Potentiometric titration
Deteremination of orthophosphoric acid

Purpose of the exercise:
Determination of orthophosphoric acid by titration with sodium hydroxide

Equipment:
pH meter, mechanical stirrer, automatic dispenser, 50 mL beaker, pipette

Reagents:
0.1 M NaOH solution
standard phosphate buffer with pH 7.0

Course of proceedings:

1. Turn on the pH meter and set the operating mode to pH measurement. Place the electrodes in the stand holder and connect the cables to the socket.

2. Calibrate the pH meter using the phosphate buffer standard solution.

3. Pipette 20 or 30 mL of the tested drink solution (Coca-Cola; **please degas before measurement**) into a 50 mL beaker. Then place in a stand with electrodes and a stirrer.

4. After starting the stirring, add 0.1 mL of NaOH solution to the tested solution in portions, measuring the pH each time. Stop the titration when, after the second pH jump, subsequent readings become small.

Data analysis and preparation of results.
1. Plot the relationships pH, $\Delta pH/\Delta V$, $\Delta^2 pH/\Delta V$ versus the volume of added NaOH.
2. Calculate the amount of phosphoric acid in the sample

Literature:

James W. Robinson, Eileen M. Skelly Frame, George M. Frame II, *Instrumental Analytical Chemistry,* Taylor&Francis Ltd. 2021

V.K. Ahluvalia, *Instrumental Methods of Chemical Analysis*, Springer, 2023