

CELEBRATING
COMMERCIALISATION
YEAR 2014

iiindex 2014

AN INTERNATIONAL EXPOSITION ON RESEARCH AND INNOVATION

invention
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exposition 2014

INNOVATEUR
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2014

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UNIVERSITI TEKNOLOGI MARA
MALAYSIA

*Bridging
the valley of death :
advancing the
commercialisation
of research*

RESEARCH BOOK

iiindex2014

AN INTERNATIONAL EXPOSITION ON RESEARCH AND INNOVATION

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FOREWORD

The Honourable Minister of Science, Technology and Innovation (MOSTI) has launched 2014 as Malaysia Commercialisation Year 2014 (MCY2014) with the theme Science Technology and Innovation (STI) for Wealth Creation. In line with this theme, Invention, Innovation, Design & Exposition 2014 (iidex2014) is an annual exposition organized by UiTM and is the ultimate platform to highlight and commercialise new inventions and innovations. Researchers and inventors will exhibit their products which cater to the needs and wants of the community and the country.

The iidex2014 creates a new dimension by fusing two competitive concepts, a competition among innovative products and a competition to invite Innovateur Wannabes to perform live pitching of their products to the audience. The iidex2014 focuses on comprehensive commercialization and creating opportunities for entrepreneurs to carry out R&D as well as to provide avenue to commercialise their products. Through expositions such as iidex2014, MOSTI hopes to inculcate the culture of commercialisation of new technology designed and created by Malaysians.

I wish to congratulate all the participants of the iidex2014 and this is the opportunity for all researchers to show their ideas and exhibits their products and creativity. Apart from showcasing their products, innovators will have the opportunity to provide a window to the industry for business matching during the exposition.

Tan Sri Dato' Sri Sallehuddin Mohamed
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RECYCLED SHUTTLECOCKS AS PARTICLE BOARDS

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Sound pollution is a major concern to people. Conventionally expensive sound absorbing materials are used to achieve good quality of sound. The use of recycled material has many advantages compared to conventional which include in the reduction of product cost, good handling and environmental protection. Other studies have used rice husk, banana trees, coir fibre and many more. But only a few researchers' focus on industrial waste such tyre, tea bag and some product that already available. Shuttlecock is one of the industrial wastes (sporting industrial waste) possessing good properties of absorption (duck/goose feather). The rapid deterioration of shuttlecocks causes it to be discarded fast. The project created particle boards with good sound absorbance which will have good market value either to use in the auditorium or in a good audio room. Thus the waste produces from this sports activity might be utilized in creating particleboards and fully utilized shuttlecocks properties benefits to create sound absorbance material. This study was carried out using shuttlecocks as by-product. Main part of single shuttlecocks contains of cork (3 gram) and feather skirt (2 gram). The shuttlecocks are crushed into particles after which it is fabricated into low density particleboards (600kg/m³). The process of fabrication consists of bonding using phenol-formaldehyde (PF) and hot press 170 degree Celsius. Aim of this work was to reuse used shuttlecocks and fabricate them into panel. The panel was then tested for their sound absorption performances. The study shows that there is a possibility of using crushed shuttlecocks as a particleboards and it is lightweight. Good quality shuttlecocks was produced. The success of this sound properties using impedance tube-transfer function method accordance to ISO 10534 and it fall into Grade E out of 6 grades available. The improvement of this grade can be archived with further research. Next the study on its water permeability and its strength will be conducted.