Microscale chemistry experiments for secondary schools

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Target group: 20 Secondary school teachers teaching Chemistry or Science

Abstract

The workshop will begin with an introduction on microscale chemistry and development of microscale chemistry experiments according to the Malaysian Form Four (equivalent to Grade 10) Chemistry syllabus. This will be followed by a hands-on lab session where the participants will perform experiments in pairs/individually using the microscale approach. This approach will encourage and facilitate students to conduct more experiments apart from other benefits such as reduction in chemical wastes produced, chemical costs, time spent and greater safety. A questionnaire will be given to the participants to gather their feedback on microscale chemistry experiments and also on their experience in conducting chemistry experiments in schools.

3 learning objectives

1. Participants will be introduced to the microscale chemistry approach to conducting experiments.

2. They will have hands-on experience to conducting microscale chemistry experiments which have been developed according to the Malaysian Form Four (equivalent to Grade 10) Chemistry syllabus.

3. They will obtain a first hand experience at how microscale chemistry experiments can mean savings in terms of chemical costs, time spent and chemical wastes produced as well as allowing experiments to be done safely.

Program

Workshop on Microscale chemistry experiments for secondary schools

Duration

20 min	Microchemistry experiments in chemistry teaching –Malaysian experiments. *Lecture by Professor Norita Mohamed (Universiti Sains Malaysia)*
60 min	Practical Work - Norita Mohamed, Zurida Ismail.

Experiments

1. Qualitative analysis of cations

2. Investigating the electrolysis of aqueous solution
   - Electrolysis of sodium hydroxide solution

3. Reduction of copper(II) oxide by hydrogen

4. Determining the end point of the titration between hydrochloric acid, HCl and sodium hydroxide, NaOH solution using an acid-base indicator.

5. Studying the effect of heat on carbonate and nitrate salts.

6. Testing for the presence of anions in aqueous solutions.

[Final selection of experiments to be conducted will be from the above experiments]

Short discussion

Questionnaire on feedback from teachers about microscale chemistry experiments and status of chemistry laboratory experience in schools.

Participants will be given a manual for the experiments. Separate stations will be set up for different experiments. The participants (in pairs) will move from one station to the other.

Workshop coordinators

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