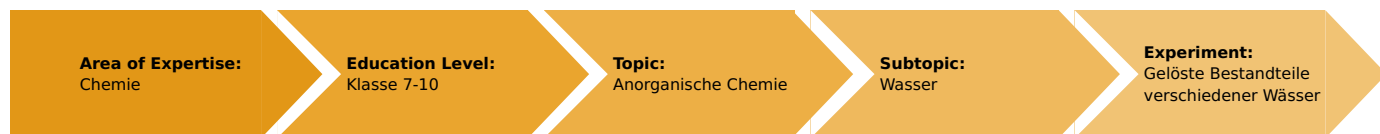


Dissolved components of different waters (Item No.: P7154600)

Curricular Relevance



Difficulty



Easy

Preparation Time



10 Minutes

Execution Time



10 Minutes

Recommended Group Size



2 Students

Additional Requirements:

Experiment Variations:

Keywords:

water, mixture of substances

Task and equipment

Information for teachers

Learning objectives

- Naturally occurring water contains dissolved solids which form deposits on evaporation.
- In addition to the solids, other substances, e.g. gaseous components, are dissolved in water.

Notes on set-up and procedure

Preparation

It is advisable to pour the water types to be tested in labelled bottles before class. A simple salt solution serves as a substitute for sea-water in this experiment. To save time, the students can work in groups and exchange experimental results.

Remarks on the students' experiments

Ensure that the watch glasses are not placed directly in the flame and are not heated too strongly, as they will crack otherwise.



Hazards

- On heating the water samples there is danger of spattering. Wear protective glasses!

Note

Sometimes a deposit can be also observed on evaporating distilled water. This is the result of contamination on standing for a long time. Therefore, use fresh distilled water.

Remarks on the method

This experiment returns to the methods compiled in the "Separation methods" experiments; they can be extended here. It is advisable to discuss the hazards to drinking water, of the use of fertilizers and pesticides, as well as other similar problems with

the students.

Dissolved components of different waters (Item No.: P7154600)

Task and equipment

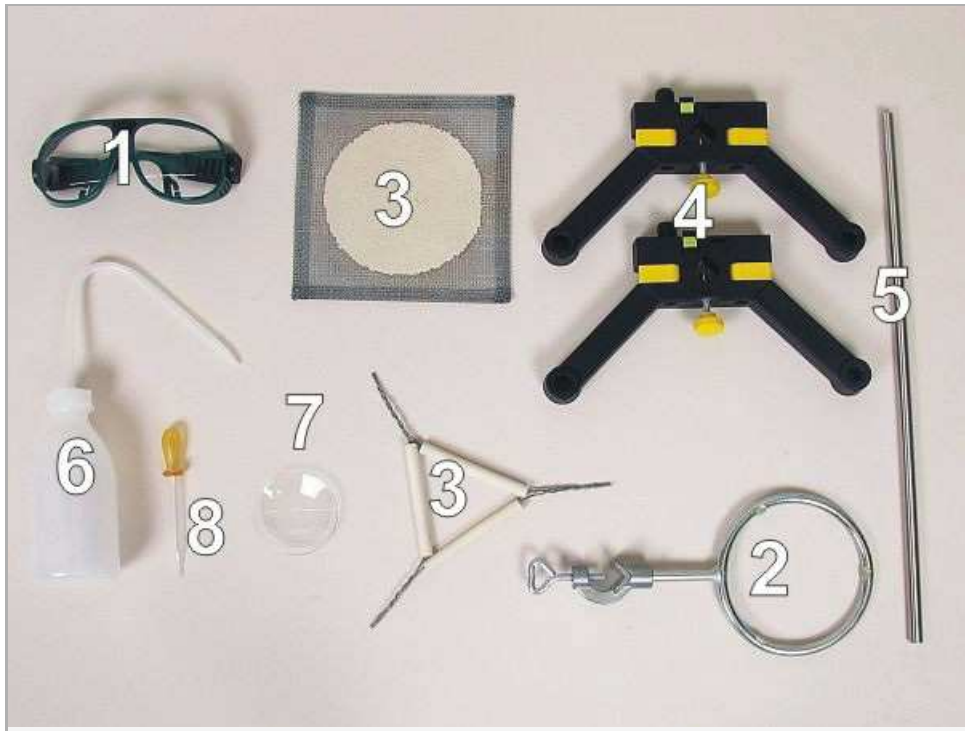
Task

Is naturally occurring water a pure substance or a mixture?

Investigate different water samples for their dissolved components.



Equipment



Position No.	Material	Order No.	Quantity
1	Protecting glasses, clear glass	39316-00	1
2	Ring with boss head, i. d. = 10 cm	37701-01	1
3	Wire gauze with ceramic, 160 x 160 mm	33287-01	1
3	Triangle w.pipeclay, l 60mm	33278-00	1
4	Support base, variable	02001-00	1
5	Support rod, stainless steel, l=370 mm, d=10 mm	02059-00	1
6	Wash bottle, 250 ml, plastic	33930-00	1
7	Watch glass, dia.60 mm	34570-00	1
8	Pipette with rubber bulb	64701-00	1
	Butane burner f.cartridge 270+470	47536-00	1
	Butane cartridge CV 300 Plus, 240 g	47538-01	1
Additional material			
	Distilled water		
	Mineral water		
	Rain water		
	Salt water (sea water)		
	Tap water		

Set-up and procedure

Set-up

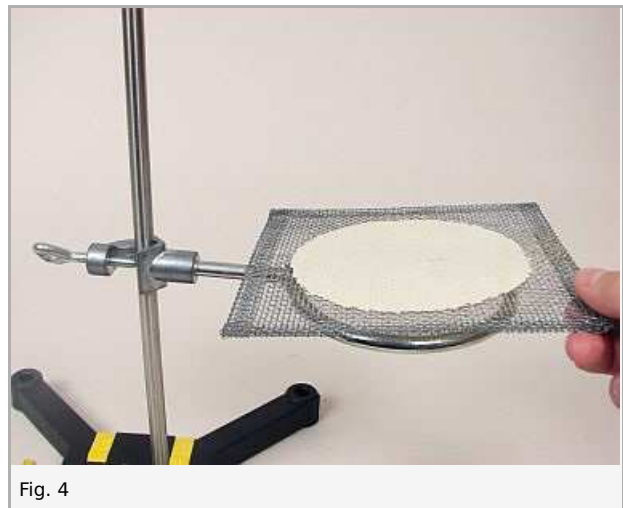
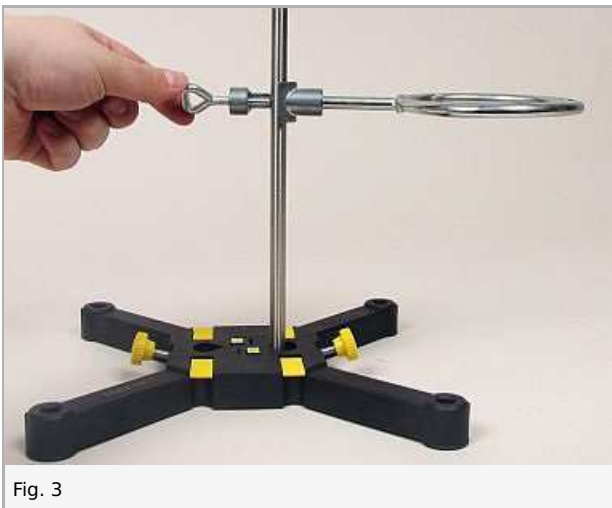
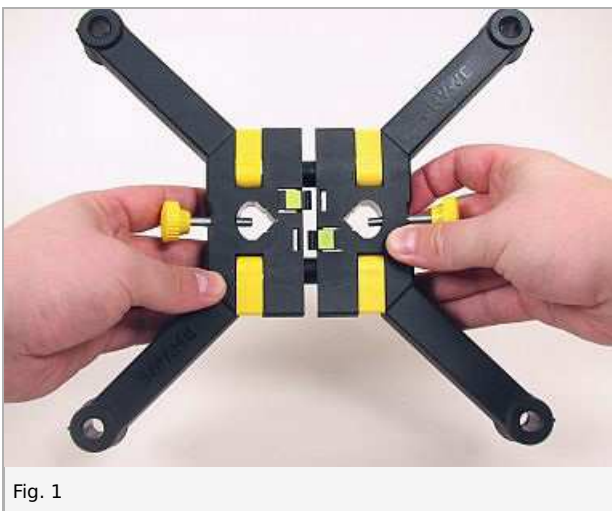
Hazards

- On heating the water samples there is danger of spattering. Wear protective glasses!



Set-up

Set up the support stand according to Fig. 1 and Fig. 2. Attach the support ring (Fig. 3) and place the wire gauze onto it (Fig. 4).



Put the wire triangle in the middle of the wire gauze (Fig. 5). Adjust the height of this contrivance such that the burner heats the wire gauze with the hot part of its flame.

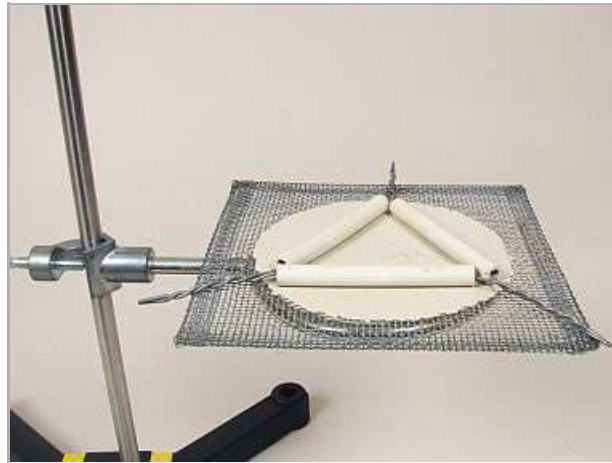


Fig. 5

Procedure

Procedure

Put approximately 5 drops of tap water onto the watch glass with the pipette (Fig. 6). Place it onto the claypipe triangle and heat it cautiously with a small flame (Fig. 7). Do not heat it too strongly, as the watch glass will crack otherwise.



Fig. 6

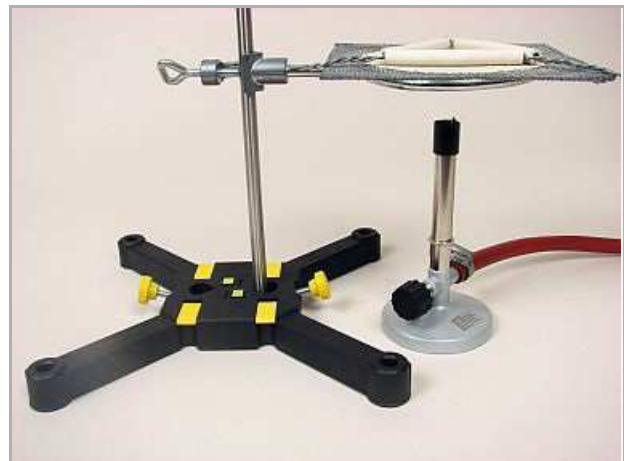


Fig. 7

Heat it until the water has completely evaporated. Then extinguish the burner's flame and allow the watch glass to cool. Record the results in Table 1.

Perform the experiment in the same manner with the other water samples.

Report: Dissolved components of different waters

Result - Observations

Note your observations in a general way; then complete Table 1.

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Result - Table 1

Complete Table 1.

Type of water	Appearance	Result of heating	Appearance of the residues
Tap water	1	1	1
Salt water	1	1	1
Rain water	1	1	1
Mineral water	1	1	1
Distilled water	1	1	1

Evaluation - Question 1

Answer the question in the heading.

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Evaluation - Question 2

Which physical properties are used here to deposit the dissolved substances?

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Evaluation - Question 3

Which substances could the previously dissolved residues consist of?

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Evaluation - Question 4

Which substances that were not found using this method could also be dissolved in water?

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