Dispersion and resolving power of the prism and grating spectroscope 2.1.03-00

What you can learn about ...

- ➔ Maxwell relationship
- ➔ Dispersion
- ➔ Polarizability
- ➔ Refractive index
- ➔ Prism
- ➔ Rowland grating
- ➔ Spectrometer-goniometer

Principle:

The refractive indices of liquids, crown glass and flint glass are determined as a function of the wavelength by refraction of light through the prism at minimum deviation. The resolving power of the glass prisms is determined from the dispersion curve.

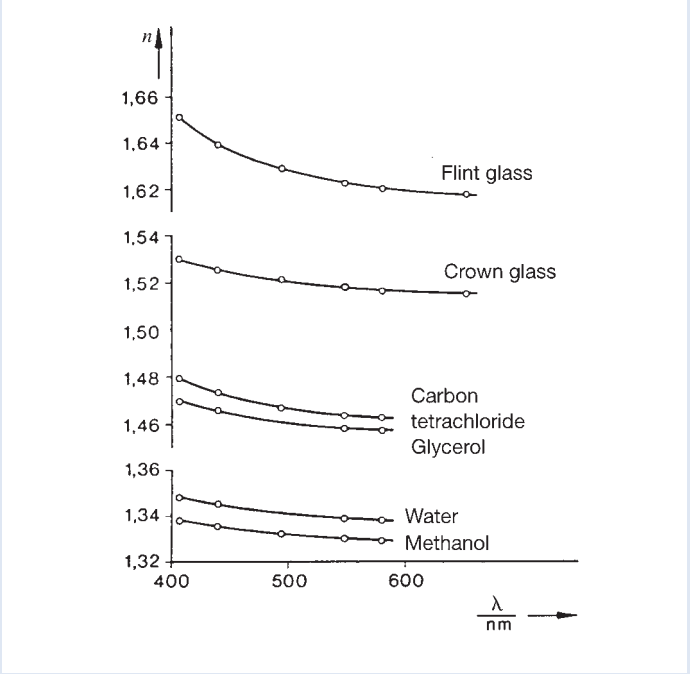
Tasks:

1. To adjust the spectrometer-goniometer.
2. To determine the refractive index of various liquids in a hollow prism.

What you need:

Spectrometer/goniometer with verniers	35635.02	1
Lamp holder, pico 9, for spectral lamps	08119.00	1
Spectral lamp Hg 100, pico 9 base	08120.14	1
Power supply for spectral lamps	13662.97	1
Prism, 60°, Crownglass, h = 30 mm	08231.00	1
Hollow prism 60°, l = 60 mm, h = 60 mm	08240.00	1
Diffraction grating, 4 lines/mm	08532.00	1
Diffraction grating, 8 lines/mm	08534.00	1
Diffraction grating,10 lines/mm	08540.00	1
Diffraction grating, 50 lines/mm	08543.00	1
Diffraction grating, 600 lines/mm	08546.00	1
Vernier calipers, stainless steel	03010.00	1
Barrel base -PASS-	02006.55	1
Right angle clamp -PASS-	02040.55	1
Support rod -PASS-, square, l = 250 mm	02025.55	1
Bench clamp -PASS-	02010.00	1
Stand tube	02060.00	1
Wash bottle, plastic, 250 ml	33930.00	1
Glycerol, 250 ml	30084.25	1
Methanol 500 ml	30142.50	1
Cyclohexane for synthesis, 100 ml	31236.10	1

Complete Equipment Set, Manual on CD-ROM included
Dispersion and resolving power of the prism and grating spectroscope P2210300



Dispersion curves of various substances.

3. To determine the refractive index of various glass prism.
4. To determine the wavelengths of the mercury spectral lines.
5. To demonstrate the relationship between refractive index and wavelength (dispersion curve).
6. To calculate the resolving power of the glass prisms from the slope of the dispersion curves.
7. Determination of the grating constant of a Rowland grating based on the diffraction angle (up to the third order) of the high intensity spectral lines of mercury.
8. Determination of the angular dispersion of a grating.
9. Determination of the resolving power required to separate the different Hg-Lines. Comparison with theory.