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TIMBER ENGINEERING

meet the expert



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Prof. Dr. Zakiah Ahmad
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ABOUT

After devoting over 19 years researching engineered and timber composite products, Professor Dr. Zakiah Ahmad, head of the Institute for Infrastructure Engineering & Sustainable Management (IIESM), Universiti Teknologi MARA has received national and international accolades and recognitions.

She is passionately active in research related to engineered wood products such as glued laminated timber, laminated veneer lumber, cross laminated timber, plywood, wood/fibre cement and plastic composite products, and etc.



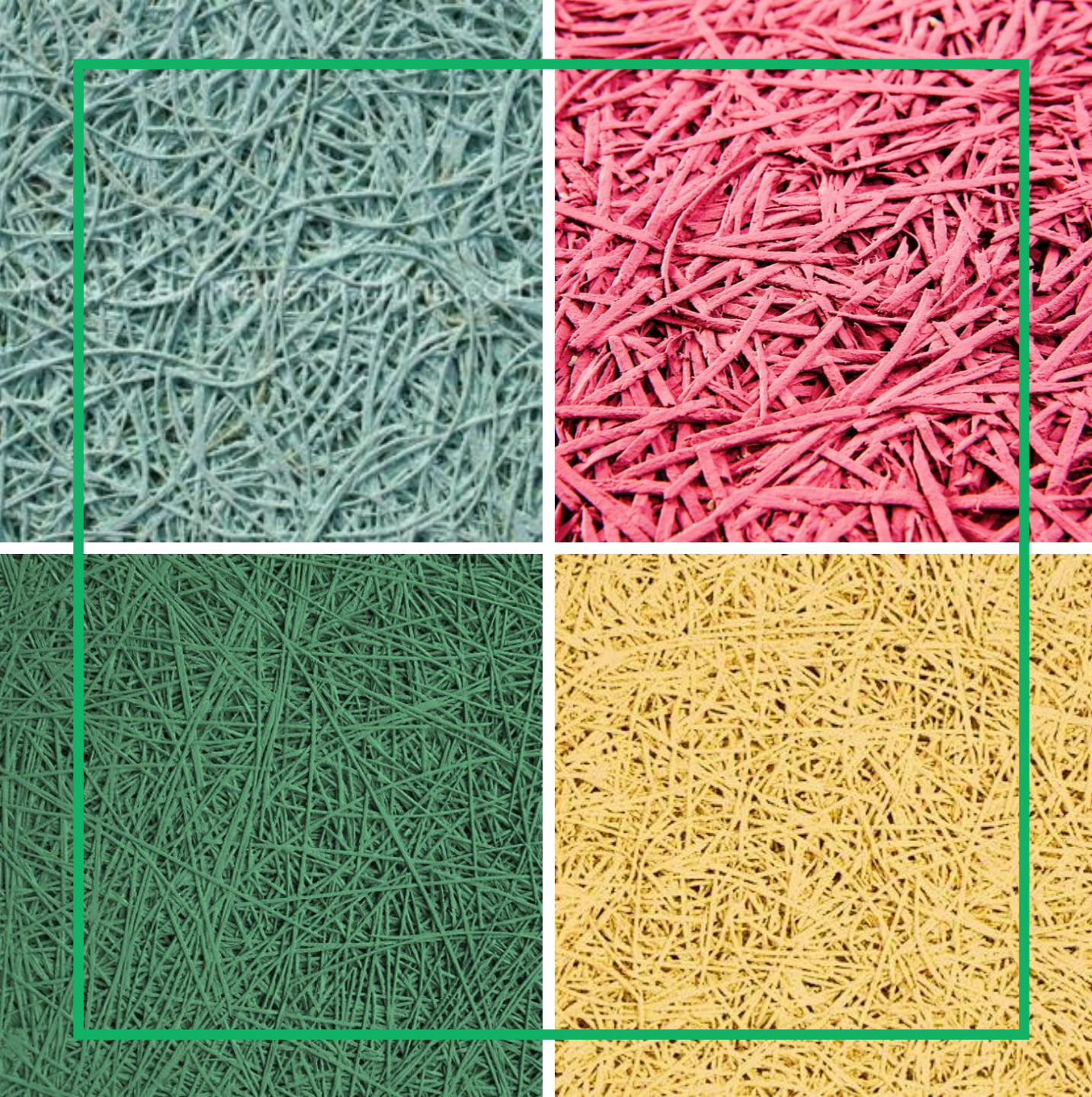
A woman wearing a blue and white patterned hijab, glasses, and a dark blazer stands in a factory. The background shows industrial machinery, including a large blue press and yellow equipment, with stacks of wood in the foreground.

Professor Zakiah work started with the use of oil palm fibre to enhance the properties of concrete which has gained recognition silver medal at MOSTE and also silver medal at Seoul exhibition. Later she collaborated with Universiti Putra Malaysia to develop an engineered wood product called laminated veneer lumber (LVL) which is assembled from multiple layers of thin peeled veneer, making the resultant more homogenous and stable.

Glulam



Glulam is manufactured from laminated layers of graded timber lamella. The advantage of glulam is that you can design the timber to the desired strength. By gluing lower grade timber and converting them to glulam, the strength can be enhanced, thus saving costs and reducing dependency on single timber species. The project received a RM 3 million grant from the Malaysian Timber Industry Board (MTIB) and collaborated with Persatuan Kayu Kayan & Perabut Bumiputera Malaysia (PEKA).



Woodwool

Prof Zakiah is currently working with prefabricated woodwool wall panel using lesser known and fast grown timber species from Malaysia. This project utilized 90 percent wood fibre as building material with small amount of cement as binder. The project started from studying the performance of the woodwool panel by exploring various species, wood-cement content and sizes of woodwool.

commercializing **KELAMPAYAN**

What does make the project interesting is that, the panel made of the strand from the chosen wood is used as the building component.

“This product is environmentally friendly and sustainable as we use uncommercialised timber such as kelampayan. As they are fast-growing trees, we can reduce our reliance on Mother Nature,” said Zakiah Ahmad.



Kelampayan, Neolamarckia cadamba


The project received grant RM 162,000 from the Fibre and Biocomposite Development Centre, Malaysian Timber Industry Board for the development of Concrete column with integrated permanent formwork from woodwool panels.

Although fragile-looking, the woodwool panel has been tested and proven to be suitable for use as a building material. It has strength that meets the standards in building construction. The product is lighter and delivers good thermal comfort.




Professor Zakiah further extend the application of the woodwool panel into the construction of prefabricated woodwool wall panel with special design for easy installation during construction. The advantages of this wall are light, green and sustainable and will save cost on the construction. The study on the prefabricated woodwool wall panel has been made possible with the ERGS grant from Ministry of Science and Technology (RM 80,000).

This project received a series of awards namely gold medal in the invention category at the recent International Invention, Innovation & Technology Exhibition (ITEX) and the Best Invention Award from the Japan Intellectual Property Organization (JIPA).

A portrait of Prof. Dr. Zakiah Ahmad, a woman wearing a blue and pink patterned hijab, glasses, and a dark blazer. She is standing against a light-colored wall. A semi-transparent green box is overlaid on the lower left portion of the image, containing text.

Prof. Dr. Zakiah Ahmad plays an important role in the development of Malaysian Standards on timber structures and as Malaysian delegates for ISO technical committee for timber structures.

She also has served as visiting research scientist at BRE Research Institute, University of Bath, United Kingdom, Centre for Nanoscience and Nanotechnology, School of Chemical Sciences, Mahatma Gandhi University India and Timber Research Institute, Kyoto

A collage of images on the left side of the page. It features a central portrait of a woman wearing a black hijab and glasses, with a patterned dress. Surrounding this portrait are several rectangular images of different wood grain textures, some overlapping each other. The overall composition is artistic and thematic, related to the text about timber.

Prof Zakiah has been busy working with MTIB to promote the use of timber and timber products in Malaysia. She speaks at seminars to educate engineers, architects, builders and contractors on using timber and timber products in construction.

In between research and lectures, she somehow found time to sit in Standards Malaysia's committee to develop standards for timbers. She plays an important role in the development of Malaysian Standards on timber structures and also as Malaysian delegates for ISO technical committee at international level.

Prof. Zakiah also has served as consultant, committee member and advisor to numerous public and private agencies and institutions on timber related projects.

She is currently moving to raise the Institute for Infrastructure Engineering & Sustainable Management (IIESM) to greater heights and aiming for it to become a Higher Institution Centre of Excellence in five years. She aims to promote IIESM at an international level.

IIESM is a Centre of Excellence focusing on research in civil engineering disciplines. It aims to solve infrastructure and environmental engineering problems in a more sustainable way and introduce new state-of-the-art technologies with the niche 'green and sustainable materials'.





Glued Laminated Timber Railway Sleepers from Malaysia Tropical Heavy Hardwood' won the winning entry for the International Conference And Exposition On Inventions By Institutions Of Higher Learning (PECIPTA) 2017

IIESM is a Centre of Excellence focusing on research in civil engineering disciplines. It aims to solve infrastructure and environmental engineering problems in a more sustainable way and introduce new state-of-the-art technologies.

The objectives of the IIESM are to enhance existing knowledge through high impact research and publication, to develop sustainable products and processes for infrastructure development, to become reference centre in solving and managing infrastructure problems towards sustainable environment and lastly to intensify research networking and collaboration in the critical areas internationally.

IIESM

Institute for Infrastructure Engineering & Sustainable Management



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