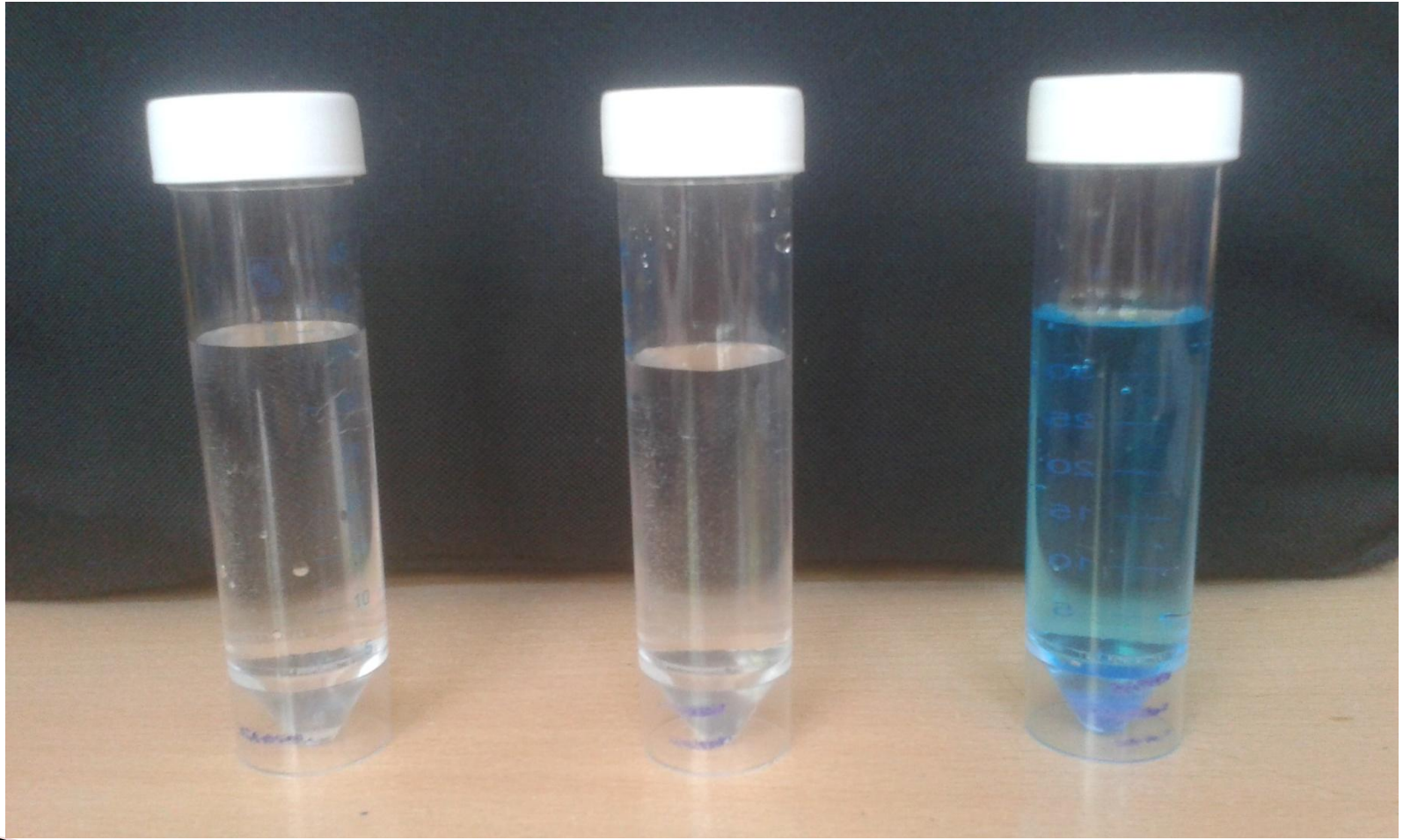


24. Chemistry

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Problem

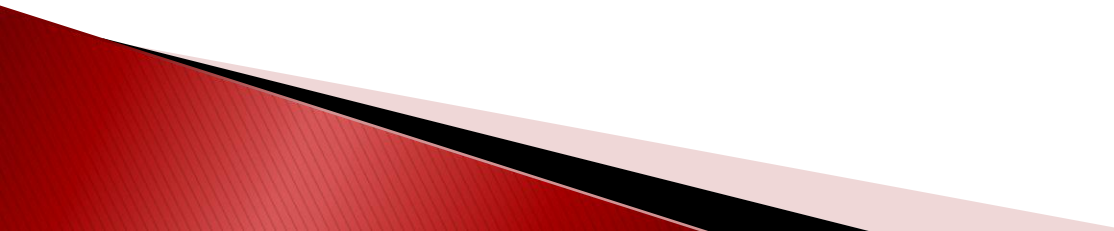
- ▶ A list of compounds includes CuSO_4 , $\text{K}_2\text{Cr}_2\text{O}_7$, MgCl_2 , NaCl . Three of those are in three marked test tubes. Determine the contents of each test tube.



Plan for solving the problem

- ▶ 1. test blue solution by: vapourising water to get blue sediment, heating up sediment to get white sediment, add water
- ▶ 2. Testing first two solutions with flame

Materials

- ▶ Vials 1, 2 and 3, with solutions
 - ▶ Botle with water
 - ▶ Alcohol lamp
 - ▶ Test tubes
 - ▶ Alcohol
 - ▶ Carbon stick (for pencils)
- 

Vials

- ▶ Vial number 1 and 2 are colorless solutions, so we first need to examine them with the experiments
- ▶ Vial number 3 had blue solution and blue sediment at the bottom which we can assume is $\text{CuSO}_4 \cdot 5 \text{H}_2\text{O}$
- ▶ There is no orange colored vial, which we assume there is no $\text{K}_2\text{Cr}_2\text{O}_7$

Hypothesis

- ▶ Of all four chemicals, we consider that $\text{K}_2\text{Cr}_2\text{O}_7$ isn't in the vial since it has characteristic orange color
- ▶ CuSO_4 is usually blue when combined with water and under influence of fire it will change color to white when the water evaporates
- ▶ Solution of NaCl in fire will color flame in orange

CuSO₄

- ▶ The experiment was done as expected, and all the water evaporated from the sediment taken from the bottom of the vial, leaving white sediment proving it is CuSO₄
- ▶ For now our results are that the vial number 3 contains CuSO₄





NaCl

- ▶ The experiment done with the NaCl is proving that by adding a small amount to the fire, we get an orange flame
- ▶ We have done the experiment and the results were successful, so we can say that the vial 1 contains NaCl solution

Conclusions

- ▶ 1. vial – NaCl
 - ▶ 2. Vial – MgCl₂
 - ▶ 3. Vial – CuSO₄
 - ▶ No K₂Cr₂O₇ in vials
-
- ▶ Literature: Slikovni rječnik kemije (Illustrated chemistry glossary)

Thank You for attention!

