

**Name of RIG/Centre :**  
**TRIBOLOGY FOR**  
**TRANSPORTATION INDUSTRI**





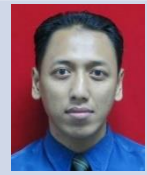
**CoRe :**

**Green Technology and**  
**Sustainable Development (GTSD)**  
**(Frontier Material & Industry**  
**Application)**

**Faculty :**

**Universiti Teknologi MARA**

# Background of Members

	Name of Leader & Members	Faculty & Staff No.	Qualification	Area of Expertise
	<b>Prof. Dr Salmiah Kasolang</b>	Faculty of Mechanical Engineering	PhD	TRIBOLOGY; FLUID MECHANICS; QUALITY MANAGEMENT SYSTEM
	<b>Dr. Mohamad Ali Ahmad</b>	Faculty of Mechanical Engineering	PhD	TRIBOLOGY; ENERGY MANAGEMENT; MACHINE DEVELOPMENT; TPM
	<b>Dr Mimi Azlina Abu Bakar</b>	Faculty of Mechanical Engineering	PhD	NATURAL FIBER COMPOSITE; BIOMATERIALS; MATERIAL CHARACTERISTICS; MECHANICAL TESTING
	<b>Dr Noor Azlina Mohd Salleh</b>	Faculty of Mechanical Engineering	PhD	QUALITY MANAGEMENT SYSTEM, LEAN MANUFACTURING
	<b>Dr Mohd Faizul Mohd Idros</b>	Faculty of Electrical Engineering	PhD	INTEGRATED CIRCUIT DESIGN; EMBEDDED SYSTEM DESIGN; SENSORS

# Research grants (2013 - 2015)

Bil	Nama Penyelidik Utama	Nama Projek	Jenis	Agensi Pembiaya	Status	Tarikh Mula	Tarikh Tamat	Jumlah (RM)
1	PROF DR SALMIAH KASOLANG	NEW FRAMEWORK MODEL OF INTEGRATED ISLAMIC QUALITY MANUFACTURING SYSTEM	GERAN	FRGS	COMPLETED	Nov-13	Nov-15	80,500.00
2	PROF DR SALMIAH KASOLANG	HYDRODYNAMIC FLUID BEHAVIOUR OF BIO LUBRICANTS IN PLAIN BEARING	GERAN	Prinsipal Investigator support Initiative	COMPLETED	Dis-13	Nov-15	60,000.00
3	PROF DR SALMIAH KASOLANG	NEW FRAMEWORK MODEL OF INTEGRATED ISLAMIC QUALITY MANUFACTURING SYSTEM	GERAN	Prinsipal Investigator support Initiative	COMPLETED	Dis-13	Nov-16	60,000.00
4	DR MIMI AZLINA ABU BAKAR	HAP BLENDED PALM STEARIN BINDER; RHEOLOGICAL BEHAVIOUR IN POWDER INJECTION MOULDING	GERAN	FRGS	ON GOING	Jun-13	May-16	103,000.00
5	DR NOOR AZLINA MOHD SALLEH	FUNCTIONALLY GRADED ALUMINIUM FOAM WITH SPACE HOLDER REPLICATION	GERAN	RAGS	ON GOING	Dis-14	Nov-16	80,000.00
6	DR NOOR AZLINA MOHD SALLEH	NEW SOCIAL RISK MANAGEMENT MANUFACTURING SYSTEM FRAMEWORK MODEL	GERAN	FRGS	ONGOING	Dis-14	Nov-16	102,000.00
7	DR MOHD FAIZUL BIN MD IDROS	ASIC REALIZATION OF OPTICAL BASED LUBRICANT DEGRADATION FOR HIGHER UTILISATION	GERAN	DANA KECEMERLANGAN	ONGOING	2015	2017	20,000.00

**Total RM 505,500**

# Postgraduates (Research 2011-2015)

BIL	NAMA	WARGANEGARA	TAHUN KEMASUKAN	TAHUN TAMAT PENGAJIAN	PERINGKAT PENGAJIAN	ENTRY LEVEL (CGPA)	JENIS PENGAJIAN	STATUS PENGAJIAN	JENIS PEMBIAYAAN
1	AJMAIN BIN KASIM	Malaysia	2011		PHD				
2	MOHAMAD MAZWAN BIN MAHAT	Malaysia	2014		PHD				
3	NAJIBAH AB LATIF	Malaysia	2015		PHD				
4	NOR SYAHIRAH BINTI MOHAMAD	Malaysia	2014		MASTER				
5	NURHIDAYAH ROZIEANA ZAMANI	Malaysia	2012		MASTER				
6	SITI NORAZLINI ABD. AZIZ	Malaysia	2013		MASTER				
7	NURUL ALIAH ZULKEFLI	Malaysia	2014		MASTER				
8	SITI FARHANIZA ABD SAMAT	Malaysia	2015		MASTER				

# PUBLICATIONS (Salmiah)

1. **Kasolang, S.**, and Dwyer-Joyce, R.S. (2005), "Thickness measurement, turbulence, and bubbles in lubrication." Journal of Mechanical Engineering, Publications of the Universiti Teknologi MARA, 2(1), 63-78; ISSN:18235514; Index: SCOPUS, H Index, Q4
2. Reddyhoff, T., **Kasolang, S.**, Dwyer-Joyce, R. S., and Drinkwater, B. W. (2005), "The phase shift of an ultrasonic pulse at an oil layer and determination of film thickness." Proceedings of the Institution of Mechanical Engineers, Part J: Journal of Engineering Tribology, 219(6), 387-400. ISSN:18235514; Index: SCOPUS/ISI, H Index 30, Q2; IF 0.631
3. **Kasolang, S.**, Dwyer-Joyce, R.S., (2008), "Observations of film thickness profile and cavitation around a journal bearing circumference", Tribology Transactions, 51(2), 231-245; ISSN:10402004; Index: SCOPUS/ISI, H Index 38, Q1; IF 0.914
4. **Kasolang, S.**, Dwyer-Joyce, R.S., (2008), "Viscosity measurement in thin lubricant films using shear ultrasonic reflection" Proceedings of the I MECH E Part J Journal of Engineering Tribology, Vol. 222, No. 3., pp. 423-429; Index: SCOPUS/ISI, H Index 30, Q2; IF 0.631
5. **Kasolang, S.**, Ahmad, M.A. and Dwyer-Joyce, R.S. (2011) Measurement of circumferential viscosity profile in stationary journal bearing by shear ultrasonic reflection. Tribology International, [Volume 44, Issue 11](#), October 2011, Pages 1264–1270; ISSN:0301679x; Index: SCOPUS/ISI; H Index 56, Q1; IF 1.536
6. **Kasolang, S.**, Ahmad, M. A., Ghazali, F.A., Azmi, A.M. (2011) "Preliminary Study of Dry Sliding Wear in Kenaf Epoxy and Carbon Epoxy", Applied Mechanics and Materials, Volume 52-54, Pages 464-469, ISSN:16609336; Index: SCOPUS, H Index 9, Q4
7. **Kasolang, S.**, Kalam, A., Ahamd, M.A. (2011) "Dry Sliding Wear of Oil Palm Empty Fruit Bunch (OPEFB) Epoxy Composite", Advanced Materials Research, Volume 308-310, 2011, Pages 1535-1539; ISSN:16609336; Index: SCOPUS, H Index 12, Q4
8. Salleh, NAM, **Kasolang, S.**, Jaffar, A (2011) Lean TQM Automotive Factory System, World Academy of Science, Engineering and Technology, Volume 79, pp 627-631; ISSN:20103778; Index: SCOPUS, H Index 9, Q4
9. Salleh, NAM, **Kasolang, S.**, Jaffar, A. (2012), "Lean TQM Automotive Factory System", World Academy of Science, Engineering and Technology, Volume 79, July 2011, Pages 627-631; ISSN:20103778; Index: SCOPUS, H Index 9, Q4
10. **Salmiah Kasolang**, Mohamad Ali Ahmad, Mimi Azlina Abu Bakar, Ahmad Hussein Abdul Hamid, (2012) Specific Wear Rate of Kenaf Epoxy Composite and Oil Palm Empty Fruit Bunch (OPEFB) Epoxy Composite in Dry Sliding, Jurnal Teknologi, 58 (Sains & Kej.) Keluaran Khas (2) , Ogos 2012: 85–88; ISSN: 01279696; Index: SCOPUS, H Index 1, Q4

# PUBLICATIONS (Salmiah)

11. Noor Azlina Mohd. Salleh, **Salmiah Kasolang**, Hj Ahmed Jaafar, (2012), "Review study of developing an integrated TQM with LM framework model in Malaysian automotive industry", TQM Journal, Vol. 24 Iss: 5 pp. 399 – 417; ISSN:17542731; Index: SCOPUS, H Index 31, Q2
12. **Salmiah Kasolang**, Mohamad Ali Ahmad, Rob-Dwyer Joyce, Che Faridah Mat Taib, (2012) Preliminary Study of Pressure Profile in Hydrodynamic Lubrication Journal Bearing, Procedia Engineering, Volume 41, Pages 1743-1749; ISSN:1877-7058; Index: SCOPUS, H Index 7, Q3
13. Noor Azlina Mohd. Salleh, **Salmiah Kasolang**, Ahmed Jaffar, (2012) Green Lean Total Quality Information Management in Malaysian Automotive Companies, Procedia Engineering, Volume 41, Pages 1708-1713; ISSN:1877-7058; Index: SCOPUS, H Index 7, Q3
14. Noor Azlina Mohd. Salleh, **Salmiah Kasolang**, Ahmed Jaffar, (2012) Simulation of Integrated Total Quality Management (TQM) with Lean Manufacturing (LM) Practices in Forming Process Using Delmia Quest, Procedia Engineering, Volume 41, 2012, Pages 1702-1707; ISSN:1877-7058; Index: SCOPUS, H Index 7, Q3
15. Abdul Rahim Mahamad Sahab, Nor Hayati Saad, **Salmiah Kasolang**, Juri Saedon, (2012) Impact of Plasma Spray Variables Parameters on Mechanical and Wear Behaviour of Plasma Sprayed Al<sub>2</sub>O<sub>3</sub> 3%wt TiO<sub>2</sub> Coating in Abrasion and Erosion Application, Procedia Engineering, Volume 41, Pages 1689-1695; ISSN:1877-7058; Index: SCOPUS, H Index 7, Q3
16. A. Hussein, M. Hafiz, H. Rashid, A. Halim, W. Wisnoe, **S. Kasolang** (2012) "Characteristics of Hollow Cone Swirl Spray at Various Nozzle Orifice Diameters", Jurnal Teknologi, Vol. 24 Iss: 5 pp. 399 – 417; ISSN: 01279696; Index: SCOPUS, H Index 1, Q4
17. Diyar I. Ahmed, M.Z. Yusoff, Al-Falahi Amir, **S. Kasolang**, (2012) High Speed Flow Characteristics in Gun Tunnel, Procedia Engineering, Volume 41, 2012, Pages 1787-1793; ISSN:1877-7058; Index: SCOPUS, H Index 7, Q3
18. Aidah Jumahat, Costas Soutis, Shahrul Azam Abdullah, **Salmiah Kasolang**, (2012) Tensile Properties of Nanosilica/Epoxy Nanocomposites, Procedia Engineering, Volume 41, Pages 1634-1640, ISSN:1877-7058; Index: SCOPUS, H Index 7, Q3
19. C. Bambang Dwi Kuncoro, Armansyah, Nor Hayati Saad, Ahmed Jaffar, Cheng Yee Low, **Salmiah Kasolang**, (2012) Wireless e-Nose Sensor Node: State of the Art, Procedia Engineering, Volume 41, Pages 1405-1411; ISSN:1877-7058; Index: SCOPUS, H Index 7, Q3

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20. M.A. Mokhri, N.R. Abdullah, S.A. Abdullah, **S. Kasalong**, R. Mamat, Soot Filtration Recent Simulation Analysis in Diesel Particulate Filter (DPF). International Symposium on Robotics and Intelligent Sensors 2012 (IRIS 2012) Procedia Engineering 41 ( 2012 ) 1750 – 1755. ISSN:1877-7058; Index: SCOPUS, H Index 7, Q3
21. Mohamad Ali Ahmad, **Salmiah Kasolang**, Rob Dwyer-Joyce, Mimi Azlina Abu Bakar (2013) The effects of Oil Groove Position on Torque and Frictional Force in Hydrodynamic Journal Bearing, Applied Mechanics and Materials, Vol. 393 (2013) pp 907-912; ISSN:16609336; Index: SCOPUS, H Index 9, Q4
22. Mohamad Ali Ahmad, **Salmiah Kasolang**, Rob Dwyer-Joyce and Nik Rosli Abdullah (2013) The Effect of Oil Supply Pressure on the Circumferential Pressure Profile in Hydrodynamic Journal Bearing, Applied Mechanics and Materials, Vol. 315 pp 809-814; ISSN:16609336; Index: SCOPUS, H Index 9, Q4,
23. **S. Kasolang**, Diyar I. Ahmed, R. S. Dwyer-Joyce, B. F. Yousif (2013) Performance Analysis of Journal Bearings Using Ultrasonic Reflection, Tribology International, Vol 64, pp. 78-84; ISSN:0301679x; Index: SCOPUS/ISI; H Index 56, Q1; IF 1.536
24. Mohamad Ali Ahmad, **Salmiah Kasolang** and Rob Dwyer-Joyce (2013) Experimental Study of Oil Supply Pressure Effects on Bearing Friction in Hydrodynamic Lubrication, Applied Mechanics and Materials, Vol. 315 (2013) pp 977-981; ISSN:16609336; Index: SCOPUS, H Index 9, Q4
25. Diyar I. Ahmed, **S. Kasolang**, Balasem Salem S., Basim A. Khidhir, B.F. Yousif (2013) Prediction of Maximum Oil-Film Pressure in Journal Bearing using Fuzzy Logic and Particle Swam Optimization Approaches, Australian Journal of Basic and Applied Science, 7(4): 505-514; ISSN:19918178; ISSN 1991-8178; Indexed: ISI/Thomson Reuters; H Index 10, Q3
26. Diyar I. Ahmed, **S. Kasolang**, Balasem Salem S., Basim A. Khidhir, B.F. Yousif, (2013) Model-Based Design of Experiments for Oil-Film Temperature in Hydrodynamic Journal Bearing, Australian Journal of Basic and Applied Sciences, 7(4): 505-514: ISSN 1991-8178; Indexed: ISI/Thomson Reuters; H Index 10, Q3
27. Diyar I. Ahmed, **S. Kasolang**, Basim A. Khidhir, N.R. Abdullah (2013) Application of Response Surface Methodology to Predict Oil-Film Friction in Journal Bearing, Applied Mechanics and Materials, Vol. 393 (2013) pp 881-887; ISSN:16609336; Index: SCOPUS, H Index 9, Q4
28. Diyar I. Ahmed, **S. Kasolang**, Basim A. Khidhir, C.F. Mat Taib (2013) Application of fuzzy logic approach to predict maximum oil-film pressure in journal bearing, Applied Mechanics and Materials, Vol. 393 (2013) pp 881-887; ISSN:16609336; Index: SCOPUS, H Index 9, Q4

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30. Noor Azlina Mohd. Salleh, **Salmiah Kasolang**, Hj Ahmed Jaafar, Azianti Ismail (2013) Green Lean TQM Suppliers, Organization and Customers Management, Applied Mechanics and Materials, Vol. 393 (2013) pp 29-35; ISSN:16609336; Index: SCOPUS, H Index 9, Q4
31. Norhanifah Abdul Rahman, **Salmiah Kasolang**, Mohamad Ali Ahmad, and Mimi Azlina Abu Bakar (2013) Analysis of Transmission Fluid in Manual Diesel Engine by Ferrographic Technique, Applied Mechanics and Materials, Vol. 393 (2013) pp 925-930; ISSN:16609336; Index: SCOPUS, H Index 7, Q4
32. Syazuan Abdul Latip, **Salmiah Kasolang**, Siti Khadijah Alias, Amirul Abd Rashid, Abdul Hakim Abdullah, Syarifah Yunus (2013) Wear Particle Characterization and Severity Evaluation of Perodua Myvi 1.3L Automatic Transmission (AT) Fluid, Applied Mechanics and Materials, Vol. 393 (2013) pp 925-930; ISSN:16609336; Index: SCOPUS, H Index 9, Q4
33. C.F. Mat Taib, Abdul Aziz Jaafar, **S. Kasolang** (2013) Numerical Study of Winglet Cant Angle Effect on Wing Performance at Low Reynolds Number, Applied Mechanics and Materials, Vol. 393 (2013) pp 366-371; ISSN:16609336; Index: SCOPUS, H Index 9, Q4
34. Mimi Azlina Abu Bakar, Sahrim Ahmad, Wahyu Kuntjoro, **Salmiah Kasolang** (2013) Effect of Carbon Fibre Ratio to the Impact Properties Of Hybrid Kenaf/Carbon Fibre Reinforced Epoxy Composites, Applied Mechanics and Materials, Vol. 393 pp 136-139; ISSN:16609336; Index: SCOPUS, H Index 9, Q4
35. N.R. Nik Roselina, Koay Mei Hyie, C.M. Mardziah, **S. Kasolang**, S.K. Alias, Z. Salleh (2013) Synthesis Route Towards Fine and Monodisperse Ni Nanoparticles via Hot-Injection Approach, Applied Mechanics and Materials, Vol. 393 (2013) pp 146-151; ISSN:16609336; Index: SCOPUS, H Index 9, Q4
36. MA Ahmad, **S Kasolang**, R Dwyer-Joyce (2013) [The Effects of Oil Supply Pressure at Different Groove Position on Frictional Force and Torque in Journal Bearing Lubrication](#), Procedia Engineering Vol 68, pp 70-76; ISSN:1877-7058; Index: SCOPUS, H Index 7, Q3
37. NA Resali, KM Hyie, MN Berhan, Z Salleh, **S Kasolang** (2013) [Cobalt-nickel-iron Nanoparticles Coated on Stainless Steel Substrate](#), Procedia Engineering , Vol. 68, pp 30-36; ISSN:1877-7058; Index: SCOPUS, H Index 7, Q3



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38. NR Abdullah, NS Shahrudin, AMI Mamat, **S Kasolang**, A Zulkifli (2013) [Effects of Air Intake Pressure to the Fuel Economy and Exhaust Emissions on a Small SI Engine](#), Procedia Engineering Vol 68, pp 278-284; ISSN:1877-7058; Index: SCOPUS, H Index 7, Q3
39. SA Latip, **S Kasolang**, SK Alias, S Yunus, AH Abdullah, N Jenal (2013) [Wear Elemental Spectrometric Quantitative Analysis of Used Perodua Automatic Transmission Fluid-3 Series \(ATF-3\)](#), Procedia Engineering Vol 68, pp 193-198; ISSN:1877-7058; Index: SCOPUS, H Index 7, Q3
40. NA Nordin, FM Yussof, **S Kasolang**, Z Salleh, MA Ahmad (2013) [Wear Rate of Natural Fibre: Long Kenaf Composite](#), Procedia Engineering Vol 68, pp 145-151; ISSN:1877-7058; Index: SCOPUS, H Index 7, Q3
41. SK Alias, B Abdullah, A Jaffar, SA Latip, **S Kasolang**, MF Izham (2013) [Mechanical Properties of Paste Carburized ASTM A516 Steel](#), Procedia Engineering Vol 68, pp 525-530; ISSN:1877-7058; Index: SCOPUS, H Index 7, Q3
42. MA Ahmad, **S Kasolang**, RS Dwyer-Joyce (2014) [Experimental study on the effects of oil groove location on temperature and pressure profiles in journal bearing lubrication](#), Tribology International Vol 74, pp 79-86; ISSN:0301679x; Index: SCOPUS/ISI; H Index 56, Q1; IF 1.536
43. DI Ahmed, **S Kasolang**, A Bakar, M Yousif (2014) [Alternative Lubricant Based on Renewable Resources for Industrial Applications](#), Advanced Materials Research Vol 894, pp 275-279; ISSN:16609336; Index: SCOPUS, H Index 12, Q4
44. MA Ahmad, **S Kasolang**, RS Dwyer-Joyce, A Jumahat (2014) [The Effects of Oil Supply Pressure at different Groove Position on Temperature and Pressure Profile in Journal Bearing](#) Jurnal Teknologi Vol 66 (3), pp 113-116; ISSN: 01279696; Index: SCOPUS, H Index 1, Q4
45. [Jumahat, A.](#), [Amir, W.W.](#), [Soutis, C.](#), **[Kasolang, S](#)** (2014) [Flexural response of nanoclay-modified epoxy polymers](#), [Materials Research Innovations](#), Vol 18, pp. S6-280-S6-285; Index; SCOPUS, H Index 37, Q3
46. [Ghaffar, Z.A.](#), **[Kasolang, S.](#)**, [Hamid, A.H.A.](#) (2014) [Characteristics of swirl effervescent atomizer spray angle](#), [Applied Mechanics and Materials](#), Vol 607, pp. 108-111; SCOPUS, H Index 11, Q3

# PUBLICATIONS (Mohamad Ali)

1. **Ahmad, M. A.**, Kasolang, S., & Dwyer-Joyce, R. S. (2014). Experimental study on the effects of oil groove location on temperature and pressure profiles in journal bearing lubrication. *Tribology International*, 74, 79-86.
2. **Ahmad, M. A.**, Kasolang, S., & Dwyer-Joyce, R. (2013). The Effects of Oil Supply Pressure at Different Groove Position on Frictional Force and Torque in Journal Bearing Lubrication. *Procedia Engineering*, 68, 70-76.
3. **Ahmad, M. A.**, Kasolang, S., Dwyer-Joyce, R., & Bakar, M. A. A. (2013). The Effects of Oil Groove Position on Torque and Frictional Force in Hydrodynamic Journal Bearing. *Applied Mechanics and Materials*, 393, 907-912.
4. Abdul Rahman, N., Kasolang, S., **Ahmad, M. A.**, & Bakar, M. A. A. (2013). Analysis of Transmission Fluid in Manual Diesel Engine by Ferrographic Technique. *Applied Mechanics and Materials*, 393, 925-930.
5. **Ahmad, M. A.**, Kasolang, S., & Dwyer-Joyce, R. (2013). Experimental Study of Oil Supply Pressure Effects on Bearing Friction in Hydrodynamic Lubrication. *Applied Mechanics and Materials*, 315, 977-981.
6. Kasolang, S., Dwyer Joyce, R. S., & **Ahmad, M. A.** (2013). PZT transducer design and pulsing optimization for film thickness and viscosity measurement. *Sensors and Actuators A: Physical*, 203, 386-393.
7. **Ahmad, M. A.**, Kasolang, S., Dwyer-Joyce, R., & Abdullah, N. R. (2013). The Effect of Oil Supply Pressure on the Circumferential Pressure Profile in Hydrodynamic Journal Bearing. *Applied Mechanics and Materials*, 315, 809-814.
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# PUBLICATIONS (Mohamad Ali)

9. Ghani, M. A. A., Kamal, A. F., **Ahmad, M. A.**, Taib, Y. M. D., Salleh, Z., & Alias, S. K. (2013). Slurry Wear Test of Long Kenaf Polyester Composite (LKPC) and Long Kenaf Polyester with Fiberglass Composite. *Applied Mechanics and Materials*, 393, 919-924.
10. Kasolang, S., **Ahmad, M. A.**, Joyce, R. D., & Tai, C. F. M. (2012). Preliminary Study of Pressure Profile in Hydrodynamic Lubrication Journal Bearing. *Procedia Engineering*, 41, 1743-1749
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12. Kasolang, S., Kalam, A., & **Ahmad, M. A.** (2011). Dry Sliding Wear of Oil Palm Empty Fruit Bunch (OPEFB) Epoxy Composite. *Advanced Materials Research*, 308, 1535-1539.
13. Kasolang, S., Kalam, A., **Ahmad, M. A.**, Rahman, N. A., & Suhadah, W. N. (2012, June). Abrasive wear: The effects of fibres size on oil palm empty fruit bunch polyester composite. In *THE 4TH INTERNATIONAL MEETING OF ADVANCES IN THERMOFLUIDS (IMAT 2011)* (Vol. 1440, No. 1, pp. 1169-1174). AIP Publishing.
14. Kasolang, S., **Ahmad, M. A.**, & Dwyer Joyce, R. S. (2011). Measurement of circumferential viscosity profile in stationary journal bearing by shear ultrasonic reflection. *Tribology International*, 44(11), 1264-1270.
15. Kasolang, S., **Ahmad, M. A.**, Ghazali, F. A., & Azmi, A. M. (2011). Preliminary study of dry sliding wear in Kenaf Epoxy and Carbon Epoxy composites. *Applied Mechanics and Materials*, 52, 464-469.
16. Kasolang, S., **Ahmad, M. A.**, & Joyce, R. D. (2010, April). Viscosity profile measurement in journal bearing by shear ultrasonic reflection. In *Computer Engineering and Technology (ICCET), 2010 2nd International Conference on* (Vol. 5, pp. V5-41). IEEE.

# PUBLICATIONS (Mimi Azlina)

1. **Mimi Azlina Abu Bakar** and Valliyappan David a/l Natarajan. 2005. Effects of binders on the porosity and strength of hydroxyapatite. *Journal of Solid State Science and Technology Letters*, 12, 1, 7
2. **MAA Bakar**, VD Natarajan, A Kalam and NH Kudiran. 2007. Mechanical properties of oil palm fibre reinforced epoxy for building short span bridge. *Proceedings of 13th International Conference on Experimental Mechanics*, pp97-98
3. **Abu Bakar, M.A.**, Ahmad, S. and Kuntjoro, W. 2010. The mechanical properties of treated and untreated kenaf fibre reinforced epoxy composite. *Journal of Biobased Materials and Bioenergy*, 4, 2, pp 159-163
4. **Abu Bakar, M.A.**, Ahmad, S. and Kuntjoro, W. 2010. Effect of gamma radiation surface treatment to the mechanical properties of short carbon fibre reinforced epoxy composites. *Canadian Journal of Scientific and Industrial Research*, 1, 3, pp 34-49
5. **Abu Bakar, M.A.**, Ahmad, S. and Kuntjoro, W. 2011. Effect of matrix modification to the mechanical properties of short carbon fibre reinforced epoxy composites. *Journal of Reinforced Plastics and Composites*, 30, 4, pp 357-361
6. **Mimi Azlina Abu Bakar**, Sahrim Hj Ahmad and Wahyu Kuntjoro. 2011. Effect of LENR addition to the mechanical properties of kenaf fibre reinforced epoxy composites. *International Journal of Plastic Technology*, 15, 1, pp 33-42
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8. **Mimi Azlina Abu Bakar**, Sahrim Hj Ahmad and Wahyu Kuntjoro. 2012. Effect of epoxidized natural rubber on mechanical properties of epoxy reinforced kenaf fibre composites. *Pertanika Journal of Science and Technology*, 20, 1, pp 141-149
9. Salmiah Kasolang, Mohamad Ali Ahmad, **Mimi Azlina Abu Bakar** and Ahmad Hussein Abdul Hamid. 2012. Specific wear rate of kenaf epoxy composite and oil palm empty fruit bunch (OPEFB) epoxy composite in dry sliding. *Jurnal Teknologi*, 58, pp85-88
10. **Mimi Azlina Abu Bakar**, Sahrim Ahmad, Wahyu Kuntjoro and Salmiah Kasolang. 2013. Effect of carbon fibre ratio to the impact properties of hybrid kenaf/carbon fibre reinforced epoxy composites. *Applied Mechanics and Materials*, 393, pp136-139
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# PUBLICATIONS (Mimi Azlina)

12. Mohamad Ali Ahmad, Salmiah Kasolang, Rob Dwyer-Joyce and **Mimi Azlina Abu Bakar**. 2013. The effects of oil groove position on torque and frictional force in hydrodynamic journal bearing, *Applied Mechanics and Materials*, 393, pp907-912.
13. N.R. Nik Roselina, A. Azizan, Koay Mei Hyie, Aidah Jumahat and **M.A. Abu Bakar**. 2013. Effect of pH on formation of Nickel nanostructures through chemical reduction method, *Procedia Engineering* 68, pp43-48
14. Norhazlin Hamzah, Yakub Md Taib and **Mimi Azlina Abu Bakar**. 2014. Tensile properties of untreated and treated long kenaf fiber/polyester composites, *Advanced Materials Research*, 871, pp179-183.
15. Siti Norazlini Abd Aziz, **Mimi Azlina Abu Bakar** and Muhammad Hussain Ismail. 2015. Effect of single binder palm stearin on sintered properties of hydroxyapatite scaffold, *Applied Mechanics and Materials*, 763, pp36-40.
16. Yusri H Muhammad, Sahrim Ahmad, **Mimi A Abu Bakar**, Abdullah A Mamun and Hans P Heim. 2015. Mechanical properties of hybrid glass/kenaf fibre-reinforced epoxy composite with matrix modification using liquid epoxidised natural rubber, *Journal of Reinforced Plastics and Composites*, 34 (11), pp896-906
17. **Mimi Azlina Abu Bakar**, Sahrim Ahmad, Salmiah Kasolang, Mohamad Ali Ahmad, Nik Roselina Nik Roseley and Wahyu Kuntjoro. 2015. Characterization of rubber toughened epoxy reinforced hybrid kenaf/carbon fiber via water absorption and thermal degradation, *Jurnal Teknologi UTM*, 76(3), pp81-85
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# Niche Area and Relevance of RIG

Tribology is a study related to wear, friction and lubrication. Alternatively, it can be defined as the science and technology of interacting surfaces in relative motion and other areas related to it. The word tribology is relatively new among research community in Malaysia. Tribology was first coined in 1964 by British Physicist David Tabor and Prof Peter Jost.

In Malaysian Context, there is Malaysian Tribology Society (MYTRIBOS) providing a platform for different research groups to work together. We are active members of MYTRIBOS. **Our niche lies in the specific areas of hydrodynamic lubrication specifically in bearings. Bearings are common components found in mechanical system such as automotive, railway, aeronautics, ships, agricultural machineries. In short, it is an important component of a transmission system.**

We also do wear and tear testing as well as lubrication formulation and testing. Our recent attempts are on bio tribology specifically looking at blood dynamics and bio mimetics on plants (lotus, *Pistia stratiotes*).



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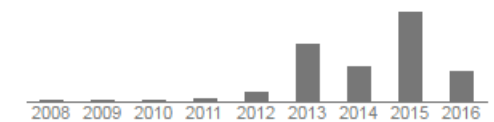
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# OPPORTUNITIES AND CHALLENGES

- There hasn't been a specific tribology lab in Malaysia going for National Center for Tribology.
- We would like take this opportunity to be the leading/pioneering group that initiate the work towards establishing a **National Center for Tribology**.
- The main challenge is equipment. Currently we have limited equipment.
- Current competitors are UMP and UTeM
- We need to move fast and perhaps establish a synergistic collaboration.

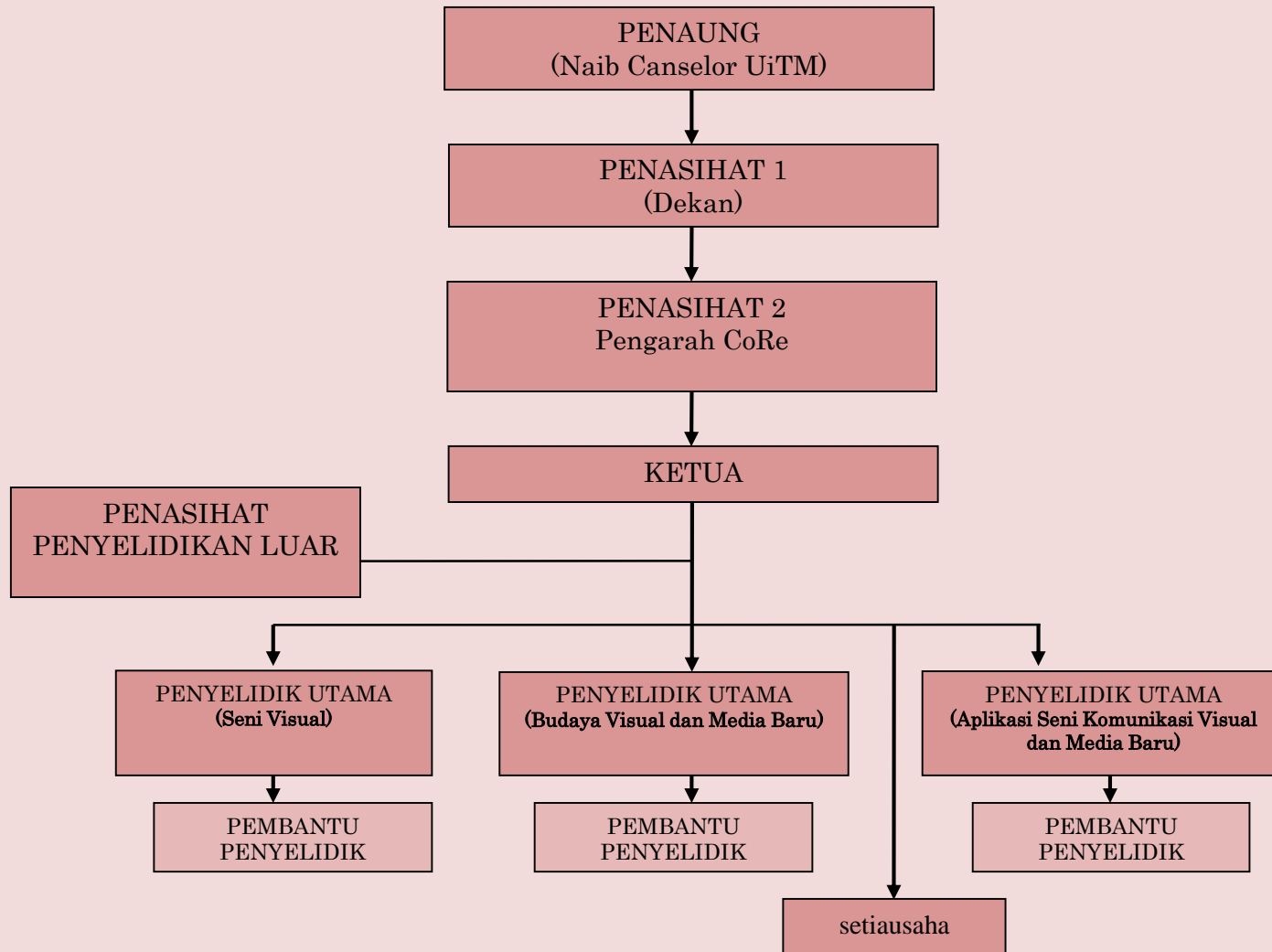
# Niche Area and Relevance of RIG

Transportation industry consists of many movable parts where the process of wear and friction are inevitable. This has caused billions in waste of resources and equipment breakdown. Our research interest group will focus on tribology properties especially in lubricants to reduce wear and friction. New technology and materials will be explored for green and efficient transportation system.

# NATIONAL KEY ECONOMIC AREAS (NKEA)



# Organizational Chart



# RIG Research Roadmap (5/10 yrs)

