

CURRICULUM VITAE

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PERSONAL DETAILS

Name : Professor Dr. Zakiah Ahmad
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Birth Date : 02 February 1963
Place of Birth : Muar Johor
Home Address : No 25, Jalan Daun Sal Satu 18/5A
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Current Position : Dean
Faculty of Civil Engineering
Universiti Teknologi Mara
40450 Shah Alam
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AREA OF SPECIALISATION

Timber Engineering, Timber adhesive composite, Wood/fibre cement composites, Glued-in rod

Scopus ID:

<https://www.scopus.com/authid/detail.uri?authorId=15080745800>

Google scholar:

https://scholar.google.com/citations?hl=en&user=REPM_yEAAAJ

ACADEMIC QUALIFICATION

Degree	Field	Name of Institution	Year
Ph.D	Timber Engineering	University of Bath, UK	2008
<i>PhD thesis: Nanoparticle-Filled Adhesives for Bonded-In Timber Connections</i>			
M.Sc.	Mathematics	University of Memphis, Memphis, USA	1995
B.Sc.	Civil Engineering	Memphis State University, Memphis, USA	1985

WORK EXPERIENCE

Period	Position	Organisation
October 2017- Sept 2021	Dean	Faculty of Civil Engineering, UiTM
January 2012 – Sept 2019	Director	Institute of Infrastructure Engineering and Sustainable Management, UiTM
September 2010- December 2011	Coordinator of Quality Unit	Faculty of Civil Engineering, UiTM
Sept 2008 – August 2010	Head of Division: Structures and Materials	Faculty of Civil Engineering, UiTM
September 2005 – September 2006	Graduate Assistant/Laboratory Demonstrator	Physics Laboratory, Department of Mechanical, University of Bath, UK
September 2004 March 2008	PhD candidate	University of Bath, UK
March 2001 – Sept 2004	Deputy Dean	Faculty of Civil Engineering UiTM
October 2001 – Feb 2002	Head of Construction Division	Faculty of Civil Engineering UiTM
1999-2001	Head of Program EC110	Faculty of Civil Engineering UiTM
September 1997- present	Lecturer	Appointment at Faculty of Civil Engineering, UiTM
1995-1996	Lecturer	A Level Programme, Center of Preparatory Studies, Institut Teknologi MARA, Sek 17 Shah Alam, Selangor
1993-1995	Graduate Research Assistant	Department of Statistics University of Memphis Memphis, USA

1993-1995	Master Candidate	Memphis State University, Memphis, USA
1986-1997	Lecturer	A Level Programme, Center of Preparatory Studies, Institut Teknologi MARA, Sek 17 Shah Alam, Selangor

TEACHING EXPERIENCE

1. COURSES TAUGHT

Courses & Codes	Course Level
Timber Engineering Design (ECS 735)	Post Graduate
Basic Structural Design (steel, reinforced concrete, timber) (ECS 458)	Undergraduate
Basic Steel and Timber Design (ECS 444)	Undergraduate
Construction Technology (ECM446)	Undergraduate
Construction Materials (ECM426)	Undergraduate
Numerical methods for Engineers	Undergraduate
Finite Element Methods	Undergraduate
Construction Business	Undergraduate
Dynamics and Statics	Undergraduate
Uncertainty Analysis	Undergraduate

2. STUDENTS SUPERVISION (2002-present)

23 PhD students (15 graduated, 1 waiting for viva, 1 converted from M.S.)

17 Masters (15 graduated)

25 Masters by course work (25 completed)

Supervised ~100 Bachelor students

PHD

No	Name	Thesis Title	Status
1	H'ng Paik San (UPM co-supervisor)	Mechanical properties of laminated veneer lumber from selected Malaysian Tropical Timber	Completed 2004
2	Rohana Binti Hassan	Tenon-and-mortice joint performance with GFRP dowels	Completed 2010
3	Amel Basher Ahmed Basher	Utilization of Kenaf Fiber in Cement Bonded Fiber Board	Completed 2013
4	Nurul Faizin Abdul Aziz	Mechanical properties and water absorption characteristic of kenaf-plastic composite	Completed Nov 2017
5	Wan Hazira Wan Mohamed	Development of glued laminated timber using lesser known timber species	Completed April 2018
6	Hasmawi Khalid	Production of Stud from phenol formaldehyde treated oil palm trunk laminated veneer lumber for concrete formwork	Completed March 2018
7	Rajisha K.R	Charaterization of Nanostarch Bio-Nanocomposites (Mahatma Gandhi University, Kerala, India)	Completed Jun 2018
8	Norshariza Mohamad Bhkari	Fatigue of glued laminated railway sleepers	Completed Oct 2018
9	Reza Andast Kazeroon	Structural performance of finger-jointed timber from Malaysian tropical Hardwood	Completed Sept 2018
10	Nur Illya Farhana Md Noh	Chemical and mechanical characterization of heat treated hardwood timbers	Completed March 2018
11	Nurul Izzatul Lydia Za'ba	Development of characteristic values for tensile strength of timber	Completed Sept 2019
12	Anis Binti Azmi	Development of Characteristic strength of bending strength properties of timber in accordance with Eurocode 5	Completed Dec 2019
13	Zulhazmee bin Yasin	Charring rate of Laminated Veneer Lumber (LVL) from Malaysian Tropical timber	Completed Jan 2020
14	Mohammad Soffi Md Noh	Behavior of Prefabricated Wall using woodwool panel under lateral loading	Completed Jan 2020
15	Adnie Binti Baharin	Development of Characteristic strength of compression strength properties of timber in accordance with Eurocode 5	Waiting for viva
16	Sajith Thottalhil Abdul Rahman	Development Of Flexible Thermoplastic Elastomer Composites For Neutron Shielding Applications	Completed May 2020

17	Sarina Ismail	Structural Performance of hybrid glulam roof trusses	Ongoing
18	Nor Azizah Muhammad Ghawbar	Structural performance of LVL roof trusses in comparison to solid timber	Ongoing
19	Atikah Fatma Binti Md Daud	Effect of density on the charring rate of glulam from Malaysian Tropical timber	Ongoing
20	Khairul Salleh Baharuddin)	Finite Element Analysis of Roof trusses from Laminated Veneer Lumber	On going
21	Muhammad Bazli Faliq Mohd Puaad	Torsional Modulus Of Elasticity from Malaysian Tropical Timber	Ongoing
22	Nurul Aini Salehuddin	Structural performance of wall constructed using kenaf brick	Ongoing
23	Nazatul Syuhada Zainal	Structural properties of Cross Laminated Timber from Malaysian Tropical Timber	On going

MASTERS

No	Name	Thesis Title	Status
1	Norhafizah Binti Abdul Wahab	Development of three-layered resin-bonded kenaf boards	Completed 2005
2	Ezahtul Shahreen Ab. Wahab	Compression behaviour of rubberwood LVLs	Completed 2005
3	Roqiyah Nur bt. Mohd Shariffudin	Joint behavior of rubberwood laminated veneer lumber (LVL) using multiple nail connectors (MNCs): The effect of cyclic boil dry (CBD) treatment	Completed 2005
4	Chuo Toung Wrn (co-supervisor UPM)	Effect of Cyclic Boil-dry on the strength properties of LVL produced from tropical hardwood species	Completed 2005
5	Rohana Hassan	Nondestructive testing of timber	Completed 2005
6	Muhammad Bazli Faliq Bin Mohd Puaad	The mechanical properties of structural size timber for lesser known timber species	Completed 2013
7	Hafizah binti Muhammad Azlan	The properties of repaired timber beam using bonded-in plate	Completed 2013
8	Nurul Izzatul Lydia Za'ba	Bonded-in timber connection manufactured using Malaysian tropical timber	Completed 2013
9	Lannie anak Francis	Durability and stability of glulam manufactured from Malaysian Tropical Timber	Completed 2015
10	Mohd Azran Bin Razlan	The effect of finger joint profile on the strength properties of timber beam	Completed 2016

11	Mohd Nazrin Bin Othman (co-supervisor)	Development of water retting system of kenaf for wastewater treatment and fiber processing	Completed 2017
12	Nabilah Huda binti Abdul Halim (co-supervisor)	Membrane fabrication for reclamation of wastewater from kenaf water retting process	Completed 2018
13	Syarifah Hanisah Bt Syed Mokhtarruddin	Durability Performance of Engineered Wood Product (Glulam) Treated with Preservative and Fire Retardant	Completed 2018
14	Amin Ali Alfakih (co-supervisor)	Compatibility study of wood particles with gypsum-cement binder by isothermal calorimetry	On-going
15	Mohd Za'im Mohd Nor	Effect of kenaf core and quarry dust as sand replacement in sand cement brick	Completed Dec 2019
16	Abdul Hadi Hassan	Thermal properties of kenaf fiber reinforced brick	On-going
17	Muhammad Shaiful Nordin	comparative assessment quality control test & evaluation on cross laminated timber bond from Malaysian Tropical timber (Keruing and Light Meranti)	On-going

MASTERS BY COURSEWORK

No	Name	Thesis Title	Status
1	Nurul Hani Bt Hasnan	Fracture toughness properties of kenaf fiber reinforced plastics	Completed 2010
2	Nurul Hana Bt Hasnan	Durability of kenaf fiber reinforced plastics	Completed 2010
3	Nur Marina Hani Ribot	Physical and mechanical properties of kenaf fiber reinforced plastic utilizing short fiber	Completed 2010
4	Azahan Mazlifah	FE analysis on the bending behavior of beams using interlocking brick	Completed 2010
5	Mohd Razmi	FE analysis on the behavior of wall constructed using woodwool panels	Completed 2010
6	Wan Hamizah	FE analysis of interlocking brick wall	Completed 2010
7	Zaidah	Behaviour of wall constructed using interlocking brick	Completed 2010
8	Norkhairiah	Behvaiour of wall constructed using woodwool panels	Completed 2010

9	Mohd Azrizal bin Aziz Fauzi	Development of wood shaving cement board using lesser known timber species	Completed 2010
10	Ardalan Mahshanian	Development of concrete column with embodied permanent formwork using woodwool panel	Completed 2011
11	Nor Salisa Mohd Zulkafely	Fire performance of reinforced concrete column embedded with woodwool panel	Completed 2011
12	Nurul Najmah Mohd Najib	Analysing the performance of bonded-in connection using finite element	Completed 2011
13	Rinaida Binti Rameli	A development of cement gypsum bonded fiberboard	Completed 2011
14	Mohd Firdaus Bin Barjumin	Behaviour of prefabricated wall using woodwool panel	Completed 2011
15	Afshin Kabiri Naëini	Effect of treated woodwool on mechanical properties of woodwool cement block	Completed 2011
16	Atikah Fatmah Binti Md Daud	Mechanical properties of sand-cement-quarry sand block	Completed 2012
17	Maureen Jurliel Binti Abdullah	Strength properties of brick masonry prisms and wallettes under compression	Completed 2012
18	Zulhazmee bin Yasin	Compressive strength of hollow quarry sand-cement block masonry column	Completed 2012
19	Mohd Hanafie Bin Yasin	Fatigue behavior of bonded-in pulturded rod into timber	Completed 2012
20	Afifah Azrae	Tensile and bending properties of kenaf waste composite ceiling board	Completed 2013
21	Amy Rozalind Binti Kamarulzaman	Comparative study on the jointed strength of timber connected with fastener and adhesively Bonded-in GFRP rod	Completed 2014
22	Sophia Jarva Anak Subah	A study on T-Piece timber jointed in adhesively bonded-in GFRP rod subjected to bending moment and shear force	Completed 2015
23	Akmalina Ab Rahman	Effect of moisture content on the Modulus of Elasticity of timber using NDT and static test	Completed 2015
24	Muhammad Farhan Hafiz Mohamad Munir	Shear strength of adhesively bonded timber	Completed 2016
25	Nazatul Zainal Syuhada	Bending properties of Laminated Veneer Lumber from low density timber	Completed 2017

AWARDS

1. SERVICES

Excellent Service Award 1996

Excellent Service Award 2002

Excellent Service Award 2018

2. RESEARCH

INTERNATIONAL

YEAR	TYPE
2019	<p>Gold Medal at 28th International Invention, Innovation & Technology Exhibition (ITEX), May 11-13, 2017. Malaysia</p> <ul style="list-style-type: none">• Kenaf Core Fine Aggregate (KECPFA) <p>Gold Medal at Pecipta 2019, 22-23 September, UTHM, Malaysia</p>
2018	<p>Bronze Medal at 29th International Invention, Innovation & Technology Exhibition (ITEX), May 10-12, 2018. Malaysia</p> <ul style="list-style-type: none">• 100% Oil Palm Plywood Through Innovative Pre-drying Technology
2017	<p>Grand award at Pecipta 2017, 7-9 October 2017, Malaysia</p> <p>Gold Award at Pecipta 2017, 7-9 October 2017, Malaysia</p> <ul style="list-style-type: none">• Glued Laminated Timber Sleepers from Malaysian Tropical Timber <p>Special Award from Indonesia Invention and Innovation Promotion Association at Seoul International Invention Fair (SIIF), 30 Nov – 3 Dec, 2017, COEX, Seoul, South Korea</p> <p>Bronze Award at Seoul International Invention Fair (SIIF), 30 Nov – 3 Dec, 2017, COEX, Seoul, South Korea</p> <ul style="list-style-type: none">• Engineered glulam timber sleepers from tropical heavy hardwood <p>Silver Award at Seoul International Invention Fair (SIIF), 30 Nov – 3 Dec, 2017, COEX, Seoul, South Korea</p> <ul style="list-style-type: none">• prefabricated woodwool panel with monolithic connection system <p>Silver Medal at 28th International Invention, Innovation & Technology Exhibition (ITEX), May 11-13, 2017. Malaysia</p> <ul style="list-style-type: none">• Landfill Leachate and Industrial Wastewater Treatment with

Silver Medal at 28th International Invention, Innovation & Technology Exhibition (ITEX), May 11-13, 2017. Malaysia

- Contaminants Removal from Aqueous Solution by a new subsurface and surface flow constructed wetland

2016 **Gold Award** at 27TH International Invention, Innovation & Technology Exhibition (ITEX) 2016

- SOFAZ: Green Prefabricated Woodwool Wall,

2 Bronze Awards at 15th Malaysian Technology Exhibition (MTE) 2016

- Prefabricated Wall Constructed Using Wood-Wool Cement Composite Panel,
- Glued Laminated Timber Sleepers from Malaysian Tropical Timber

Best Design Award from Japan Intellectual Property Association at 15th Malaysian Technology Exhibition (MTE) 2016

- Prefabricated Wall Constructed Using Wood-Wool Cement Composite Panel

Silver Award at International Invention of Geneva Salon, Geneva, 2016

- Green Prefabricated WoodWool Wall Panel

Special Award for excellent invention from National Research Council of Thailand, at International Invention of Geneva Salon, Geneva 2016.

- Green Prefabricated Woodwool Wall Panel

2010 **Bronze award** Malaysian Technology Expo (MTE), 2010.

- Innovative Technique of mortise and Tenon Joint

2009 **Silver award** at Malaysian Technology Expo (MTE), 2009.

- Novel nano particles filled epoxy based adhesive for in-situ timber bonding.

Gold award at International Trade Fair Ideas Inventions New Products iENA 2009, Nuremberg, Germany

- Novel nano particles filled epoxy based adhesive for in-situ timber bonding.

2004 2 **Silver award** International Invention, Innovation & Technology Exhibition (ITEX) 2004.

- a. Impedence and admittance nondestructive testing systems for timber engineering applications (IA-NDTS)
- b. Novel Method for Detection of Defects in Concrete Structures

Bronze award International Invention, Innovation & Technology Exhibition (ITEX) 2004

- Moisture Density Meter.

Silver award at Seoul International Invention Fair (SIIF2004), Korea

- Concrete reinforced with oil palm trunk fibre'
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NATIONAL

YEAR	TYPE
2019	<p>Hadiah Utama Kategori Institut Pengajian Tinggi (Trofi, sijil dan Cek RM10,000), di Anugerah Inovasi Negeri Selangir (AINS)</p> <ul style="list-style-type: none"> • Glued laminated timber railway sleepers from Malaysian Tropical Hardwood <p>Silver Medal at Invention, Innovation & Design Exposition, IIDEX 2019, UiTM</p> <ul style="list-style-type: none"> • Engineered panels of cross laminated timber from Malaysian Tropical Hardwoods
2018	<p>Gold Award at Invention, Innovation & Design Exposition, IIDEX 2018, UiTM</p> <ul style="list-style-type: none"> • Kenaf Core Fine Aggregate (KECOFA)
2017	<p>Silver Medal Malaysian Technology Expo (MTE), 2017</p> <ul style="list-style-type: none"> • Coal Ash Lightweight Block (CaLiB)
2015	<p>2 Silver Awards at Invention, Innovation & Design Exposition, iidex 2015, UiTM</p> <ul style="list-style-type: none"> • Glued laminated timber railway sleepers • Development of Green Prefabricated Wall Constructed Using Wood-Wool Cement Composite Panel (WWCP) <p>Bronze award for project at Invention, Innovation & Design Exposition, iidex 2015, UiTM</p> <ul style="list-style-type: none"> • Kenaf reinforced clay roof tiles
2014	<p>Gold Award at Invention, Innovation & Design Exposition, IIDEX 2014, UiTM</p> <ul style="list-style-type: none"> • Lite Paver <p>Diamond Award- Invention(Inventor) at Invention, Innovation & Design Exposition, IIDEX 2014, UiTM</p> <ul style="list-style-type: none"> • Lite Paver
2012	<p>Silver award at Innovation and Design Competition (RIID) Melaka.</p> <ul style="list-style-type: none"> • Woodwool composite panels as intergrated structural members formworks
2011	<p>Silver award at Innovation, Invention and Design Competition, IID 2011 UiTM Penang</p> <ul style="list-style-type: none"> • Green composite using cement based matrix reinforced with woodwool from fast grown timber species, Kelampayan (<i>Neolamarckia Cadamba</i>)¹
2010	<p>Gold award at Invention, Innovation & Design Exposition, IIDEX 2010, UiTM</p> <ul style="list-style-type: none"> • Innovative Technique of mortise and Tenon Joint <p>First Prize Award at exhibition organised by Ministry Plantation Industries and Commodities, Putra Jaya. 2010.</p>

	<ul style="list-style-type: none"> Woodwool Composite Panels as Intergrated Structural Members Formworks
2009	<p>Gold award at Invention, Innovation & Design Exposition, IDEX 2009, UiTM</p> <ul style="list-style-type: none"> Novel nano particles filled epoxy based adhesive for in-situ timber bonding
2003	<p>Silver award at MOSTE 2003</p> <ul style="list-style-type: none"> The use of oil palm trunk fiber as concrete reinforcement",
2002	<p>2 Bronze awards at Invention, Innovation & Design Exposition, IDEX 2002, UiTM</p> <ol style="list-style-type: none"> The use of oil palm trunk fiber as concrete reinforcement The use of rubber wood laminated veneer lumber for roof truss application <p>Gold award at Invention and Innovation Competition, UPM (2002)</p> <ul style="list-style-type: none"> Laminated Veneer Lumber From Malaysian Tropical Timber: A New Building Material

3. OTHERS

YEAR	TYPE
2019	<p>Anugerah Kepimpinan Akademik (Trofi, sijil dan Cek RM5,000) dari Bahagian Hal Ehwal Akademik UiTM</p> <p>Anugerah Standard Kebangsaan, (National Standard Award) (Trophy, certificate dan RM5,000) from Department of Standards Malaysia and Malaysian Ministry of International Trade and Industry</p> <p>Top Research Scientist from Malaysian Academy of Science</p>
2018	<p>Women in Education Leadership Award, Asia's Education Leadership Award, August 2018 from CMO Asia at Le Meridien, Singapore</p> <p>Women Super Achiever Award, April 2018, from the Golden Globe Tigers Education Leadership Award, Kuala Lumpur</p> <p>Exceptional Dedicated Innovative Academician & Distinguished Professional Achievement Award, 2018, Innovative Scientific Research Professional Malaysia</p>
2017	<p>Excellent Researcher Award at Research Summit Day, IRMI, Universiti Teknologi Mara</p> <p>Bronze Award for Highest Amount Category for Research grant (national/industry) at Research Summit Day, IRMI, Universiti Teknologi Mara</p> <p>Gold Award for Excellent Consultant at Research Summit Day, from IRMI, Universiti Teknologi Mara</p>

	<p>Recipient of travel grant from Woodsfield Timber Industries Sdn Bhd To attend International Mass Timber Conference, March 28-30, 2017 in Portland, Oregon, USA</p> <p>The best Researcher Award (Most Number of National Research Grants) at Majlis Anugerah Kecemerlangan Fakulti Kejuruteraan Awam</p> <p>The Highest Impact Writer (Highest H-Index) Award di Majlis Anugerah Kecemerlangan Fakulti Kejuruteraan Awam</p> <p>The Best Researcher Award (Highest amount @ value of national research grant) di Majlis Anugerah Kecemerlangan Fakulti Kejuruteraan Awam</p> <p>The Highest Achievement Award di Majlis Anugerah Kecemerlangan Fakulti Kejuruteraan Awam</p> <p>Anugerah The Most Influential (kategori staf akademik) pilihan staf di Majlis Malam Gala Fakulti Kejuruteraan Awam anjuran Kelab Kakitangan</p> <p>Anugerah The Most Admired (kategori staf akademik) pilihan staf di Majlis Malam Gala Fakulti Kejuruteraan anjuran Kelab Kakitangan.</p>
2016	Best Researcher Award at Academic Conference, Universiti Teknologi Mara
2014	Recipient of Mahatma Gandhi University Travel Grant To give talk on Kenaf Composite for Construction Materials at Center for Nanoscience and Nanotechnology, Mahatma Gandhi University
2012	<p>Appreciation Best Book Award at the Academic Publication Council of Malaysia (MAPIM) – Higher Education Ministry 2012 event for the book category: Science , Technology and Medical</p> <ul style="list-style-type: none"> Laminated Veneer Lumber from Malaysian Tropical Timber: Manufacturing and Design, UiTM Press.
2005	Excellent Scientist Award from Ministry of Higher Education
2003	Innovation Award: Lecturer Category from Bank Islam
2002	Recipient of travel grant from Wood Research Institute, Kyoto Japan Project: <i>Laminated Veneer Lumber (Collaborator. Prof. Dr Kohei Komutsu)</i>
2001	<p>Awards for 'The project that has commercial value' given by Biro Research and Consultancy, University Technology Mara, 2nd November 2001</p> <ul style="list-style-type: none"> for the project "The use of oil palm trunk fiber as concrete reinforcement" <p>Best presenter awards at 1st International Conference on Science and Social Research, 2nd November 2001.</p>

PUBLICATIONS

1. Refereed Journal

Mohamad W, Bhkari N, Ahmad Z. (2019). Bending and bonding properties of mixed-species glued laminated timber from merpauh, jelutong and sesendok, *Jurnal Teknologi* (2019) 81(4) 165-170, DOI: <https://dx.doi.org/10.11113/jt.v81.12557>

Azmi, A., Ahmad, Z., & Chen, L. W. (2019). Compressive strength properties of structural size malaysian tropical hardwood timber. *Malaysian Construction Research Journal*, 28(2), 21–29. ISSN: <https://www.google.com/search?q=issn%25904140>

Arshad, M. F., Nor, M. Z. M., Ahmad, Z., Ibrahim, M. H. W., & Salehuddin, N. A. B. (2019). Effect different type of fine aggregate to heat of hydration in cement mortar. *Malaysian Construction Research Journal*, 28(2), 31–37. ISSN: <https://www.google.com/search?q=issn%25904140>

Zaba, N. I. L., Ahmad, Z., & Chen, L. W. (2019). Tensile strength properties of small clear and structural size specimens of kempas, keruing and light red meranti. *Malaysian Construction Research Journal*, 28(2), 11–19. ISSN: <https://www.google.com/search?q=issn%25904140>

J Thomas, B Joseph, JP Jose, HJ Maria, P Main, A Ali Rahman, B Francis, Z Ahmad, S Thomas (2019), Recent advances in cross-linked polyethylene-based nanocomposites for high voltage engineering applications: A critical review, *Industrial & Engineering Chemistry Research*, 58(46), 20863–20879. <https://dx.doi.org/10.1021/acs.iecr.9b02172>. (Q1, IF: 4.978) (Citation:2, Readers 13)

NM Mahfuz, M Yusoff, Z Ahmad, (2019), Review of single clustering methods, *IAES International Journal of Artificial Intelligence*, 8(3), 221-227.

AA Wahab, MF Arshad, Z Ahmad, ARM Ridzuan, MHW Ibrahim (2018). Potential of Bottom Ash as sand replacement material to produce sand cement brick, *International Journal of Integrated Engineering* 10 (8). <https://dx.doi.org/10.30880/ijie.2018.10.08.007> (Q3, IF: 1.02)

Simon Aicher, Zakiah Ahmad, Maren Hirsch (2018), Bondline shear strength and wood failure of European and tropical hardwood glulams, *European Journal of Wood and Wood Products*, 1–18. <https://dx.doi.org/10.1007/s00107-018-1305-0> (Q1, IF: 1.901) (Citation:3, Readers 12)

A Mojiri, RM Tajuddin, Z Ahmad, L Ziyang, HA Aziz, NM Amin, (2018). Chromium (VI) and cadmium removal from aqueous solutions using the BAZLSC/cockle shell constructed wetland system: optimization with RSM, *International Journal of Environmental Science and Technology* 15 (9), 1949-1956 <https://dx.doi.org/10.1007/s13762-017-1561-2> (Q3, IF: 2.031) (Citation:3, Readers 13)

Z Ahmad, L Chen and Lees Hua. (2018). Behaviour of Walls Constructed using Kelempayan (*Neolamarckia cadamba*) Wood Wool Reinforced Cement Board, *Sains Malaysiana* 47 (8), 1897-1906. <https://dx.doi.org/10.17576/jsm-2018-4708-31> (Q2, IF:0.540)

Amel, B.A., Paridah, M.T., Rahim, S., H'Ng, P.S., Ahmad, Z., Hussein, A.S. (2017). Physical-mechanical characteristics of cement-bonded kenaf bast fibres composite boards with different densities, *Journal of Engineering Science and Technology*, 12(8), 2254-2267. <https://www.google.com/search?q=issn%18234690> (Q3; 0.193)

Md Noh, M.S, Shahidan, S, Ali, A., Kamarudin, A.F, S N Mokhatar , Razak, M.F.F.A., Ahmad, Z., and Ibrahim, A. (2017), Axial compression behaviour of cross laminated wood-wool panel wallettes, *Materials Science and Engineering*, 271 (2017) 012072 doi:10.1088/1757-899X/271/1/012072

L Francis, Z Ahmad (2017), Bonding performance of CCA treated glulam timber under different environmental exposure, *Journal of Engineering and Applied Sciences* 12 (16), 4047-4052. <https://dx.doi.org/10.3923/jeasci.2017.4047.4052> (Q 3; IF: 0.35)

Mojiri A., Ahmad Z., Tajuddin R.M., Arshad M.F., Gholami A. (2017). Ammonia, phosphate, phenol and copper(II) removal from aqueous solution by subsurface and surface flow constructed wetland. *Environmental Monitoring and Assessment*, 189(7): 337. (Q2, IF: 2.103) <https://dx.doi.org/10.1007/s10661-017-6052-x>. (Q2, IF:0.62) (Citation:8, Readers:19)

Mojiri A., Ahmad Z., Tajuddin R.M., Arshad M.F., Barrera V. (2017). Molybdenum(VI) Removal from Aqueous Solutions Using Bentonite and Powdered Cockle Shell; Optimization by Response Surface Methodology. *Global NEST Journal*, 19 (2), 232-240, <https://dx.doi.org/10.30955/gnj.001971> (Q3)

Vakili A.H., Selamat M.R.B., Aziz H.A., Mojiri A., Ahmad Z., Safarzadeh M. (2017). Treatment of dispersive clay soil by ZELIAC. *Geoderma*, 285: 270-279. <https://doi.org/10.1016/j.geoderma.2016.10.009>. (Q1, IF: 4.336)(Citation:12, Readers 25)

Zakiah Ahmad, Wei Chen Lum, Seng Hua Lee, Mohd Azran Razlan, Wan Hazira Wan Mohamad (2017). Mechanical properties of finger jointed beams fabricated from eight Malaysian hardwood species, *Construction and Building Materials*, 145, 464-473. <https://dx.doi.org/10.1016/j.conbuildmat.2017.04.016>. (Q1, IF:1.522) (Citation:2, Readers: 35)

Z Ahmad, WC Lum, SH Lee, R Rameli (2017). Preliminary study on properties evaluation of cement added gypsum board reinforced with kenaf (*Hibiscus cannabinus*) bast fibers, *Journal of the Indian Academy of Wood Science*, 14(1), 46-48. <https://dx.doi.org/10.1007/s13196-017-0186-x> (Q4; IF: 0.45)

Mojiri, A., Ziyang, L., Hui, W., Ahmad, Z., Tajuddin, R. M., Abu Amr, S. S., Farraji, H. (2017). Concentrated landfill leachate treatment with a combined system including electro-ozonation and composite adsorbent augmented sequencing batch reactor process. *Process Safety and Environmental Protection*, 111, 253–262. <https://dx.doi.org/10.1016/j.psep.2017.07.013>, (Q1, IF: 4.934)(Citation:13, Readers 35)

MBFM Puaad, Z Ahmad. (2017). Comparing the compressive strength properties of structural size and small clear specimens for Malaysian tropical timber, *Science International*, 29(1), 25-29.

Azizan, N.N.N., Ahmad, Z., Rahman, A.Ab., Baharin, A. (2016). Flexural strength properties of Kenaf Fibre Reinforced Plastic (KFRP) composite with addition of nano calcium carbonates, *Malaysian Construction Research Journal*, 19(2), 75-84

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Guidebook: Laminated Veneer Lumber – Light Structural Frames

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RESEARCH

1. RESEARCH GRANTS RECEIVED

a) National And Internal Grant

No.	Project Title	Duration	Amount (RM)	Source	Role
1	Concrete reinforced with oil palm trunk fibre	2001-2002	20000	Biro Research and Consultancy, UiTM	Leader
2	The awareness of risk management efforts and current practice of class A and G7 contractors in the Malaysian construction industry	2001-2002	20000	BRC UiTM	Member

3	Analysis and Design of Space Frame Connection Using Finite Element Analysis, collaborative work between Kolej Universiti Teknologi Tun Hussein Onn and Faculty of Civil Engineering, Universiti Teknologi Mara	2001-2002	15000	Kolej Universiti Teknologi Tun Hussein Onn	Leader
4	Mechanical properties of Laminated Veneer Lumber from Rubberwood	2002	2000	CHG Plywood Sdn. Bhd.	Leader
5	Manufacture of structural grade laminated veneer lumber from tropical hardwoods	1999-2001	277000	IRPA UPM, FRIM	Member
6	Bending strength of rectangular beams using reactive powder concrete (RPC) and reinforced with treated oil palm trunk fiber (OPTF) mesh.	2001-2002	10000	Biro Research and Consultancy, UiTM	Member
7	Microwave Non-destructive Testing for Characterization of Malaysian, Wood and Wood Products	2002-2004	20 000	Biro Research and Consultancy, UiTM	Member
8	Application of Parallel Plate Electrode System in Nondestructive Testing for Timber Engineering	2002-2003	20 000	Biro Research and Consultancy, UiTM	Member
9	Compression strength properties of structural size specimen from Malaysian tropical timber.	2002-2003	20 000	Biro Research and Consultancy, UiTM	Leader
10	Tensile strength properties of structural size timber specimen from Malaysian tropical timber.	2003-2004	20000	Biro Research and Consultancy, UiTM	Leader
11	Series of furniture design using laminated veneer lumber (LVL) technology.	2003-2004	20 000	Biro Research and Consultancy, UiTM	Member
12	Behaviour of concrete reinforced with kenaf fibre.	2003-2004	20 000	Biro Research and Consultancy, UiTM	Leader
13	Development of mortise and tenon joint for Malaysian tropical timber	2005-2008	50000	FRGS	Member
14	Increasing the Strength of Low Density Hard Wood through Densification for the Production of Structural Grade Material.	2007-2009	80 000	FRGS	Member

15	Development of glued-laminated timber (GLULAM) from selected Malaysian tropical timber (Malaysian Timber Industrial Board, MTIB)	2008-2011	3 million	LEVI Fund MTIB	Leader
16	Development of unidirectional kenaf fiber reinforced plastic composite	2009-2010	9500	UiTM Excellent fund	Leader
17	Novel Nano- Particles Filled Epoxy Based Adhesives for In-situ Timber Bonding	2009-2011	155000	E-Science Fund 03-01-01-SF0300	Leader
18	Investigation on the physl and mecha proeprties of biocomposite cement block manufactured using lesser known timber species for structural application	2009-2010	7000	UiTM Excellent fund	Leader
19	Experimental tension behaviour of dowelled mortise and tenon connections	2009-2010	30000	UiTM Excellent fund	Member
20	Kenaf Particulate Reinforced Polyethylene Composites Moisture Diffusion Model	2011-2013	105000	FRGS*	Member
21	Co-cured in-line joint fibre reinforced plastic composite adhesion strength theory	2011-2013	98000	FRGS	Member
22	Strength and durability of injection moulded high filler loading kenaf particulate reinforced polyethylene composites	2011-2012	8000	UiTM Excellent fund	Member
23	Characterization of fatigue properties of bonded-in pultruded rod timber connection	2011-2012	9000	UiTM Excellent fund	Leader
24	Enhancing the kenaf productivity of small farmers through innovative plantation and processing	2011-2013	200,000	Lembaga Kenaf dan Tembakau Negara (LKTN)	Leader
25	Development of roof trusses using engineered timber product	Dis 2011 – Nov 2013	1.28 million	JKR	Leader
26	Characterization of woodwool cement composite wall with openings subjected to axial and lateral loading	July 2012-July 2014	80,000	ERGS	Leader

27	Glass fibre reinforced polymer (GFRP) as an advanced material in glulam timber joints applications	July 2012-July 2014	80,000	ERGS	Member
28	Hydration reaction wood-synthetic gypsum complex binder isothermal calorimetry model	July 2012-July 2013	32,000	UiTM Excellent fund*	Member
29	Lateral Resistance Timber Joints Monte Carlo Simulation	July 2012-July 2013	32,000	UiTM Excellent fund	Member
30	Heat treated hardwood timbers chemical and mechanical characterization	Dec 2012-Nov 2014	75,000	RAGS*	Member
31	Kenaf cellulose nano-whiskers natural rubber composite spectroscopic and thermal analysis	Dec 2012-Nove 2014	32,000	RIF*	Member
32	Tensile resistance of composite timber connections european yield model	Dec 2012-Nov 2014	80,000	RAGS	Member
33	Development of data for limit state design for timber	June 2013 – Dec 2015	5,000,000	EPU	Leader
34	Thermal and visco-elastic characterization of kenaf cellulose nano-whiskers natural rubber composite	Sept 2013-Sept 2015	65,000	RAGS*	Member
35	Lateral Resistance Timber Joints Monte Carlo Simulation	Sept 2013-Sept 2015	65,000	RAGS	Member
36	Effects of Moisture content on the dynamic Estimation of stiffness in green hardwood	Dec 2014 – Nov 2016	70,000	RAGS*	Member
37	Bond durability Characterization of Chromated Copper Arsenate (CCA) Preservative treated glued laminated timber	Dec 2014 – Nov 2016	80,000	RAGS*	Member
38	Strength and interface adhesion mechanism of in-plane shear loaded thick adhesive joints	Dec 2014 – Nov 2016	80,000	RAGS*	Member
39	Enhancing kenaf productivity through product development	Dis 2015-Nov 2017	500,000	LKTN	Leader
40	Fatigue performance of glued Laminated timber railway sleepers	Jun 2015-Mei 2017	245500	ESCIENCE 03-01-01-SF0724	Leader

	Using selected malaysian tropical Hardwood				
41	Derivation of shear modulus of timber through state of pure shear action with saint-venant theory	Ogos 2016 - Julai 2018	114000	FRGS* FRGS/1/2016/ TK06/UITM/03/1	Member
42	Green prefabricated woodwool wall panel	Oct 2016- Oct 2018	175000	PRGS 600-IRMI/PRGS 5/3 (0006/2016)	Leader
43	Absorption capability of neutron radiation for rubber-based/polyethylene/boron blend composites	July 2019-Jun 2020	30000	Lestari	Member
44	Timber opinionated text analytic model inspired by associative learning polyphagous grasshopper	Jan 2019- Dec 2021	73000	FRGS	Member
45	Strength classification of visually graded tropical timber to EN 14081-1 and EN 384	Sept 2019- May 2020	337,210.95	MTIB	Leader

***Prepared the grant proposal and act as mentor to junior lecturers**

Total grant: RM 12561210.95

b) Industrial Research Funding Including Contract

No	Research Project	Source	Total Funds (RM)	Begin Year	Role
1	Prestress concrete slab	SmeCorp	175,000	2010	Leader
2	Outreach Programme- Introduction to Industrialised Building System (IBS) Modular Coordination & Computerized Industrialised Building System (CIBS) Portal Module	MIDA	541,600.00	2009	Member
3	Development of Woodwool Composite Panels As Intergrated Structural Members Formworks	FIDEC	162,000	2010	Leader
4	Modelling, Instrumentation, Testing, Monitoring and Evaluation of Existing and Retrofitted Manik Urai Bridge.	JKR	300,000	2012	Member

TOTAL 1,003,600.00

Overall total involved:	13564810.95
Total as project leader:	11257210.95

2. Consultancy Projects

No.	Activities	Amount (RM)	Year	Source
1	Load test for Steel-timber composite roof truss system.	15,000	2000	MITEK Asia Asia. Bhd
2	Mechanical properties of Laminated Veneer Lumber from Rubberwood	2,000	2000	CHG Plywood Sdn. Bhd.
3	Mechanical properties of solid timber	1,500	2009	Woodsfield Timber Industries Sdn Bhd.
4	Woodwool cement block	4,500	2009	Duralite Sdn. Bhd.
5	IBS lightweight wood-cement composite panels	11,700	2010	UEM
6	Wood-cement composite panels	5,500	2010	UEM
7	Interlocking Brick testing	30,500	2010	ID Interlocking Bricks Sdn Bhd
8	Mechanical properties of glulam	18,000	2010	Woodsfield Timber Industries Sdn Bhd.
9	Bending test glulam	18,000	2010	Lembaga Perindustiran Kayu Malaysia
10	Bending test glulam	7,000	2010	Lembaga Perindustiran Kayu Malaysia
11	Testing Interlocking brick	3,700	2010	IBS interlocking brick Sdn Bhd
12	Glulam testing	28,700	2010	Woodsfield Timber Industries Sdn Bhd
13	Glulam testing	14,200	2010	Woodsfield Timber Industries Sdn Bhd
14	Glulam design	43,999.88	2011	Jurutera Perunding Zainal & Mohamad Sdn Bhd
15	Testing Interlocking brick	30,000	2011	ID Interlocking Bricks Sdn. Bhd
16	Testing Woodwool panels	21,000	2011	FIDEC
17	Testing Pestress concrete	55,000	2011	IBS interlocking

				brick Sdn Bhd
18	Ujian Bahan (Fire test)	20,395	2012	Woodsfield Timber Sdn Bhd
19	Glulam projek	10,000	2012	Woodsfield Timber Sdn Bhd
20	Workshop on design and construction of RC column using integrated permanent formwork from woodwool panel	16,806	2012	FIDEC
21	Investigation on structural integrity of abandon school,	40,000	2013	Sek. Maahad Hadini, Kedah
	Testing of Glulam Beam	11,800	2014	Woodsfield Timber Ind. Sdn Bhd
22	Span table glued laminated timber	71,080	2014	Malaysian Timber Council
23	Testing Glulam sleepers	5,000	2014	Woodsfield Timber Ind. Sdn Bhd
24	Advising on manufacturing of glulam	10,000	2014	Woodsfield Timber Ind. Sdn Bhd
25	Testing Woodwool cement board	3,000	2014	Duralite Sdn Bhd
26	Testing of glulam curve beam for CFFRC projek	75,000	2015	JKR
27	Testing Pine sleepers	12,800	2015	Woodsfield Timber Ind. Sdn Bhd
28	Testing Treated pine sleepers	8,300	2015	Woodsfield Timber Ind. Sdn Bhd
29	Kajian Penggunaan Kayu Dalam Industri Pembinaan Di Malaysia	500,000	2016	MTIB
30	Treated Glulam	13,175	2016	Woodsfield Timber Ind. Sdn Bhd
31	Pengujian Glulam	10,300	2016	Woodsfield Timber Ind. Sdn Bhd
32	Glulam For Roof Truss	7,300	2016	Woodsfield Timber Ind. Sdn Bhd
33	Ujian Mampatan Untuk Tiub Kenaf Plastik Komposit	4,000	2016	LKTN
34	Development Of Silica Nano Particles Filled Xlpe-Based Electrical Insulation For Medium Voltage Power Cable	475,000	2016	TNBR
35	Permuliharaan dan naik taraf muzium di raja istana lama Seri Menanti	133,000	2016-2018	NTQT SDN BHD
36	Cadangan Merekabentuk Dan Membina Pembaikan Cerun Di Persiaran 1, Bandar Baru Selayang-Sub Surface Investigation	4,000	2017	Geotrend Sdn Bhd

37	Water Retting Of Kenaf Fiber	10,000	2015-2016	LKTN
38	Design Props And Checking Structural Integrity	30,000	2017	Landasan Kapital (M) Sdn Bhd
39	PERUNDING JURUTEKNIK	149,900	2017	Ultra Platform Sdn Bhd
40	Glulam as expert panel	10,000	2017	Woodsfield Timber Industries Sdn Bhd
41	Program pembangunan produk kejuruteraan kayu (ETP) sebagai struktur di dalam sektor pembinaan – Cross laminated timber	1906778.88	Jan 2016- Dec 2020	MTIB
42	Compressive Strength Test Of Dss Shoring System For Full Scale Shoring Tower Of 5.0m Height	22,000	Jun-Ogos 2018	DAHTEC MARKETING SDN BHD
43	Creosote Timber Railway Sleepers	12,100	12/9-31/11/18	Hikmat Asia
44	CIMB Islamic Uitm Entrepreneurship Programme Benefiting FELDA Settlers	1,000,000	3/9/18-2/9/2020	CIMB Islamic Bank
45	Bending Strength, Delamination And Block Shear Test Of Keruing Glulam Beam	30,000	1/10-15/11/18	Woodsfield Timber Industries Sdn Bhd
TOTAL		4,912,035		

3. COPYRIGHT/PATENT

1. Glued laminated timber railway sleepers from Malaysian Tropical Timber.
Patent file PI2011002551: Team Leader
2. Concrete element with integrated permanent formwork from woodwool panels
Patent file PI 2012700705: Team Leader
3. Glued laminated timber railway sleepers from Malaysian Tropical Heavy Hardwood, 2016
Patent Filing 2018: Team Leader
4. SOFAZ WALL: Green Prefabricated wood-wool wall, 2016:
MyIPO LY2016000596: Team Leader
5. Monolithic connection of precast wall panel, 2017
MyIPO LY2017003264 : Team Leader
6. Moisture extraction solution (MEXS) for oil palm wood, 2017
MyIPO LY2017003268 : Member
7. Mized-species glulam beam from Malaysian Medium and Light Hardwood Timber, (2017)
MyIPO LY2017003567: Member
8. Kenaf core fine aggregate (KECOFA), 2018

MyIPO LY2018004210 : Member

9. 100% Oil palm plywood through innovative pre-drying technology,2018

MyIPO LY2018001941 : Member

4. VISITING SCIENTIST/PROFESSOR

YEAR	TYPE
2002-2004	Visiting researcher at Timber Research Institute, Kyoto University Japan
2010-2013	Visiting researcher at BRE Research Institute, University of Bath, United Kingdom
2014-2016	Visiting Professor at Centre for Nanoscience and Nanotechnology, School of Chemical Sciences, Mahatma Gandhi University, Priyadarshini Hills P. O. Kottayam, Kerala, India
2002-Present	Felo Researcher at Institute of Tropical Forest and Forest Product (INTROP)
2015-2017	Visiting Professor at University of British Columbia's, Okanagan Campus, Canada

EXTENSION AND ADVISORY SERVICES

1. TECHNICAL ASSESSOR

NATIONAL ASSESSOR

- a) Panel assessor for Ministry of Science, Technology and Innovation Malaysia (MOSTI) for projects:**

Project Title	Year	Company	Project Cost, RM
Development of steel-reinforced structural glued-laminated timber members for construction industry using timber resources	2001	Evamas Sdn. Bhd.	12,889,881

- b) Panel technical for project application under Industrial grant scheme (IGS) Ministry of Science, Technology and Environment Malaysia projects:**

Project Title	Year	Company	Project Cost, RM
Development of furniture manufactured using advanced composite and laminating veneer timber	2002	New Wave Century Sdn Bhd	5,835,000

c) Judge/assessor for competition/program (SELECTED ONLY)

Project Title	Year	Company	Project Cost, RM
Judge for Malaysian Agricultural Invention Show 2015(MAGIS)"	2015	MARDI	-
External examiner for Diploma Programme Faculty of Civil Engineering	5/2015-4/2016	Universiti Selangor (UNISEL)	-
Design Checker for 'glulam roof trusses' Hospital Setiu Terengganu.	Jan – Jun 2015	JKR	150,000
Structural integrity inspection for conservation project of Museum Istana Sri Menanti, Negeri Sembilan,	2016-2017	Museum Negeri Sembilan	2,000,000
Design checker for the construction of glulam gallery, Johor Bahru. (Timber Section)	2013	JKR and MTIB	5,000,000
Examiner Semester Matriculation Program: Panel for marking examination script (engineering)	2011	Ministry of Higher Education Malaysia	-
Jury for Malaysia Wood Awards (MWA)	2017	MTIB	-

INTERNATIONAL ASSESSOR

d) Panel assessor for External assessor (Technical) for international project:

Project Title	Year	Company	Project Cost, RM
Improving the structural performance of glued laminated timber beams through the application of conventional prestressing systems	2012	The Portuguese Foundation for Science and Technology (FCT)	350,000

2. DEVELOPMENT OF STANDARDS FOR TMBER AND TIMBER-BASED PRODUCTS

INTERNATIONAL STANDARDS

Particular	Secretariat/ sponsor	Position	Period
Malaysia Expert Panel to ISO TC 165 Timber Structures, Bogota, Colombia	Department of Standard Malaysia (DSM)	Expert Panel	23-26 Sept 2019
Malaysia Expert Panel to ISO TC 165 Timber Structures, Istanbul, Turki	Department of Standard Malaysia (DSM)	Expert Panel	9-13 Sept 2018
Malaysia Delegation to ISO TC 165 Timber Structures, Melbourne, Australia	Department of Standard Malaysia (DSM)	Member delegation	19-23 Sept 2016
ISO/TC 218 WG4: standard on wood composite	Department of Standard Malaysia (DSM)	Secretary	2015-present
Malaysia Delegation to ISO TC Timber Structures, Johor Bahru, Malaysia	Department of Standard Malaysia (DSM)	Member delegation	21-25 Sept 2015
ISO Standard for wood based panel : decorative veneered plywood and blockboard	Department of Standard Malaysia (DSM)	Member	2014-present
Malaysia Delegation to ISO TC Timber Structures, Stuttgart, Germany	Department of Standard Malaysia (DSM)	Member delegation	12-16 Sept 2013
Malaysia Delegation to ISO TC Timber Structures, Bali, Indonesia	Department of Standard Malaysia (DSM)	Member delegation	17 - 21 July 2011
Malaysia Delegation to ISO TC Timber Structures, Sidney, Australia	Department of Standard Malaysia (DSM)	Member delegation	Sept 2008

MALAYSIAN STANDARDS

Particular	Secretariat/ sponsor	Position	Period
Technical Committee for Timber Structures	MTIB	Chairman	2018-2023
Technical committee for Industrial Standard (ISC)	MTIB	Permenant Member	2018-2020

Technical committee for product certification system	MTIB	Member	2018-2020
Working Group Committee on Malaysian Standards MS 1714: Visual strength grading for tropical hardwood timber	MTIB	Member	2018- 2022
Working group for prescriptive specification towards performance based (Program revision for Uniform Building By Law 1984)	Ministry of Plantation Industry and Commodity (MPIC)	Member	2017-2019
Technical Committee for reviewing Uniform Building by Law 1984 on timber section	MTIB	Chairman	2017-2020
Working Group Committee on Standards for Code of Practice for the Structural Use of Timber: MS 758 Performance Requirements and Minimum Manufacturing Requirements (Second Revision) MS 578.	MTIB	Chairman	2017-present
Working Group Committee on Standards for Code of Practice for the Timber on visual grading	MTIB	Member	2017-present
Technical committee for plywood certification	MTIB	Member	2015 – present
Technical Committee for Timber Structures	MTIB	Chairman	2014-2015
Working Group Committee on Standards for Code of Practice for the Structural Use of Timber: MS 544: Part 11: Recommended span tables and their calculations	MTIB	Member	2013- 2016
Working Group Committee on Standards for Code of Practice for the Structural Use of Timber: MS 544: Part 1 : General	MTIB	Chairman	2015-2017
Working Group Committee on Standards for Code of Practice for the Structural Use of Timber: MS 544: Part 2 : Permissible stress design of solid timber	MTIB	Chairman	2015-2017
Working Group Committee on Standards for Code of Practice for the Structural Use of Timber: MS 544: Part 3 : Permissible stress design of glued laminated timber	MTIB	Chairman	2015-2017
Working Group Committee on Standards for Code of Practice for the Structural Use of Timber: MS 544: Part 8: Design, Fabrication and Installation of Prefabricated Timber Roof Trusses	MTIB	Member	2013-2016
Working Group Committee “Cadangan pindaan ke atas Undang-Undang Kecil	Kementerian Perumahan	Member	2013-sekarang

Bangunan Seragam (UKBS) 1984 bagi Tangga Tunggal dan Kayu	dan Kerajaan Tempatan		
Working Group Committee on Standards for MS 1224: Specification for Fiber Cement Symmetrically Corrugated Sheet and Fittings	SIRIM	Member	2010-2012
Working Group Committee 'CIDB/SWO/TC4: Code of Practise for Structural Use of Timber	CIDB	Member	2002-2004
Working Group Committee on Standards for MS 934: Specification for wood cement board	SIRIM	Member	2009-2011
Working Group Committee on Standards for Code of Practice for the Structural Use of Timber: MS 544: Part 12. Structural Laminated Veneer Lumber	CIDB	Member	1999- 2002
Working Group Committee on Standards for Glued Laminated Products: Performance Requirements and Minimum Manufacturing Requirements (First Revision) MS 578.	CIDB	Member	1998 - 2000

COMMITTEE MEMBERSHIPS

Particular	Secretariat	Position	Period
INTERNATIONAL			
The 2019 International Conference on Advances in Civil Engineering, Energy Resources and Environment Engineering (ACCESE 2019) June 28-30, 2019 in Jilin, China	College of Civil Engineering, Jilin Jianzu University, China	Member for the Scientific committee	2019
Wood&fire Safety 2020 Conference, 3-6 th May, the Patria Hotel, Štrbské Pleso Slovakia	Department of Agriculture, Slovakia	Member for the Scientific committee	2019
The International Conference on Civil Engineering, Environment Resources and Energy Materials (CCESEM 2019), Sept 20-22, 2019 Beijing, China	North China University of Technology	Chairman	2019
3 rd International Conference on Composite Material, Polymer Science and Engineering, CMPSE 2018, 21-22 Sept 2018, Osaka Japan	Dept of Mechanical and Intellectual System, Tokoyama, Japan	Program Committee	2018

2nd International Conference on Civil Engineering and Building Materials, Hong Kong, 17-18/11/2012	David Parker International Science and Engineering Research Center	International committee and scientific committee,	Nov 2011- Dec 2012
International Conference Advanced Micro nano Composites materials for Construction, 23-24/3/2012, Organised by Center for nanoscience & Nanotechnology, Mahatma Gandhi University, Kerala, India, Institute of Infrastructure Engineering & Sustainable Management and Faculty of Civil Engineering Univeriti Teknologi Mara, Malaysia	Mahatma Gandhi University	Conveners	Jan 2011- Mac 2012
Polymer conference (IMPC 2012), 23-24/3/2012, Organised by RMIT University, Australia and Center for Nanoscience and nanotechnology Mahatma Gandhi University, Kerala India.	RMIT Australia	Conveners	Jan 2011- Mac 2012
RILEM conference, University of Stuttgart, 2013.	MPA University of Stuttgart	Technical Advisory committee	2013
Asia-Pacific Journal of Modelling and Simulation for Mechanical System Design and Analysis	GV School Secretary	Editorial Board	2013 until present
National Seminar on Material Science and Modern Analytical Technique	M.P.M.M.S.N .Trust College Shoranur, India	Resource person	March 26-27, 2014
MAYFEB Journal of Civil Engineering	MAYFEB Canada	Editor	2015 until present
Malaysian Construction Journal (MCRJ)	CREAM	Guest Editor	2015 until present
The 4th International Conference on Advanced Materials Design and Mechanics (ICAMDM2016). 20th to 21st August 2016, Jeju Island, Korea (South)	ICAMDM	Guest Editor	Jan 2015- Aug 2016
International Civil and Infrastructure Engineering Conference 2015(InCIEC)	IIESM, University of Bath, UK dan Universiti Gajahmada , Indonesia	Advisory Committee	2015
the 4th International Conference on Metallurgy Technology and Materials (ICMTM2016), 21-22th, May,2016 in Bayview Hotel, Singapore	ICMTM.org	Program Committee Member	2016
The International Conference on Composite Material, Polymer Science and Engineering, 24-25 June, 2017, Toyoma, Japan.	University Toyoma, Japan	Program Committee	2017

NATIONAL

Technical Committee : Timber Structure	MTIB	Member	2007-present
		Chairman	2014-2015
		Member	2016-2017
		Chairman	2018-2020
Malaysian Council of Engineering Deans	Ministry of Education	Member	2017-2019
Committee for Development of Product from Oil Palm Trunk – <i>Focus group palmwood</i>	MTIB	Member	2018-present
'Jawatankuasa penganjur dan jawatankuasa teknikal FELDA 2.0 Timber Design Competition'	MTIB	Co-Chairman	2018
Malaysian Forest Products Society (MFPS)		Member	2008-present
Steering Technical Committee for Project: Development of glued laminated timber product from selected tropical timber	MTIB	Member	2008-2012
Committee for timber roof truss	MTIB	Member	2009-2012
Main committee for National Timber Policy (NATIP)	Kementerian Perusahaan Perladangan dan Komoditi	Member	2009-present
National Timber Industrialised Building System (IBS) Advisory Committee (NATIC)	MTIB	Member	2009-present
Glued Laminated Road Map	Malaysian Timber Council	Member	2009-present
Committee for 'Program galakan aplikasi IBS kayu dalam industry pembinaan	MTIB	Member	2010-present
National occupational skill standard (NOSS) for waterproof	CIDB	Member	2012-2013
Technical committee for the construction of glulam gallery, Johor Bahru.	JKR/MTIB	Expert panel	2012-2013
IBS Roadmap for timber	MTIB	Member	2012-2022
Technical Tender Committee for Supply, delivery, installation, Testing, Certify and Maintenance (in Warranty period) Equipment 'Torsion Tester With PC Based Software'	MTIB	Member	2014
Technical committee for the construction of CFFRC, Semenyih,	JKR	Expert panel	2013-2015

Main Committee for R&D Kenaf	Kementerian Perusahaan Perladangan dan Komoditi.	Member	2013 - present
Technical committee for the construction of MITI Pavillion in Milan, Italy	MITI	Expert panel	2015-2016
Committee for panel evaluation for E-Science fund	MOSTI	Panel	2016-present
Committee for panel evaluation for KPT research grant	KPT	Panel	2016-present
Technical Committee for 'Tender Perolehan Bahan Mentah Kayu Untuk Pembangunan Data Cross Laminated Timber (CLT) dan Produk Glued Laminated Timber (Glulam) bagi Lembaga Perindustrian Kayu Malaysia (MTIB) (No Tender : MTIB/T003/2017)	MTIB	Member	2017

UNIVERSITY (Selected only)

Faculty Academic Board	FKA	Member Chairman	2008-2017 2018-2019
Jawatankuasa Kelestarian	UiTM	Chairman	2018-2020
Budaya Perdana	UiTM	Chairman	2018-2020
'Jawatankuasa Induk Penilaian Akademik (JKIPA)'	UiTM	Member	2017-2019
Senate UiTM	UiTM	Member	2017-2019
'Majlis Penasihat Institut Pengangkutan Malaysia (MITRANS)'	MITRANS	Member	2018-2021
Jawatankuasa pelupusan aset tak alih	UiTM	Member	2018-present
'Jawatankuasa tata tertib akademik Fakulti Kejuruteraan Awam'	FKA	Chairman	2017-2019
'Jawatan kesepakaran'	FKA	Member Chairman	2009-2011 2017-2019
ISO Committee	FKA	Manager	2009-2011
Committee for postgraduate academic studies (JAPS)	FKA	Member Chairman	2012-2017 2017-2019
Committee: 'Projek Transformasi Trans4U UiTM bagi <i>Projek Keusahawanan Berintensifkan Penyelidikan</i> '	UiTM	Program Manager	2015 until present
'Jawatankuasa Entiti Kecemerlangan (JEK)'	UiTM	Member	2014-present
'Jawatankuasa penyediaan dasar dan garis	UiTM	Member	2014-

panduan entiti kecemerlangan'						present
Ahli	Majlis Keselamatan	Jabatan	Universiti	UiTM	Member	2014-present
Teknologi MARA						
Committee for 'Pusat Kecemerlangan (JPK)'				UiTM	Member	2015-present
Ahli	Mesyuarat	Jawatankuasa	Kecil	UiTM	Member	2015-present
Pembangunan Penyelidikan (JKPaP), Universiti Teknologi MARA (UiTM)						
Committee for Penyediaan Dasar dan Garis Panduan Entiti Kecemerlangan UiTM'				UiTM	Member	2016-present

OTHER EXPERTISE (Selected only)

1. INVITED/KEYNOTE SPEAKER:

INTERNATIONAL

Zakiah Ahmad(2019), Development of strength class for Tropical Hardwoods for Sustainable Future through Timber Construction6th International Timber Construction Symposium, 21-22 August 2019, Koreana Hotel, Seoul, organized by National Institute of Forest Science, Seoul, Korea.

Zakiah Ahmad(2019), Development of strength class for Tropical Hardwoods for Sustainable Future through Timber Construction2nd International Conference of Green Buildings and Environmental Management (GBEM2019), 14-16 June 2019, Guiyang, China. Organised by AEIC Guizhou Minzu University, China.

Zakiah Ahmad(2018), Driving Timber Construction in Malaysia through Standards Development, Workshop on ISO NP and Roles and Responsibilities of Project Leader, 19 September 2018. Bliston Swan Park View Hotel, Bangkok.

Zakiah Ahmad (2018). Application of nano-materials in construction. The workshop on Biomaterials for Tomorrow (B4T), 7th to 9th January 2018, at Kochi Marriot Hotel, Kochi, India.

Zakiah Ahmad(2018), Potential of tropical timber for high rise buildings-development of strength grades in the EN/ISO Standards, at the International Symposium on Application of Engineered Timber Products Towards High Rise Buildings: Challenges and Opportunities, 15 Nov. 2018, Hotel Istana Kuala Lumpur, Malaysia.

Zakiah Ahmad(2017) Tropical Hardwood Glue-laminated Timber Pioneering a new niche in Asean Country at The Second Indonesian Lightwood Cooperation Forum – ILCF, Thursday, October 12th, 2017 at the TradExpo 2017 Indonesia at ICE BSD in Tangerang, Indonesia.

Zakiah Ahmad(2017) Global Outlook Of Timber In Urban Development: Trends And Opportunities The 2nd Global Timber Conference 2017, 06 - 08 November 2017, Pullman Kuching, Sarawak, Malaysia.

Zakiah Ahmad(2017). Experience, recent developments and future in timber Structures, International Civil and Infrastructure Engineering Conference held in Semarang, Indonesia 7th Aug, 2017

Zakiah Ahmad (2015). Tropical Hardwood Glue-laminated Timber Pioneering a new niche in Malaysia, Singapore Build Smart Conference 2015, 16/10/15

Zakiah Ahmad (2015). Fire exposure, theory, and testing, Regional Workshop on Establishing cross-references on wood products quality assessments and standard testing among Asean member states, FRIM, 25-28 Mei 2015.

Zakiah Ahmad (2014). National Seminar on Micro and Nano Composite at Nanoscience and Nanotechnology, School of Chemical Sciences, Mahatma Gandhi University, 24 March 2014

Zakiah Ahmad (2014). National Seminar on Material Science and Modern Analytical Technique at M.P.M.M.S.N Trusts College Shoranur, Palakkad, Kerala India, Mac 26-27, 2014

Zakiah Ahmad (2011). Effect of nano- and micro-particles on the mechanical and thermal properties of epoxy-based adhesives for in-situ timber bonding'. First International Conference on Composite and Nanocomposites, 7-9 Januari 2011, Kerala India

NATIONAL

Zakiah Ahmad(2020), Workshop on Structural Timber and Glued Laminated Timber Design According to MS 544, 12-13 March 2020, Best Western I-City Ahah Alam, Selangor, Malaysia.

Zakiah Ahmad(2018), To provide guidance to engineer and architect in choosing wood product as construction materials, Seminar Wood Utilisation on Construction Structure, 3rd July 2018, Hotel Riverside Majestic, Kuching, Sarawak.

Zakiah Ahmad(2017). Experience, recent developments and future in timber Structures, Institute of Engineers Malaysia, Petaling Jaya. 4th July 2017.

Zakiah Ahmad(2017). Experience, recent developments and future in timber Structures, Institute of Engineers Malaysia, Petaling Jaya. 4th July 2017.

Zakiah Ahmad(2017). Experince in securing PRGS grant at PRGS workshop, Faculty of Mechanical , UiTM. 3 Feb 2017

Zakiah Ahmad (2016). Introduction to MS 544 Part 3, Permissible stress design, Workshop on design, manufacturing and qualification test for glulam, IIESM, Universiti Teknologi Mara, 2 June 2016.

Zakiah Ahmad (2016). Manufacturing of glulam and respective qualification tests, Workshop on design, manufacturing and qualification test for glulam, IIESM, Universiti Teknologi Mara, 2 June 2016.

Zakiah Ahmad (2016). The use of timber in construction, The Wood & Lifestyle Fair 2016, organized by Malaysian Timber Industry Board, 22 May 2016, PWTC, Kuala Lumpur

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Zakiah Ahmad (2015). Manufacturing of glued laminated timber in accordance with MS 758, Seminar on Malaysian Standard (MS) on Timber Structures, Seri Pacific Hotel, Kuala Lumpur 16/6/2015.

Zakiah Ahmad (2013) Glulam as alternative materials for construction; Called as an expert on timber engineering and presenting the benefit of using glulam for pavillion to be constructed in Milan. Project by MITI. The presentation was made to MITI, Hijaz Kasturi Architects, JKR engineers and Consultants.

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Zakiah Ahmad(2010), seminar on Structural Timber Design Topic: Assuring quality for timber, MTIB, 28 Oct 2010.

Zakiah Ahmad (2010), MTIB T-Talk with industry, Topic: potential for timber: application of timber in IBS in construction 19 Oct 2010.

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2. REVIEWER (Selected only)

Reviewer for book “Structural Analysis: Using Matrix Method”, Universiti Teknologi Malaysia. 2018.

Reviewer for journal paper: Fire test and effects of fire retardant on the natural ability of timber, Journal of Science and Technology, 2018.

Reviewer for journal paper: Growth characteristics and wood properties of two interspecific Eucalyptus Hybrids developed in Indonesia, Forest Product Journal, 2018.

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Reviewer for journal paper: Non-isothermal curing kinetics study of polyurethane-closite 30B composite adhesives using DSC analysis: Comparative study with pristine polyurethane adhesive, International Journal of Adhesion & Adhesives, 2016.

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1. Thermal gravimetry analyser (TGA) analysis on kenaf core and cellulose for membrane fabrication
2. Tensile behavior of bolted timber composite connection for merpauh (SG4)
3. Dowel bearing strength properties of glulam with and without glueline made of Mengkulang species
4. Evaluation on the thermal performance of selected tropical timber species.
5. Effect of GFRP sheet to the strength capacity of dowelled type timber connection
6. Nano filler reinforced intumescent fire retardant coating for protection of structural steel

Reviewer for journal paper: Influence of Water/Binder Ratio and Fibre Content on the Flow Values and Cohesion of Sisal Fibre Composites Part-I Cement Mortar Composites, Advanced composite with natural reinforcement, 2013.

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Yusof, M. F. Arshad, The 2013 IEEE Symposium on Humanities, Science & Engineering Research (SHUSER 2013); 2013.

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Reviewer for journal paper; Natural Resistance of Imported Woods Under Terrestrial Condition in Different Agro Eco Zones of India, Journal of Tropical Forest Science, 2012.

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Reviewer for conference paper: Influence of Iron oxide nano particles on electrospun poly (vinylidene fluoride)-based Carbon nanofibers on Hydrogen storage. Samaneh Shahgaldi, Zahira Yaakob, Norazrina Mat Jali, Dariush Jafar Khadem, Wan Ramli Wan Daud, Edy Herianto Majlan, Eighth International Conference on Composite Science and Technology Novotel Hotel Kuala Lumpur, Malaysia, March 22nd – 24th, 2011.

Reviewer for conference paper: An Investigation on Relative Post-buckling Stiffness Variations of Symmetrically Cross-ply Laminates. Eighth International Conference on

Composite Science and Technology Novotel Hotel Kuala Lumpur, Malaysia, March 22nd – 24th, 2011.

Seyyed Amir Mahdi Ghannadpour, Hamid Reza Ovesy and Mohammad Hajikazemi, Eighth International Conference on Composite Science and Technology Novotel Hotel Kuala Lumpur, Malaysia, March 22nd – 24th, 2011.

Reviewer for conference paper : Structural performance of wall slab connection under gravity load, Ahmed Abdulrazzaq Nasser Al-Aghbari , Siti Hawa Hamzah, Nurharniza Abdul Rahman 2010 National Postgraduate Seminar (NAPAS 2010), Faculty of Architecture, Planning and surveying, UiTM, Malaysia. 2010.

Reviewer for journal paper : Design of a multi echelon distribution network for perishable products, Scientific Research and Essays, July 2010.

Reviewer for journal paper : Effects of foliar micronutrient application on osmotic adjustments, grain yield and yield components in sunflower (Alstar cultivar) under water stress at three stages, African Journal of Agricultural Research, December 2010.

Reviewer for journal paper : Potential of Palm oil clinker as reinforcement in aluminium matrix composites for tribological applications. International Journal of Mechanical and Materials Engineering, August 2010.

Reviewer for conference paper:Kajian Sifat Mekanikal papan serpai berlapis yang mengandungi habuk kayu gergaji, persidangan Kebangsaan Ketiga Kejuruteraan Awam, Pusat Pengajian Kejuruteraan Awam, Universiti Sains Malaysia. 20-22 Julai 2004.

3. TRAINING

1. ISO 9001 2008 Internal Quality Auditing conducted by SIRIM
2. ISO 9001 2000 Internal Quality Auditing conducted by MOSTI.
3. ISO 17025

4. ARTICLE IN MASS MEDIA

1. Interviewed on glulam sleepers, appeared in 'Selamat Pagi Malaysia (SPM 2018): Bingkisan landasan lapisan kayu berperekat', 25 Jan 2018, <https://youtube.be/1X2tjex1mtU>.
2. Glulam testing by Prof Dr Zakiah, "Varsity puts versatile timber to the test" The Star Online, 16 Mac 2014; <https://www.thestar.com.my/news/education/2014/03/16/varsity-puts-versatile-timber-to-the-test/#s3qxs8OukbwEDquf.99>
3. Article Glulam testing by Prof Dr Zakiah appeared in Timber Malaysia Magazine, 'MTC and UiTM Test Mengkulang to develop First Span Table for glulam', vol.20, no.1, 2014.
4. Interviewed on topic "Glulam in tropics, Malaysia push attempts to defy the odds" appeared in In-Wood Magazine, New Zealand ,
5. Panel at Malaysian Timber Council timber talk series and appeared in Magazine Timber Malaysia, Dec 2011

6. Activities on timber product by Prof Zakiah appeared in New Sarawak Tribune, February 10, 2012, " Glulam- a viable source of raw material for Malaysian timber and construction industries.

5. Organised Workshop and Seminars (for expertise and income generations

LIST	Position/Organised	Date
International Symposium on Application of Engineered Timber Products Towards High Rise Buildings: Challenges and Opportunities, 15 Nov. 2018, Hotel Istana Kuala Lumpur, Malaysia.	Co-Chairman/ FKA, IIESM UiTM&MTIB	15/11/2018
Seminar On Sustainable Future Through Engineered Timber Construction di Hotel Renaissance Sabah	Chairman/ IIESM UiTM&MTIB	26/7/2017
Seminar On Sustainable Future Through Engineered Timber Construction di UiTM Jengka, Pahang	Chairman / IIESM UiTM&MTIB	28/4/2017
Seminar On Sustainable Future Through Engineered Timber Construction According to Eurocode 5, di IEM Sarawak	Chairman / IIESM UiTM&MTIB	6/1/2016
Seminar on Sustainable Future Through Engineered Timber Construction: Lumber, glulam and cross-laminated Timbers the European CE-marked products for sustainable buildings: Strength, manufacture and quality provisions, fire behavior di UiTM Sarawak	Chairman / IIESM UiTM&MTIB	7/1/2016
Workshop on Manufacturing and Qualification Tests of Glulam di Fakulti Kejuruteraan Awam	Chairman / IIESM,UiTM	2/6/2016
Workshop on tensile strength according to EN408	Chairman / IIESM, UiTM	17/3/2015
Application of Timber Product (ETP) In Construction, Faculti Kejuruteraan Awam, UiTM	Chairman / IIESM UiTM&MTIB	22 /12/2014
Seminar on Sustainable Future through Timber Design & Construction According to Eurocode 5 dengan penceramah jemputan Dr Simon Aicher dari Stuttgart University, Germany di Hotel Bluewave Shah Alam Topic: Comparison between MS 544 Part 3 dan Eurocode 5)	Chairman / IIESM UiTM&MTIB	16/12/2014
Seminar on Sustainable Future through Timber Design & Construction dengan penceramah jemputan Dr Simon Aicher dari Stuttgart Universiti, Germany di Fakulti Kejuruteraan Awam, UiTM, Shah Alam Topic: Lumber, glulam and cross-laminated Timbers the European CE-marked products for sustainable buildings Strength, manufacture and quality provisions, fire behaviour	Chairman / IIESM UiTM&MTIB	17/12/2014
Workshop on Masonry Structural Design Based on Eurocode 6, Speaker: Prof Dr Peter Walker,	Chairman / IIESM	17/7/2013

University of Bath, UK, di Fakulti Kejuruteraan Awam, UiTM, Shah Alam		
One Day 'Hands On' Workshop on Concrete Casting And Laboratory Testing According to BS8110	Advisor/ IIESM	15/4/2013
Seminar on Fire Resistance and Timber Engineering According to MS 544 Part 9 di Hotel De Palma Shah Alam.	Advisor/ IIESM UiTM&MTIB	12/12/2012
Workshop on Design & Construction of RC Column Using Integrated Permanent Formwork from Woodwool Cement Board	Chairman / IIESM UiTM & FIDEC	23-28/11/2012
Bengkel pengredan kayu di Fakulti Kejuruteraan Awam	Chairman / IIESM UiTM&MTIB	11/10/12
Seminar on glulam manufacturing and quality control di Fakulti Kejuruteraan Awam	Chairman / FKA UiTM&MTIB	13/4/2012
Workshop on glulam design di Fakulti Kejuruteraan Awam, UiTM, Shah Alam	Chairman / FKA UiTM & MTC	15-17/4/2017
Workshop on Glulam-Connection Detailing, di MTC	Chairman / FKA UiTM & MTC	15/12/2011
Workshop on Glulam Connection Detailing di Fakulti Kejuruteraan Awam, UiTM, Shah Alam	Chairman / FKA UiTM & MTC	25/12/2011
TIMBER TALK "BASIC TIMBER ENGINEERING WITH EMPHASIS ON GLULAM" di Fakulti Kejuruteraan Awam, UiTM, Shah Alam	Chairman / FKA UiTM&MTIB	12/1/2011
Half-day Seminar on Timber Design: Timber Shape the Future of Construction Industry in Malalaysia, di Fakulti Kejuruteraan Awam, UiTM, Shah Alam	Chairman / FKA UiTM&MTIB	28/7/2010
MTIB-T-Talk: INNOVATIVE & STATE-OF-Art in Connecting, Strengthening and Repairing of Timber Structural Members di Fakulti Kejuruteraan Awam, UiTM, Shah Alam	Chairman / FKA UiTM&MTIB	21/4/2009

HIGHLIGHTS OF ACHIEVEMENT IN PROFESSIONAL SERVICES

R&D ON TIMBER and TIMBER PRODUCTS

a) R&D on glued laminated timber

(1) Jointly initiated with Malaysian Timber Industry Board for R&D on engineered timber product since 2008. A series of proposals were submitted to the Economic Planning Unit (EPU).

The proposal was approved in 2010 with grants worth RM 3 million starting 2010 to 2013 on the 'Development of Glued Laminated Timber from Malaysian Tropical Timber'. The project was conducted in collaboration with Persatuan Pengusaha Kayu-Kayan Bumiputra Malaysia (PEKA). This project was headed by Prof dr Zakiah Ahmad.

The outcome of these research activities;

- Publication of guidebook for glulam manufacturing and span table for glulam which will be used by the glulam manufacturers, engineers and timber as well as construction industries.
- The expertise has gained overwhelm recognition at national and international levels.
 - Has been appointed as Chairperson for Malaysian Standard , MS 544 Part 3: Code of Practice for Structural Use of Timber: Permissible Stress Design for Glued Laminated Timber.
 - Technical Committee for ISO Standard TC 165: Timber Structures. (International). Through these activities has increased the applicant's international networking.
 - As an expert and reference person on timber and glulam by Public Works Department (JKR), Malaysian Timber Industry Board (MITB), Malaysian Timber Council (MTC) and other timber industries.
 - Has always been referred to by JKR for glulam related construction project; i.e; construction of glulam building 'crop for future' in Semenyih, construction of glulam roof trusses at Hospital Setiu Terengganu, construction of Bubu Café , Ritz Carlton Hotel Langkawi and repair of Museum Seri Menanti, Negeri Sembilan
 - Has involved in the design of the glulam building ''Glulam Galery' Malaysian Timber Industrial Board in Pasir Gudang Johor Bahru and Malasyian Pavillion, Milan.
- has generated income for the university through few consultancies on glulam for timber industries worth more than RM 200,000.
- Collaboration with Woodsfield Timber industries Sdn Bhd by the binding of MOU and MOA. With this collaboration, UiTM received 5% royalty from the commercialization of glulam, RM 10,000/year for research funding, free research materials for students, consultancy. Recently Woodsfield and applicant collaborating on the new glulam product that is glulam railway sleepers and another 3% royalty will be paid to UiTM and patent has been file for this product.

Producing one (1) PhD student on the topic; development of glulam railway sleepers.

- has received full cooperation (full sponsorship) from MTIB and Malaysian Timber Council (MTC) in organizing seminars on glulam for students and industries.
- has also strengthened the collaboration with Malaysian Timber Council through MOU and received 5 equipments for testing glulam samples worth more than **RM 200,000** which will make UiTM as center for timber training program for industries and this will lead to income generation for the university.
- has been invited to give talks on glulam at various seminars organized by MTIB, MTC, FRIM, UPM and also at international level.
- has received free glulam samples manufactured using pine from APP Timber New Zealand for comparison study on glulam using tropical timber.
- In December 2011, applicant has received research grant on glulam roof trusses from JKR for **RM 1.28 million**. Collaborating with other companies on glulam related project such as Asmadi Architect Sdn Bhd, Iktisas Engineers Sdn Bhd, Fine timber Sdn Bhd, Rotafix Ltd. UK, APP Timbers New Zealand etc.





Kayu Glulam Alternatif Kepada Konkrit & Simen

Guru kayu urak bina rumah? Mesti mahal tau yang orang kata. Tapi kerana kayu bermutu sangat, baik, mampan dan tahan, mengaham mela untuk malarang dan boleh tahan sehingga 70 ke 80 tahun. Malahan, 'kayunya' ke mana atau diproses dengan 'cincin' anti kulat, bebas anai-anai, tahan cuaca, tahan api sesuai dengan iklim ini perlimanan.

Kayu adalah antara bahan binaan tertua dalam dunia binaan. Bangunan Istana Lama 'sireh kari' Melayu, masjid dan pejabat kerajaan dahulu adalah sebagai contoh yang direkastruksi. Ada masih banyak bangunan tua dan sebagainya sebagai warisan negara. Selain mempunyai nilai estetik, daya tahan dan hijau yang diwariskan, dusti akan lebih lengkap jika penggunaannya dipertingkatkan lagi.

Begitu pun malah ramai berpendapat bahawa kod struktur bina untuk kayu dan ketid mutlak dipijak ke konkrit dan simen yang jauh lebih mahal dan kosnya membolehkan bahan kayu dalam kuantiti banyak mengurangkan kos binaan.

Berikut adalah kata-kata Prof Madya Dr Zakiah Ahmad, pensyarah di Fakulti Kejuruteraan Awan, UTM Shah Alam yang sepatutnya disiarkan dalam Sanggar Keluaran Januari, bertajuk Kayu Glulam Alternatif Kepada Konkrit & Simen di muka surat 92 hingga muka surat 94.

"Saya merasakan amat perlu untuk kita menyeimbangkan penggunaan bahan dalam industri binaan. Pembuatan simen dan konkrit yang digunakan sekarang kebanyakannya daripada sumber yang tidak boleh diperbaharui. Oleh itu, penggunaan kayu Glulam ini dilihat sebagai peluang untuk kita beralih kepada bahan yang lebih menajaga kepentingan hijau dan lestari. Bagi memastikan Glulam dapat memenuhi fungsinya sebagai bahan pembina hujung dan lestari, skedong dari pihak kerajaan amatlah penting terutama dari segi pengurusan hutan yang mampan, mengadakan polisi pembinaan yang dapat menggalakkan penggunaan Glulam serta kursus reka bentuk struktur kayu dalam kurikulum di universiti bagi melatih bakal jurutera. Saya percaya ia mampu memberi



TIMBER INDUSTRY - FIRST SPAN TABLE IN MAKING

SHAH ALAM

First span table making

Better strength-to-weight ratio than steel

THE Malaysian Timber Council (MTC) is collaborating with Universiti Teknologi MARA (UTM) to develop the country's first span tables for glued laminated timber (glulam) produced from Malaysian timber.

Span tables are developed by structural engineers to establish the maximum load a wooden beam of a specific length (in 'span') can support.

Before a span table for a species of wood can be developed, various tests need to be conducted with different lengths, depths and widths of the wood under examination.

The species chosen for this pioneer work is Mengkilang (Hirtziya spp.) trials for the Mengkilang glulam were recently concluded at the Heavy Structure Laboratory, Civil Engineering Faculty of UTM.

"The test, the first ever conducted on Mengkilang glulam, involved subjecting a 12-foot long glulam beam to increasing shear stress pressures, up to a limit of 70 kilonewtons, in an attempt to determine the maximum load it could safely support."

"The test is a good indicator as it tells us a lot about the ability of Mengkilang wood to withstand shear stress," said Dr Zakiah Ahmad, director of the Institute of Infrastructure Engineering and Sustainable

Varsity puts versatile timber to the test

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"The test is a good indicator as it tells us a lot about the ability of Mengkilang wood to withstand shear stress," said UTM Institute of Infrastructure Engineering and Sustainable Management Director and project director for the Mengkilang glulam tests Dr Zakiah Ahmad.

"The test also provides valuable data to determine the optimum location of finger joints for different lengths of Mengkilang timber," said Dr Zakiah, referring to the interlocking joints used to join laminated into a solid piece of glued laminated timber.

Meanwhile, MTC Chief executive officer

Malaysia's First

Government

BUILDING A SUSTAINABLE FUTURE THROUGH TIMBER CONSTRUCTION

Officialled by:

Y.B. DATO' HANIZAH ZAINUDDIN
Deputy Minister of Plantation Industries & Commodities, Malaysia

23 November 2011
World Trade Centre, Kuala Lumpur

Shiver me timbers!

The Malaysian Timber Industry Board (MTIB) organized a seminar on "Building a Sustainable Future Through Timber Construction" in an effort to show SGLG within the building supply chain that timber remains a viable alternative for the industry.

The seminar was held at the World Trade Centre, Kuala Lumpur, on 23 November 2011. The event was attended by approximately 100 participants, including government officials, industry representatives, and members of the media.

The seminar was officiated by Y.B. Dato' Hanizah Zainuddin, Deputy Minister of Plantation Industries & Commodities, Malaysia. She emphasized the importance of sustainable timber construction in building a sustainable future for Malaysia.

The seminar featured presentations on the benefits of timber construction, including its environmental advantages, such as its renewable nature and carbon sequestration capabilities. It also discussed the challenges and opportunities in the timber construction industry and provided insights into the latest trends and technologies in the field.

The event was a significant milestone in the promotion of sustainable timber construction in Malaysia, highlighting the potential of timber as a viable and sustainable building material.



b) R&D on 'Program Pembangunan Produk Kejuruteraan Kayu (ETP) Sebagai Struktur Di Dalam Sektor Pembinaan'

This R&D is jointly initiated with Malaysian Timber Industry Board for project on engineered timber product since 2008. A series of proposals were submitted to the Economic Planning Unit (EPU).

The proposal was approved in 2016 with grants worth RM 5 million starting 2014 to 2017 on the Development of strength classes for Tropical Hardwood. The project is headed by Prof Dr Zakiah Ahmad. The data obtained will be used to publish Malaysian Standard MS 544 Part 3, European Standard EN 384 and 1912 as well as in ISO standard. This project produced 4 PhD students. The work is in collaboration with University of Stuttgart and University of Munich.





c) R&D on Development of Cross Laminated Timber

This R&D is jointly initiated with Malaysian Timber Industry Board for project on engineered timber product since 2008. A series of proposals were submitted to the Economic Planning Unit (EPU).

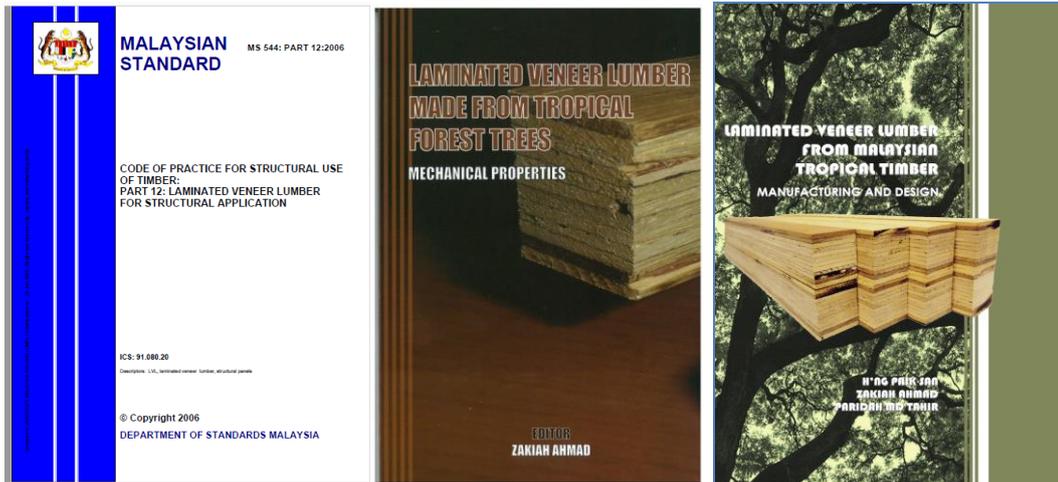
The proposal was approved in 2017 with grants worth RM 3 million starting 2017 to 2019 on the Development of Cross Laminated Timber from Malaysian Tropical Timber. The project is headed by Prof Dr Zakiah Ahmad. The data obtained will be used to publish Malaysian Standard on Manufacturing of Cross Laminated Timber. Will produce 2 PhD students and one Masters student. This R&D work is in collaboration with Material Testing Institute, University of Stuttgart and CLT Eugen Decker Holzindustrie KG, Morbach, Germany.



d) R&D on Laminated veneer lumber

Collaborated with University Putra Malaysia for **Grant IRPA(RM 227,000)** from 2004 to 2007 in the project 'Upgrading of low grade timber species through veneering and stress-laminating', initiated adoption of LVLs in engineered timber roof trusses through university-industry collaborations. Established research collaborations with;

- CHG Plywood Sdn. Bhd.,
- MiTek (Asia) Sdn. Bhd
- Kilang Papan Mohd Yusoff dan Anak-anak Sdn. Bhd.
- Supervising three M.Sc. students and 1 PhD student
- Published 17 papers in proceedings and 4 journal papers (Indexed by ISI/Scopus) and 2 books
- The data obtained from this study has been used to developed Malaysian Standard MS 544 Part 12; Permissible stress design for laminated veneer lumber.
- Further obtained Grant from Public Work Department 1.28 million which is led by Prof dr Zakiah Ahmad from 2012-2017 for the development of roof trusses using LVL and glulam, to establish span table, safe load table as well as guidebook on the installation.



e) R&D on Woodwool Cement Board

Exploring the use of lesser known timber species in the development of woodwool cement board. The novelty of this product is light and considered green product since using small amount of cement.

- Received grant RM 9,000 from UiTM on the development of woodwool panel
- Received grant RM 162,000 from The Fibre and Biocomposite Development Centre, Malaysian Timber Industry Board on product on the development of Concrete column with intergrated permanent formwork from woodwool panels
- Received grant RM 80,000 (ERGS) from Ministry of Science and Technology on the development of prefabricated woodwool wall panel
- Received grant RM 152,976 (PRGS) from Ministry of Higher Education (PRGS) on the construction of prototype house using prefabricated woodwool wall panels.
- Establish research collaboration with;
 - Faculty of Applied Science UiTM
 - Duralite (M) Sdn Bhd
 - UEM Builders Sdn Bhd
- Supervised 1 PhD and 2 master students
- patent file PI 2012700705 for concrete element with integrated permanent formwork from woodwool panels.
- Generated income for the university through
 - consultancies worth more than RM 42,000
 - training program for industries on the application of woodwool panel as construction materials (RM 16,000)
- Awards:
 - Student has won best paper at SAMPE 2011
 - 4 Silvers (1 at MTE, 1 at Geneva and 2 national), 1 Gold (ITEX)

- Best Design Award received from Japan Intellectual Property Association
- Special Award for excellent invention from National Research Council of Thailand, 2016



f) R&D on Kenaf

Exploring the use of kenaf in the development of plastic composite and also brick for construction.

- Received grants from
 - 1 grant from National Kenaf and Tobacco Board (RM 200,000) on Water retting headed by Prof Dr Zakiah Ahmad and collaborate with PM Dr Ramlah Tajuddin
 - 1 grant from National Kenaf and Tobacco Board (RM 500,000) on cement brick reinforced with kenaf headed by Prof Dr Zakiah Ahmad and collaborate with Dr Mod fadzil Arshad
 - 1 grant from Ministry of Science and Technology (RM 105,000) on pultruded kenaf plastic composite collaborated with Prof Dr Azmi Ibrahim,
 - 1 grant from Ministry of Higher Education (RM 65,000) on kenaf cellulose collaborated with Nur Kamaliah
 - 1 grant from Ministry of Higher Education (RM 98,000) on unilateral kenaf plastic composite headed by Prof Dr Zakiah Ahmad
 - and also heading some internal fund (RM8,000)
- Project on kenaf water retting has led to the collaboration with
 - Everise Crimson Sdn Bhd
 - Malaysian Agriculture Research Development Institute (MARDI)
 - Universiti Putra Malaysia
 - Faculty of Applied Science UiTM
 - University of Bath
- Supervised 1 PhD and 5 masters students
- Establish collaboration with Tanjung Pauh Sdn Bhd on the production of bricks reinforced with kenaf
- Construction of prototype kenaf gallery for LKTN



STANDARDISATION ACTIVITIES

Prof Dr Zakiah has involved in writing of standards for timber and timber products since 1997. To date she has sat in more than 17 working group committees, producing 6 standards for timber among others Product Performance of Laminated Veneer Lumber, MS 544 Code of Practice for Timber Design: Part 1,2,3 and 12 (for solid timber, glued laminated timber and Laminated Veneer Lumber), MS 758 Manufacturing of Glued Laminated Timber, MS 544 Part 8 and Part 11 for prefabricated of roof trusses and many others.

Dr. Zakiah is well known for her active participation in ISO standards writing where she has represented Malaysia in many occasions among others include ISO TC 218: Timber as secretary since 2010 and ISO TC 165 in Sydney (2008), Bali (2011), Stuttgart(2013), Johor Bahru (2014), Melbourne (2016) and Vienna (2017), Istanbul (2018), Bogota (2019) and is responsible to review or develop ISO standards.

Prof Dr Zakiah received 'Ánugerah Standard Kebangsaan 2018' award after demonstrating the passion, commitment and expertise in writing of national standards for timber and timber products since 1997.



Vienna (2017)



Melbourne (2016)



Istanbul (2018)

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