

# AMMP BULLETIN

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## Centre Activities

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### Discussion By Visiting Professor (Dr. Ghader Faraji)



16 & 17th May 2013 at JKRP Meeting Room, CAD CAM tower - AMMP Centre arranged a discussion by Visiting Associate Professor, Dr. Ghader Faraji. The discussion on "How to manage research" attracted more than 20 participants including the research members of AMMP. The discussion was held for 1 hour and 30 minutes for each day. During the discussion, most of the audience were eagerly asking question based on the topic. The tips given were very useful in managing a research. The 1 hour and 30 minutes talk was fully informative and it made the participants hesitant from leaving the room.

### Industrial Visit Top Glove Corporation Berhad

8th May 2013, Dr. Siti Nurmaya Musa, lecturer and colleagues of AMMP Centre has arranged a study trip to Top Glove Corporation Berhad . The outcome of the trip is to give students an insight of the operations and the outlook of the world's largest rubber glove manufacturer . As a result of the trip, students has been able to supplement the various theories acquired in the classroom for a simultaneous understanding and application.



### AMMP Centre scores a hat-trick gold at ITEX 2013

9 May - AMMP Centre achieved a 100% success rate of winning 3 GOLD medals for 3 showcased projects in the 24<sup>th</sup> International Invention, Innovation & Technology Exhibition (ITEX 2013).

The winning projects were:

- Novel method in synthesizing porous bovine calcium phosphate
- Wheelchair integrated with wheelchair-bound person transferring mechanism
- Intelligent lubrication system in CNC linear guideways for more precise machining and less oil consumption.

Congratulations to Prof Hamdi, Prof Ramesh, Dr Bushroa, Dr Farazila, Dr Ahmed Aly Daa Mohammed Sarhan, Dr Noor Azizi, Dr Tan Chou Yong and their respective teams for the success.

*Prof Hamdi and Mr Mahdi Sparham receiving the awards for AMMP during the ITEX 2013 Creativity Banquet Dinner.*



## Technical Review

### Introduction of AMMP Research Project: Investigation of cadmium-free brazing filler metals.

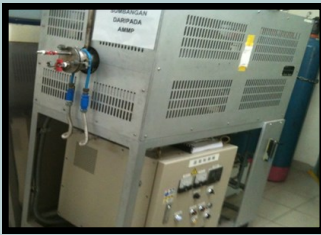


Figure 1: KYK furnace tube furnace with R-type thermocouple. The temperature ranges are from 600 to 1200°C (Optimum heating/cooling rate :10°C/min). The accuracy is +/-1°C.

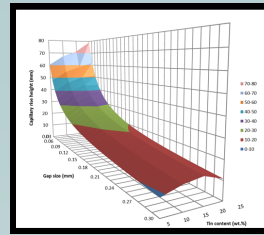


Figure 2: Effect of tin content from 5 wt.% to 25 wt.% and joint gap size on capillary rise height of the Ag-Cu-Sn filler metals. Note that the silver content is fix to 60 wt.% and the base metal is pure copper.

The term “brazing” can be applied to any process which joins metals (of the same or dissimilar composition) through the use of heat and a filler metal with a melting temperature above 450 °C, but below the melting point of the metals being joined. In order to produce satisfactory brazed joints, selection of filler metal is one of the most important aspects in brazing of a certain parent materials together with a correct brazing technique.

The addition of cadmium to silver-copper-zinc system reduces the solidus temperature and the melting range; reduces silver content; and improves the fluidity of the alloys. However, the problem associated with cadmium -containing filler metals is the toxic fume generated during the brazing operation.

The main objective of this research is to find and evaluate an alternative for cadmium content filler metals. One of the candidates is Ag-Cu-Sn filler metals. These filler metal is chosen because tin has low melting temperature and low vapour pressure and investigation into this filler metals are remains open. The wettability, gap filling ability, joint strength and hardness of the joint at various brazing conditions such as brazing temperature and time, joint design and clearance, compositions of tin content, and heating rate are under investigation process. Figure 1 shows one of the furnaces that are available in AMMP Centre that being used in this project. Figure 2 shows one of the results on the effect of tin content and joint gap on capillary rise of Ag-Cu-Sn filler metals.



By : Basri Din Kamar

## Zettron Sdn. Bhd

### Introduction

Automatic Thermocyclic Dipping Machine (ATDM) introduced construction of a closed chamber to create a controlled environment and to avoid heat loss. Hence, became a smart electric consumption machine. The Automatic Thermocyclic Dipping Machine (ATDM) is designed for laboratory simulation of oral temperature changes. The sample is immersed cyclically in baths of hot, warm and cold fluids. The machine is controlled by programmable logic controller (PLC) system with a touch screen as the interface for users. A simulation cycle was built as a mobile arm with a basket of one or more profiles, where the user can select two or three types of temperature. All six tanks are independent of each other and can be controlled via a touch screen. This new technology has a big impact especially for the University researcher and student at Dental Faculty. With this new invention it will ease their work and shorten the research time.

On 3th April, Zecttron have successfully delivered Automatic Thermocyclic Dipping Machine (ATDM) to Universiti Sains Malaysia (USM), at Kubang Kerian Kelantan. Here are some pictures:

