











## Researchers:

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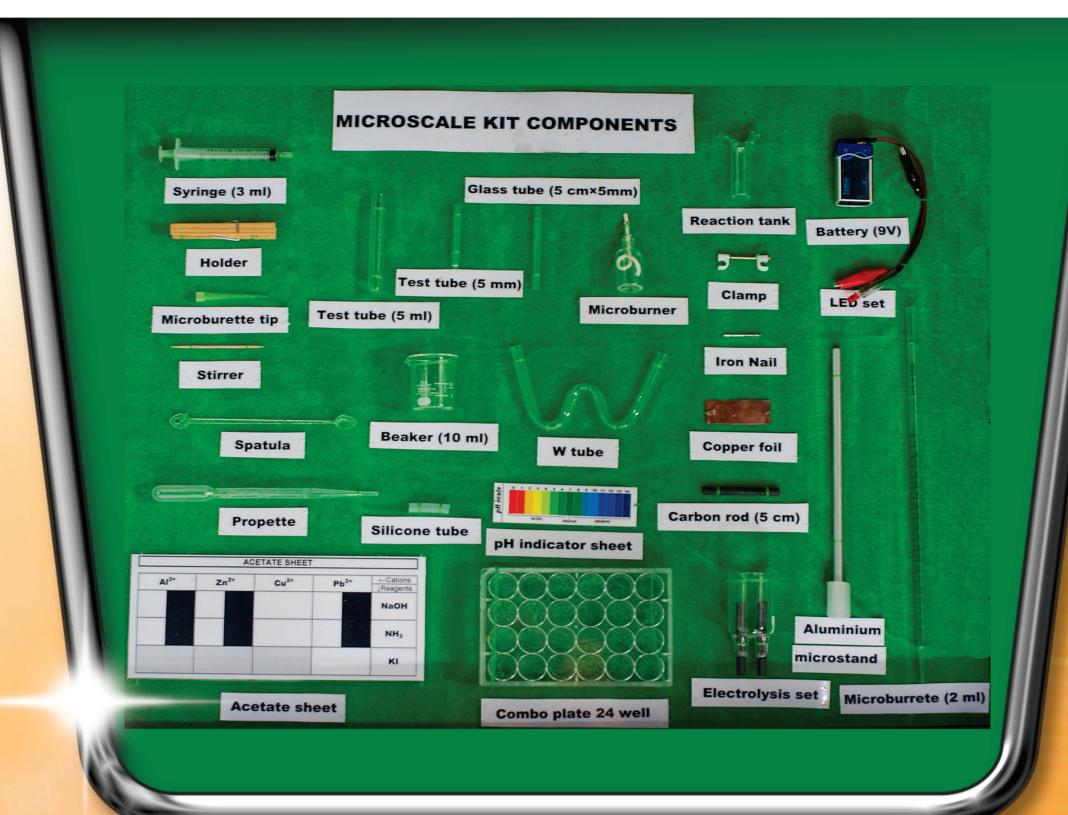
Mohd Nazeef Ahmad Wan Zulilawati Wan Zulkipli Ami Mardiana Othman Nur Ainina Abdollah Alia Syazana Roslan Lim Gin Keat

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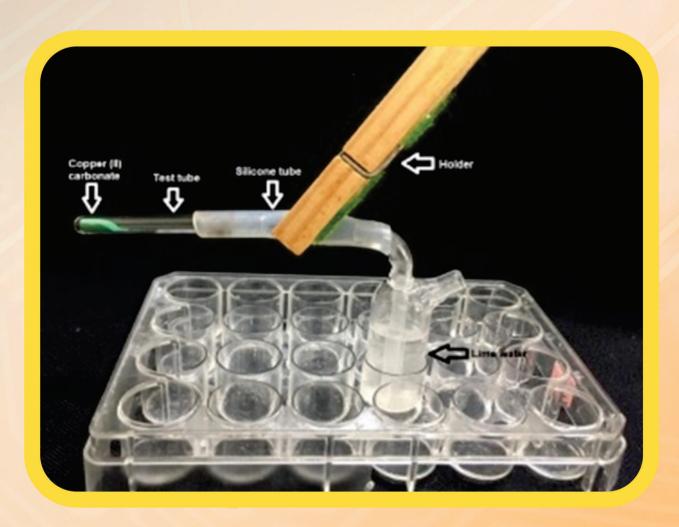
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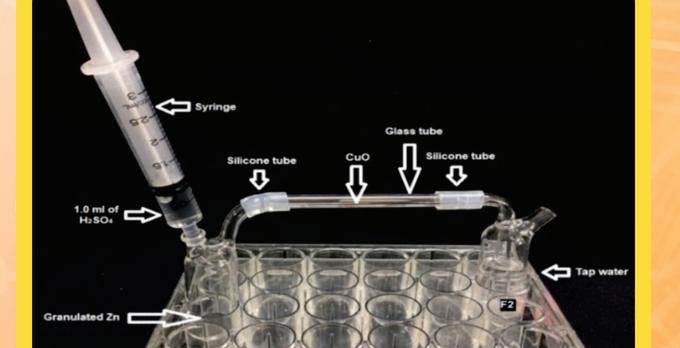


#### **Problem Statement**

Interest in science among students in Malaysia continues to decline over the past years. To a certain extend this has something to do with how science subjects are taught at school. Hands on session can help to develop the interest and increase their understanding to otherwise "difficult" science subject. However, many teachers no longer conduct chemistry experiments due to the lack of facilities, expensive chemicals and safety issues.

## **Novelty & Inventiveness**

- Introduces the concept of learning and teaching chemistry using miniaturized apparatus and chemicals in small amount.
- Adapted to Malaysian Standard Curriculum syllabus (Forms 4 & 5)



# **Applicability**

- Safe and economical
- In pair or individually
- Anywhere, in a lab or a classroom

# **Product/Technology Readiness**

- TRL7
- Sold more than 54 kits

# **Research Achievement**

- 2 Grants: University-Community Engagement Grant (1001.PKIMIA.AUPSE00116) and MRUN-Translational Research Grant (304/PKIMIA/656205/K145)
- 1 Paper: International e-Journal of Community and Industry Engagement (IeJCIE)-(May 2019); 2 Oral Presentations at International Conference
- Advisor to Schools-Akademi Sains Malaysia-USM STEM Projects
- 1 PhD student graduated
- Gold Medal in 4<sup>th</sup> International Innovation Design and Articulation, i-IdeA2018

# **Intellectual Property**

9 copyrights

# Industry/Business Partner/Academic Partner

• N/A

## **Commercialization Potential**

- Secondary and tertiary education levels
- Asean countries with similar interest in STEM education

## **Level of Impact**

- Used and adapted in USM Chemistry Practical Year 1 courses
- National STEM programme

## **Presentation and Other Strength**

Conducted more than 40 workshops and hands on sessions

