

5.1.07-00 Balmer series / Determination of Rydberg's constant



What you can learn about ...

- Diffraction image of a diffraction grating
- Visible spectral range
- Single electron atom
- Atomic model according to Bohr
- Lyman-, Paschen-, Brackett- and Pfund-Series
- Energy level
- Planck's constant
- Binding energy

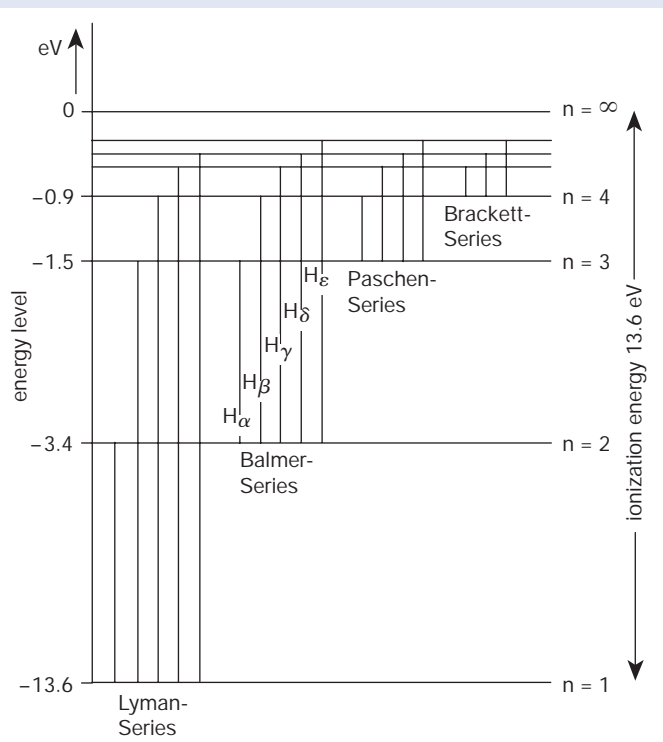
Principle:

The spectral lines of hydrogen and mercury are examined by means of a diffraction grating. The known spectral lines of Hg are used to determine the grating constant. The wavelengths of the visible lines of the Balmer series of H are measured.

What you need:

Spectral tube, H ₂	06665.00	1
Spectral tube, Hg	06664.00	1
Holder for spectral tubes, 1 pair	06674.00	1
Cover tube for spectral tubes	06675.00	1
Connecting cable, 30 kV, $l = 1000$ mm	07367.00	2
Object holder 50 mm x 50 mm	08041.00	1
Diffraction grating, 600 lines/mm	08546.00	1
High voltage supply 0...10 kV	13670.93	1
Insulating support	06020.00	2
Tripod base -PASS-	02002.55	1
Barrel base -PASS-	02006.55	1
Support rod -PASS-, square, $l = 400$ mm	02026.55	1
Right angle clamp -PASS-	02040.55	3
Stand tube	02060.00	1
Meter Scale, $l = 1000 \times 27$ mm	03001.00	1
Cursor for scale, 2 pieces, plastic, red	02201.00	1
Measuring tape, $l = 2$ m	09936.00	1

Complete Equipment Set, Manual on CD-ROM included
Balmer series /
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Energy level diagram of the H atom.

Tasks:

1. Determination of the diffraction grating constant by means of the Hg spectrum.
2. Determination of the visible lines of the Balmer series in the H spectrum, of Rydberg's constant and of the energy levels.