

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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ASH: FROM WASTE TO CRIMINAL INVESTIGATION TOOL

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Human identification is the most crucial part in criminal investigation and disaster victim investigation. Other than genetic materials of a human, known as DNA, fingerprint remains the best forensic tools for human identification since it is able to discriminate most of people in the world with high degree of certainty as it remains unchanged during an individual lifetime. Fingerprints are considered to be an infallible means of identification. No two fingerprints are exactly alike. Fingerprints are typically formed from the aqueous secretion of the eccrine glands of the fingers and palms with additional material from sebaceous glands primarily from the forehead. The latent fingerprint consists usually of a substantial proportion of water with small traces of amino acids and chlorides with a fatty, sebaceous component which contains a number of fatty acid and triglycerides. The significance of fingerprints and the criminal justice system cannot be undervalued; they can implicate the guilty by linking a criminal to the victim and the scene of the crime and exonerate the innocent. The identification of fingerprints depends on the minutiae found on it, such as island, dot and bifurcation fork, which give them individual characteristics, hence essential for forensic cases investigation. Since fingerprint is fragile pieces of evidence, it is essential that fingerprints be located, process, and recovered first in crime scene evidence recovery. Thus, the enhancement of latent fingerprint at the crime scene is definitely important. There are several enhancement techniques applied on the scene of crime in order to obtain fingerprint from suspects and those techniques are solely depending on the surface of where the fingerprint is deposited. Most commonly used is dusting technique with fingerprint enhancement powder. In this study, we developed a novel type of dusting powder from waste of cigarette ash and coal. Ash from cigarette, along with coal was finely ground and was applied on fingerprint deposited on glass surfaces using fingerprint brush. We found that this type of ash is able to enhance fingerprint samples and presented a similar quality of fingerprint enhanced from few types of commercially available fingerprint enhancement powder. The quality of enhanced fingerprint was observed using Video Spectral Comparator (VSC). Fingerprint ridges and minutiae which usually been used as a marker for identification were clearly observed after fingerprint deposited on smooth surface was enhanced using cigarette ash and coal. This is a novel preliminary product development from waste which could compete the use of expensive commercial fingerprint powder. Waste of both items is potential to be reused to produce new product which could aid in criminal investigations. Fingerprint powder developed from waste products of cigarette and coil have a high potential to be commercialized and challenge the existing products which are usually exported from outside of our country. Product developed from this study could be applied by Royal Malaysia Police (PDRM) since it helps in obtaining fingerprint from the scene of crime in a very low cost. This product will aid the government to solve National Key Economic Areas (NKEA) along with strategic Reform Initiatives (SRI) in strengthening public sector especially PDRM.