



## Making Fragrances Lab - Preparation of Esters -



Many products, like cosmetics or foods, contain artificial fragrances. In this lab, you will prepare two types of fragrant ester molecules from their original components.

### < Purpose >

Learn basic knowledge and skills about preparation of esters.

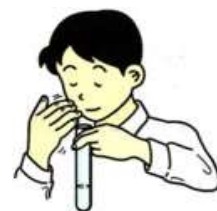
### Preparations

- (1) Materials : Ethanol, Isoamyl alcohol, Glacial acetic acid, Concd. Sulfuric acid  
(Glacial acetic acid and Concd. Sulfuric acid are very dangerous.)
- (2) Equipments : Heating apparatus, Beaker(200mL), Test tubes, Reflux condenser, Boiling stones, Thermometer, Filtration paper, Pipet, Stop watch, Marking pen

### □Procedure

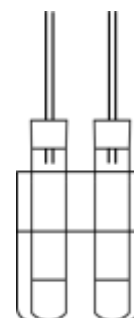
#### Experiment (1) Check original smells of the materials

- ① You must wear goggles at all times while working with chemicals.
- ② Add 1mL of ethanol to a test tube and smell the odor. ⇒ Test tube A
- ③ Add 1mL of isoamyl alcohol to the other test tube and smell the odor.  
⇒ Test tube B
- ④ Smell the odor of the glacial acetic acid in a reagent bottle.
- ⑤ Describe the odors of the chemicals and chemical formula.



#### Experiment (2) Preparation of fragrant ester molecules

- ① Prepare 150ml of water of 80°C (by using the heater ) in a beaker.
- ② Add 1mL of glacial acetic acid to Test tube A and Test tube B respectively.
- ③ Add three boiling stones to Test tube A and Test tube B respectively
- ④ Go to the teacher's desk with the two test tubes and two reflux condensers.
- ⑤ One of the teachers will add 0.5mL of Concd. Sulfuric acid to the test tubes.
- ⑥ Reflux condensers will be attached to the test tubes.
- ⑦ The two test tubes are heated by hot water to start the reaction.  
⇒ Observe the each test tube attentively during the heating.
- ⑧ Take the test tubes out of the hot water and cool them to room temperature.
- ⑨ Smell the odors.
- (⑩ Add 2mL of water to each test tubes.)
- (⑪ Smell the odors again by using the filtration paper. )



## ☐ Results

### (1) Describe the results of Experiments (1)

Name	Ethanol	Isoamyl alcohol	Glacial acetic acid
Chemical formulas			
Feature (odor)			

### (2) Explain the reactions.

### (3) Describe the odors after heating

	Test tube A	Test tube B
odor		

## ☐ Give us your feedback

Grade:      Class:      Number:      Name

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