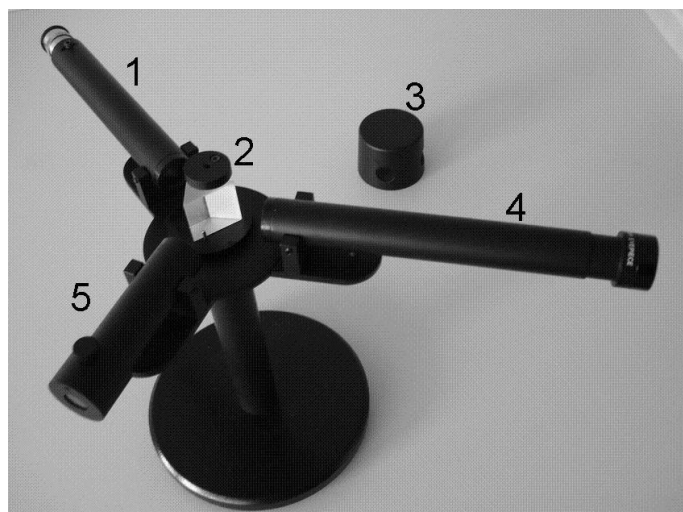


03/09-Kem

**Instruction sheet 467 112**

School spectroscope

467 112



- 1 Collimator tube
- 2 Prism
- 3 Cap
- 4 Telescope tube
- 5 Scale tube

**1 Description**

This school spectroscope serves for observing and measuring emission and absorption spectra.

The spectroscope is a prism spectroscope according to Gustav Kirchhoff and Robert Bunsen (1858).

**2 Technical data**

- (1) Collimator tube, fixed, with an adjustable slit
 

Focal length of lens	160 mm
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  - (2) Prism, flint glass
 

Angle	60°
Length of base	30 mm
Mean dispersion $n_F - n_C$	0.017
  - (3) Cap for prism
  - (4) Telescope tube, rotating, with moving eyepiece
 

Focal length	160 mm
Eyepiece, magnification	15x
  - (5) Scale tube, fixed
 

Scale	10 mm
Resolution	0.05 mm
Focal length of lens	90 mm
- Stand
- |        |       |
|--------|-------|
| Height | 25 cm |
|--------|-------|
- Weight
- |  |      |
|--|------|
|  | 2 kg |
|--|------|

**3 Operation****3.1 Calibration***- Telescope tube and collimator tube setting*

Remove the cap and prism. Turn the telescope tube so that it is aligned with the collimator tube. Align both tubes horizontally with the support screws. Open the slit and observe through the telescope tube, move eyepiece so that a focussed image of the slit can be observed. If necessary, rotate slit and fix in vertical alignment with the fixing screw.

*- Prism alignment.*

Place prism on the prism table so that the matt side faces the locking support. Fix using the locking disc. Place a light source in front of the slit of the collimator tube. We recommend using a light source with a line spectrum, e.g. a spectral lamp.

First turn the prism and telescope tube so that the spectrum can be observed. Then set the minimum deflection angle by turning the prism and telescope tube further. Fix prism table in this position using the fixing screw (under the prism table).

*- Scale tube setting*

Place a light source in front of the scale of the scale tube. The scale should now be visible with the telescope tube, as it is reflected at the front prism side. If necessary, turn the prism slightly.

Move the scale so that it can be observed in focus and turn it so that it is aligned horizontally. Fix the scale in this position using the fixing screw.

If necessary, move the light source slightly so that the complete scale is illuminated evenly and not too brightly.

**- Correct setting**

If the spectroscope is set correctly, the spectrum can be observed in focus simultaneously with the scale.

If necessary, turn the prism so that the complete spectrum (blue to red) is projected on the scale.

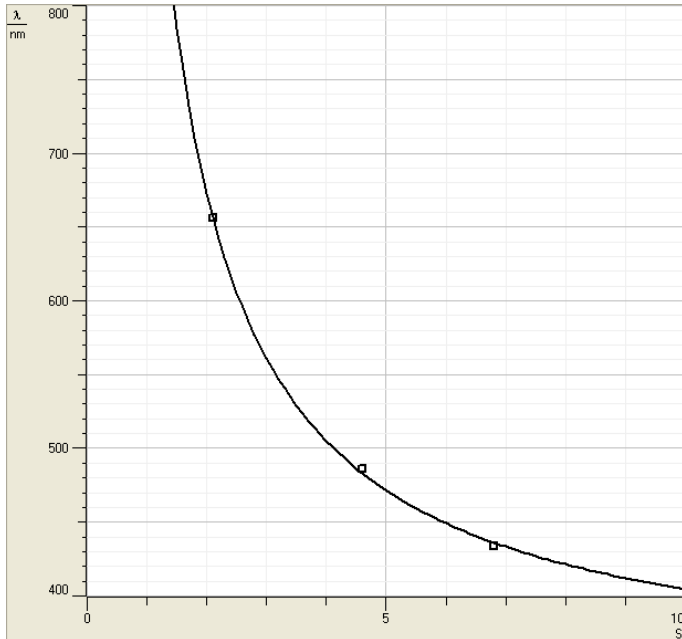
Attach the cap so that the beam paths are not interrupted.

**3.2 Calibration of the scale**

Place a spectral lamp with known lines (wavelengths) in front of the collimator tube.

Read off the position of the spectral lines on the scale.

Example of a calibration with hydrogen lines:

**3.3 Determination of unknown wavelengths**

Observe lines and determine wavelength using the calibration curve.