

Dr. Luqman Hakim Bin Ahmad Shah

Senior Lecturer

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Biography

Luqman Hakim Bin Ahmad Shah graduated from the Department of Mechanical and Mechatronics Engineering, University of Waterloo, Canada, under the supervision of Associate Professor Adrian Gerlich at the Center for Advanced Materials Joining (CAMJ). Prior to that, he graduated from Tohoku University, Sendai, Japan with a Degree of Master of Engineering in March 2010 shortly after his Bachelor's Degree in 2008 at the same university. He is currently working as a senior lecturer in the Faculty of Mechanical and Automotive Engineering Technology, Universiti Malaysia Pahang, Pahang, Malaysia. His current recent interests are in friction stir welding, laser welding as well as dissimilar welding research area.

Education Background

2016 – 2020	Doctor of Philosophy <i>Department of Mechanical and Mechatronics Engineering, University of Waterloo, Canada</i>
2008 – 2010	M.Eng. in Mechanical Engineering (Quantum Energy) <i>Department of Mechanical and Aerospace Engineering, Tohoku University, Japan</i>
2004 – 2008	B.Eng. in Mechanical Engineering (Quantum Science) <i>Department of Mechanical and Aerospace Engineering, Tohoku University, Japan</i>

Career/Academic Appointments

2020 – present	Senior Lecturer <i>Faculty of Mechanical & Automotive Engineering Technology, Universiti Malaysia Pahang</i>
2010 – 2020	Lecturer <i>Faculty of Mechanical & Automotive Engineering Technology, Universiti Malaysia Pahang</i>

Courses Taught

BMM3611	Manufacturing Processes Lab
BMM2533	Fluid Mechanics
BMM2521	Engineering Mechanics Lab 2
BMM4703	Hydraulics and Pneumatics
BMM2521	Engineering Mechanics Lab 2
BMM1553	Dynamics
DMM3623	Hydraulics and Pneumatics Technology
BMM1821	Mechanical Lab 2
DMM3663	CNC Technology
BMM1532	Statics
BHA1821	Mechanical Lab 2

BMM1533	Strength of Materials 1
BMM2613	Computer Aided Design
BTM1213	Engineering Mechanics

Professional Affiliation

Board of Engineers Malaysia (BEM)	Graduate Engineer (GE70434A)
Institute of Engineers Malaysia (IEM)	Graduate Member 64530
Canadian Welding Association (CWA), University of Waterloo chapter	Member (2016-2020)

Research Interests

Friction stir welding, dissimilar welding, bulk metallic glass

Postgraduate Supervision

Level	Name	Title	Status	Role
MSc	Nurul Hidayah Binti Othman	Effect of shoulder to pin ratio on mechanical and microstructural properties of friction stir welded magnesium alloy	Ended	Co-supervisor
MSc	Nur Fakhriah Binti Mohd Noordin	Study of dissimilar aluminium alloy AA6061 and AA7075 by fusion welding	Ended	Co-supervisor

Research Grants

Title	Type of Grant	Role	Amount (RM)	Status
Mechanical and metallurgical characterization of friction stir welding joints of aluminium and steel alloys	Short Grant	Leader	50,000	Completed
Development of a new technique to weld dissimilar metals for automotive applications	Short Grant	Leader	31,100	Completed
Microstructure and mechanical characterization of semisolid metal components for wrought aluminium alloys	Short Grant	Member	57,500	Completed
Development of force and temperature-controlled friction stir welding machine (FSW) for dissimilar metal joining application	FRGS	Member	235,000	Completed
Effect of laser welding parameters on dissimilar welded austenitic and duplex stainless steel for tailor-welded blank application	Short Grant	Member	39,365	Completed
Structural dynamic properties investigation of dissimilar materials (AA7075, AA6061, AZ31B) joints produced by friction stir welding (FSW)	Short Grant	Member	20,470	Completed
Peningkatan produktiviti pengeluaran baja cecair kilang IKS melalui penambahbaikan sistem operasi dan pengurusan bahan mentah	Industrial Grant	Member	117,426.56	Completed
Development of welded stiffener plates using dissimilar and similar metal joining technique	Short Grant	Member	35,290	Completed
Development of thin sheet metal mechanical properties database for micro-manufacturing application	Short Grant	Member	36,000	Completed

Low frequency modulation of ultrasonic guided wave method for small crack pipeline detection	Short Grant	Member	28,400	Completed
Characterization of electrical and thermal characteristic of piezoelectric ultrasonic motor for a better speed and torque performance	FRGS	Member	90,000	Completed
Enhancement of weldability in light alloys (A6061 & A7075) dissimilar metal welding	FRGS	Member	127,000	Completed
Industrial testing of a 3-axis CNC machines using the predefined closest-distance volume interpolator for tailor welded blanks (TWBs) application	FRGS	Member	200,000	Completed
Development of a data framework for maintenance activities	Short Grant	Member	16,000	Not completed
Development of EDM injection flushing technique to enhance machining performance on titanium alloy for automotive	Short Grant	Member	39,900	Completed
The development of a two-link flexible robot manipulator	Short Grant	Member	39,500	Completed
Development of new filler material in controlling corrosion of weld nonferrous alloys	Short Grant	Member	40,000	Not completed

Book/module Publications

1. "Rapid Solidification Processing and Bulk Metallic Glass Casting", S.N. Aqida, **L.H. Shah**, S. Naher, D. Brabazon, Comprehensive Materials Processing, Elsevier Ltd, Vol. 5, pp 69-88. ISBN: 978-008-0965-32-1. (Status: Published in April 2014).
2. "BMM4703 Hydraulics and Pneumatics Final Examination Solution Manual 2010-2014", Mohd Fadzil Faisae Ab. Rashid, **Luqman Hakim Ahmad Shah**, Muhammad Hatifi Mansor, UMP Publisher. (Status: Published in May 2015)
3. "Easy Step-by-step Guide to Shear Force-Bending Moment Diagrams Analysis", **Luqman Shah**, UMP Publisher. ISBN: 978-967-0691-51-0. (Status: Published in September 2015)

Journal Publications

1. 'Evolution of process parameters in friction stir welding of AA6061 aluminum alloy by varying tool eccentricity', **L.H. Shah**, A. Fleury, L. St-George, S. Walbridge, A.P. Gerlich, *International Journal of Advanced Manufacturing Technology* 2020, 109, 1601-1612.
2. 'Structural morphology of AA6061 aluminum alloy friction stir welds through tool eccentricity', **L.H. Shah**, N. Huda, S. Esmaeili, S. Walbridge, A. P. Gerlich, *Materials Letters* 2020, 275, 128098.
3. 'Influence of tool offsetting and base metal positioning on the material flow of AA5052-AA6061 dissimilar friction stir welding', **L.H. Shah**, A.R.H. Midawi, S. Walbridge, A. Gerlich, *Journal of Mechanical Engineering and Sciences* 2020, 14(1), 6393-6402.
4. 'Influence of tool eccentricity on the material flow and microstructural properties of AA6061 aluminum alloy friction stir welds', **L.H. Shah**, A.R.H. Midawi, S. Walbridge, A. Gerlich, *Journal of Alloys and Compounds* 2020, 826.
5. 'The role of tool offset on the microstructure and mechanical properties of Al/Cu friction stir welded joints', Wentao Hou, **Luqman Hakim Ahmad Shah**, Guoqiang Huang, Zhikang Shen, Yifu Shen, Adrian Gerlich, *Journal of Alloys and Compounds* 2020, 825.
6. 'Dissimilar friction stir welding of thick plate AA5052-AA6061 aluminum alloys: effects of material positioning and tool eccentricity', **Luqman Hakim Ahmad Shah**, Seyedhossein Sonbolestan, Abdelbaset R. H. Midawi, Scott Walbridge, Adrian Gerlich, *International Journal of Advance Manufacturing Processes* 2019, 105(1-4), 889-904.

7. 'Surface modification of a cold gas dynamic spray-deposited titanium coating on aluminum alloy by using friction-stir processing', F. Khodabakhshi, B. Marzbanrad, **L.H. Shah**, H. Jahed, A.P. Gerlich, *Journal of Thermal Spray Technology* 2019, 28(6), 1185-1198.
8. 'Tool eccentricity in friction stir welding: a comprehensive review', **L.H. Shah**, S. Walbridge and A. Gerlich, *Science and Technology of Welding and Joining* 2019, 24 (6), 566-578.
9. 'Dissimilar laser welding of an AA6022-AZ31 lap-joint by using Ni-interlayer: Novel beam-wobbling technique, processing parameters, and metallurgical characterization', F. Khodabakhshi, **L.H. Shah**, A.P. Gerlich, *Optics and Laser Technology* 2019, 112, 349-362.
10. 'Effect of beam wobbling on laser welding of aluminum and magnesium alloy with nickel interlayer', **L.H. Shah**, F. Khodabakhshi, A. Gerlich, *Journal of Manufacturing Processes* 2019, 37, 212-219.
11. 'Effect of quality control parameter variations on the fatigue performance of aluminum friction stir welded joints', Shihui Guo, **Luqman Shah**, Rakesh Ranjan, Scott Walbridge, Adrian Gerlich, *International Journal of Fatigue* 2019, 118, 150-161.
12. 'Effect of tool eccentricity on the properties of friction stir welded AA6061 aluminum alloys', **LH Shah**, S Guo, S Walbridge, A Gerlich, *Manufacturing Letters* 2018, 15, 14-17.
13. 'Design guideline for intermetallic compound mitigation in Al-Mg dissimilar welding through addition of interlayer', **L H Shah**, A Gerlich, Y. Zhou, *International Journal of Advance Manufacturing Technology* 2018, 94, 2667-2678.
14. 'Review of research progress on aluminium-magnesium dissimilar friction stir welding', **L H Shah**, N H Othman, A Gerlich, *Science and Technology of Welding and Joining* 2018, 23(3) 256-270
15. 'Friction-stir processing of a cold sprayed AA7075 coating layer on the AZ31B substrate: Structural homogeneity, microstructures and hardness', F Khodabakhshi, B Marzbanrad, **LH Shah**, H Jahed, AP Gerlich, *Surface and Coatings Technology* 2017, 331, 116-128.
16. 'Investigation of preheating method on joint strength of aluminium-stainless steel dissimilar welding using metal inert gas (MIG) process', M R Mohamad, **L H Shah**, M Ishak, *IOP Conference Series: Materials Science and Engineering* 2017, 012019.
17. 'Effect of shoulder to pin ratio on magnesium alloy friction stir welding', N H Othman, M Ishak, **L H Shah**, *IOP Conference Series: Materials Science and Engineering* 2017, 238 (1), 012008.
18. 'Dissimilar welding of A7075-T651 and AZ31B alloys by gas metal arc plug welding method', M R Islam, M Ishak, **L H Shah**, S R A Idris, C Meric, *The International Journal of Advanced Manufacturing Technology* 2016, 88 (9-12), 2773-2783.
19. 'Lap joint dissimilar welding of aluminium AA6061 and galvanized iron using TIG welding', **L H Shah**, U K Mohamad, K I Yaakob, A R Razali, M Ishak, *Journal of Mechanical Engineering and Sciences* 2016, 10, 1817-1826.
20. 'Effect of taper pin ratio on microstructure and mechanical property of friction stir welding AZ31 magnesium alloy', N H Othman, N Udin, M Ishak, **L H Shah**, *International Journal of Materials and Metallurgical Engineering* 2016, 10 (5), 638-641.
21. 'Prediction and optimization of process parameters on metal inert gas of dissimilar aluminium alloy AA6061-T6 and AA7075-T6 using response surface method analysis', N F Mohd Noordin, M Ishak, **L H Ahmad Shah**, *Key Engineering Materials* 2016, 701, 143-147.
22. 'Effect of taper pin ratio on AA7075 aluminium alloy friction stir welding', N H Othman, N Abdul Razak, **L H Ahmad Shah**, M Ishak, *Key Engineering Materials* 2016, 701, 154-158.
23. 'Feasibility study on joining dissimilar aluminum alloy AA6061 and AA7075 by tungsten inert gas (TIG)', M Ishak, N F M Noordin, **L H A Shah**, *Jurnal Teknologi* 2015, 75 (7).
24. 'The effect of filler ER4043 and ER5356 on weld metal structure of 6061 aluminium alloy by metal inert gas (MIG)', M Ishak, N F M Noordin, A S K Razali, **L H Ahmad Shah**, *International Journal of Engineering Technology and Sciences* 2015, 3 (1), 68-75.

25. 'Parametric studies on tensile strength in joining AA6061-T6 and AA7075-T6 by gas metal arc welding process', M Ishak, N F M Noordin, **L H Shah**, *IOP Conference Series: Materials Science and Engineering* 2015, 100 (1), 012042.
26. 'Mechanical and microstructural characterization of single and double pass aluminum AA6061 friction stir weld joints', N H Othman, **L H Shah**, M Ishak, *IOP Conference Series: Materials Science and Engineering*, 2015, 100 (1), 012016.
27. 'Effect of filler on weld metal structure of AA6061 aluminum alloy by tungsten inert gas', M Ishak, N F M Noordin, A S K Razali, **L H A Shah**, F R M Romlay, *International Journal of Automotive and Mechanical Engineering*, 2015, 11, 2438.
28. 'Experimental investigations on corrosion model of welded 6061 aluminum exposed in NaCl solution', Y P Asmara, J P Siregar, **L H Shah**, C Tezara, *International Journal of Automotive and Mechanical Engineering*, 2015, 11, 2600-2607.
29. 'Mechanical strength of dissimilar AA7075 and AA6061 aluminum alloys using friction stir welding', N A A Sathari, A R Razak, M Ishak, **L H Shah**, *International Journal of Automotive and Mechanical Engineering*, 2015, 11, 2713.
30. 'Parameter optimization of preheating method on aluminium-stainless steel metal inert gas (MIG) dissimilar welding', M Rusdi A Rahman, **L Hakim A Shah**, *Applied Mechanics and Materials* 2015, 773, 253-256.
31. 'Parameter optimization of AA6061-AA7075 dissimilar friction stir welding using the Taguchi method', **L H Shah**, N F Zainal Ariffin, A R Razali, *Applied Mechanics and Materials* 2015, 695, 20-23.
32. 'Investigation of single-pass/double-pass techniques on friction stir welding of aluminium', N A A Sathari, **L H Shah**, A R Razali, *Journal of Mechanical Engineering and Sciences* 2014, 7 1053-1061.
33. 'Review of research progress on aluminum-steel dissimilar welding', **L H Shah**, M Ishak, *Materials and Manufacturing Processes* 2014, 29 (8), 928-933.
34. 'Study of resistance spot welding between AISI 301 stainless steel and AISI 1020 carbon steel dissimilar alloys', M Ishak, **L H Shah**, I S R Aisha, W Hafizi, M R Islam, *Journal of Mechanical Engineering and Sciences* 2014, 6, 793-806.
35. 'Active sway control of a gantry crane using hybrid input shape and PID control schemes', M Z Mohd Tumari, L Shabudin, M A Zawawi, **L H Shah**, *IOP Conference Series: Materials Science and Engineering* 2013, 50 (1), 012029.
36. 'Investigation on the mechanical properties of TIG welded AA6061 alloy weldments using different aluminium fillers', **L H Shah**, N Azhani, A Razak, A Juliawati, M Ishak, *GSTF Journal of Engineering Technology* 2013, 2 (2), 116-119.
37. 'Investigation of aluminum-stainless steel dissimilar weld quality using different filler metals', **L H Shah**, Z Akhtar, M Ishak, *International Journal of Automotive and Mechanical Engineering* 2013, 8, 1121-1131.
38. 'H-infinity controller based on lmi region for flexible robot manipulator', M Z M Tumari, M S Saealal, M R Ghazali, M A Zawawi, **L H A Shah**, *Research Journal of Applied Science* 2012, 7, 275-281.
39. 'The effects of gamma-ray on the mechanical properties of Zr-based bulk metallic glass', **L H Shah**, T Bun, S Nagata, T Shikama, *International Journal of Automotive and Mechanical Engineering* 2012, 6 (1), 713-721.
40. 'The effect of gamma-rays on the electrical properties of Zr55Ni5Al10Cu30 bulk metallic glass', **L H Shah**, B Tsuchiya, S Nagata, T Shikama, *Journal of Nuclear Materials* 2011, 417 (1-3), 822-825.

Conference Proceedings

1. 'Effect of tool runout in friction stir welding of aluminum alloy for structural applications', **Luqman H.A. Shah**, S. Guo, S. Walbridge, A. Gerlich, *TMS 2017 146th Annual Meeting & Exhibition*, February 26 – March 2, 2017, San Diego, California, USA.
2. 'Effect of tool eccentricity on the microstructural and mechanical property of friction stir welded aluminum alloys', **L.H. Shah**, S. Guo, S. Walbridge, A. Gerlich, *CanWeld Expo & Conference 2017*, September 13-17, 2017, Montreal, Quebec, Canada.
3. 'Effect of laser beam wobbling on AA6022 Al alloy to AZ31 Mg alloy dissimilar welding with Ni interlayer', **Luqman Hakim Ahmad Shah**, Farzad Khodabakhshi, Adrian Gerlich, *International Conference on Aluminum Alloys 16*, June 17-21, 2018, Montreal, Quebec, Canada.
4. 'Evaluation of tool eccentricity on material flow and mechanical properties in friction stir welded AA6061 aluminum alloy', **L.H. Shah**, S. Walbridge, A. Gerlich, *12th International Symposium on Friction Stir Welding*, June 26 – 28, 2018, Chicoutimi, Quebec, Canada.
5. 'Effect of tool eccentricity & base metal positioning on dissimilar FSW of 5052-6061 aluminum alloys', **Luqman Hakim Ahmad Shah**, Seyedhossein Sonbolestan, Scott Walbridge, Adrian Gerlich, *TMS 2019 148th Annual Meeting & Exhibition*, February 26 – March 2, 2017, San Antonio, Texas, USA.