2025).
5. Aslam, M., Abdullah, A.B., Chandan, G.K. et al. Melt-Pool Sledding of SiC-AISI304 Stainless Steel Cladding on Low-Carbon Steel Using Gas Metal Arc Welding Process. *Silicon* 17, 3617–3624 (2025).

6. R. S. Jayaram, P. V. Prasanth, P. Saravanamuthukumar, A. B. Abdullah, and K. Ramalingam, "Impact Performance Enhancement of Nano-Clay-Reinforced Sandwich Panels: A Machine Learning Approach," *Polymer Composites* (2025): 1–17.
7. Jayaram RS, Saravanamuthukumar P, Abdullah AB, Krishnamoorthy R, Kunar S, et al. (2025). "Machine learning driven optimization of compressive strength of 3D printed bio polymer composite material". *PLOS ONE* 20(8): e0330625.
8. Wei Joshua Lee Jet, Mokhtar Mohzani, Abdullah Ahmad Baharuddin, Anshari Md Anwar Ali, Optimization of Forging Parameters for Enhanced Mechanical Properties of Wire Arc Additive Manufacturing-Deposited High-Strength Low-Alloy Steel Bead. *Steel Research International*, e202500837.2025.
9. Rizlan, M. Z., Abdullah, A. B., et al., (2025). "Effect of post weld heat treatment on the springback of dissimilar aluminium and steel tailor welded blanks fabricated using friction stir welding". *Advances in Materials and Processing Technologies*, 11(3), pp. 1873–1890.
10. P Saravanamuthukumar, Ahmad Baharuddin Abdullah, L Poovazhagan, RS Jayaram, S Senthil Murugan, (2025). "Investigation of the Effect of Nano-SiC Particle Addition on the Structural and Thermal Properties of PEEK-SiC Nano Composite Made by Melt Cast Process", *National Academy Science Letters*.
11. Aimin J, Abdullah AB, Mohd Yusuf S. Microstructures and mechanical properties of 316LSi/IN625 FGMs manufactured by CMT-WAAM. *Advances in Mechanical Engineering*. 2025;17(12).
12. Liu X, Abdullah AB. Thermal-assisted machining of Inconel 718: Impact of tool rake angles on specific cutting energy, carbon emission, and chip formation. *Proceedings of the Institution of Mechanical Engineers, Part E: Journal of Process Mechanical Engineering*. 2025;0(0)
13. Kataraki, P.S., Koti, V., Kusnoorkar, H., Quadri, S.M., Abdullah, A.B. (2026). *Generative Machine Learning Technique for Wire Electrical Discharge Machining Optimization of Inconel 718 – A Predictive Maintenance Approach*. In: Srihari, K., Khasawneh, M.T., Yoon, S., Won, D. (eds) *Flexible Automation and Intelligent Manufacturing: The Future of Automation and Manufacturing: Intelligence, Agility, and Sustainability*. FAIM 2025. Lecture Notes in Mechanical Engineering. Springer, Cham
14. Waziri SL, Zuhailawati H, Manladan SM, Seman AA, Abdullah AB. Mechanical properties and microstructural characterizations of TIG welded dissimilar joint of A316 stainless steel and AISI 1008 grade steel plates using RSM. *Proceedings of the Institution of Mechanical Engineers, Part C: Journal of Mechanical Engineering Science*. 2025;240(3):726-742.
15. Abioye TE, Wei CY, Zuhailawati H, Abdullah AB. Enhancing the single-track deposition quality of AISI 308L wire arc additive manufacturing via process optimization and cold forging treatment. *Proceedings of the Institution of Mechanical Engineers, Part E: Journal of Process Mechanical Engineering*. 2023;239(5):2677-2687.

Congratulation Muntaka

One of our members, Mr. Muntaka Musa has participated at the ICDTET 2026 hosted by Universiti Malaysia Perlis. The event was conducted in hybrid mode from 19 to 20th of January 2026. Mr. Muntaka share part of his PhD work.



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IN COMING EVENT



Free Admission

All Are Invited

TO

THE 3RD MFRL RESEARCH SEMINAR

RESEARCH ON BI-METALLIC ADDITIVE MANUFACTURING

24th of February 2026

2 pm - 5 pm

USM UNIVERSITI SAINS MALAYSIA

APEX™

ORGANIZED BY

METAL FORMING RESEARCH LAB, USM

Seminar Room, School of Mechanical Engineering

Opening



Assoc. Prof. Ir. Dr. Ahmad Baharuddin

Universiti Sains Malaysia, Malaysia
Coordinator of Metal Forming Research Lab

Invited Speaker

Prof. Dr. D. Rajamani

Vel-Tech Rangarajan Dr. Sagunthala R&D Institute of Science
& Technology, India
Title: Not yet



Presenters



Dr. Mohd Aslam

Postdoctoral Fellow
Title: Review of bi-metallic AM



Mr. Jiang Aimin

PhD Student
Title: Interlayer bonding performance of
IN718-18Ni300 fabricated via Cold Metal
Transfer



Mr. Mohd Faris Akmal Md Azlin

PhD Student
Title: HSLA Steel to Gray Cast Iron Bi-
Metallic Structure Manufactured using
WAAM



Mr. Saravanantakumar Ponraj

PhD Student
Title: Additive manufacturing of shape
memory alloy using machine learning



Mrs. Zarirah Karim Wani

MSc Student
Title: Shear performance of SS-MS
fabricated using MIG based WAAM.



Mr. Liu Xin

PhD Student
Title: Thermal-assisted machining of wire
arc additive manufactured part.

FURTHER INFO PLEASE CONTACT



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